The 15th International Conference on

Low Vision Research and Rehabilitation

Florence (Italy), 8-12 September 2025

ABSTRACT BOOK

VISION2025FLORENCE

ISLRR

AIMO

SPEAKERS

LOW VISION ORGANIZATIONS AND SERVICES: INTERNATIONAL EXPERIENCES - MODELS OF VISION REHABILITATION CARE WORLDWIDE

VISION REHABILITATION AND EYE CARE IN LOW AND MIDDLE-INCOME COUNTRIES

Yasmin Sumrana
Pakistan

Context: Globally, there is huge inequity in eye health and vision rehabilitation services, and even minimum levels of care are unavailable for those who are most in need. In many low and middle-income countries, the increasing need for vision rehabilitation is largely unmet. Many people, particularly children and women, who require vision rehabilitation services do not receive them. This talk will highlight some key strategies which have played a catalytic role in strengthening vision rehabilitation services in Pakistan, Liberia and Zambia.

Approach: Sightsavers' vision rehabilitation model is aligned with the World Health Organization's guidance. It is based on a comprehensive, patient-centred approach that focuses on not just the eye condition but also the impact on a person's daily functioning and quality of life, utilising a multidisciplinary team. In partnership with the Ministries of Health, Education, and Rehabilitation; organisations of people with disabilities and community-based organisations, we support the development of vision rehabilitation services as part of comprehensive eye care; support workforce development; and create necessary linkages with education, disability and social sectors to ensure a continuum of care. Key strategies focus on:

- Integration of vision rehabilitation services and assistive devices into inclusive eye health programmes, particularly at secondary and primary levels
- Integration of vision rehabilitation services and assistive devices into school health and inclusive education programmes
- Support rapid Assistive Technology Assessment (rATA) surveys, which inform the need, demand, supply, and user satisfaction with Assistive Technology, including low-vision devices.
- Strengthen procurement and supply chain mechanisms for low-vision devices to increase access and affordability
- Strengthen linkages with mental health services to support mental wellness in people with low vision

Key takeaways

1. The institutionalisation and sustainability of vision rehabilitation initiatives can only be achieved through multi-sector collaboration and integration of services into government processes, strategies and action plans.
2. Visionrehabilitationinitiativesneedtofocusonreducingstigmaand discrimination towards people with low vision for improved uptake of services.
3. Engagement with government departments and local organisations working with the out-of-school children and nomad communities is essential to ensure that we leave no one behind.

LOW VISION ORGANIZATIONS AND SERVICES: INTERNATIONAL EXPERIENCES - MODELS OF VISION REHABILITATION CARE WORLDWIDE

SYSTEMATIC APPROACH TO LOW VISION: A NOVEL PROTOCOL TO OPTIMIZE LOW VISION CARE IN WEST AFRICA

Werner Eisenbarth
Germany

Worldwide, an estimated forty-three million people are blind, 295 million have moderate to severe visual impairment (MSVI) and about 258 million have mild visual impairment. In sub-Saharan Africa, over four million people are blind and about seventeen million suffer from MSVI. Due to the lack of epidemiological data and the unsatisfactory treatment options for visual impairment across Ghana, the HM KNUST Low Vision Project aims to close the existing gaps by the establishment of an Academic low vision course and tertiary LV centre at the KNUST university hospital in Kumasi. In addition, the set-up of a model service for visual impairment in conjunction with a network of centres for primary and secondary visual impairment and conducting of studies on visual impairment in the Ashanti region. In the long term, the approximately 5.4 million inhabitants of the Ashanti region will benefit from the HM KNUST LV project.

PRESIDENT SPEECH FOR OPENING VISION 2025 CONFERENCE

Paolo G. Limoli
Italy

We expresse gratitude for being part of the Vision 2025 opening event. This conference starts from the collaborative efforts of various Italian scientific entities in organizing the world conference on low vision. In our opinion, these are the main key points:

Collaboration: Vision 2025 is the result of teamwork among major Italian organizations focused on low vision, including Low Vision Academy, PRISMA and the International Agency for the Prevention of Blindness. This work opens to all researchers in the world for create collaboration and progress about visual impairment.

Kintsugi Metaphor: We can draw a parallel between the art of Kintsugi (repairing with gold) and the rehabilitation of visually impaired individuals, suggesting that enhancing and repairing potential leads to unique value and beauty.

Exploration in Low Vision: It's important to have passion for low vision. In the past, it's was as an unexplored field, with several limitations in the treatment for visually impaired patients.

Innovative Solutions: We can now use to improve vision in patients, very interesting magnifying devices, neuromodulation techniques, innovative therapies like cell and gene therapy, new technologies as Artificial Intelligence.

Focus on Patient Autonomy: At Vision 2025, the goal is to address pressing questions from visually impaired patients about avoiding deterioration and maintaining their existing vision, as autonomy is paramount.

Alignment with WHO Recommendations: We have to reinforce the World Health Organization's view that vision rehabilitation is essential and should prioritize overall well-being, supporting a person-centered approach.

Role of Participants: The conference provides a platform for participants to share research and experiences, contributing to the progression of knowledge in visual impairment and the significance of visual rehabilitation.

Vision 2025 aims to emphasize the critical role of visual rehabilitation and inform all involved in ophthalmology and rehabilitation practices for the benefit of patients.

SOCIAL IMPACT OF VISION IMPAIRMENT AND REFRACTIVE ERROR

IMPLEMENTING TRANSLATIONAL RESEARCH PROGRAMMES FOR REFRACTIVE ERROR IN LMIC

Ving Fai Chan

United Kingdom

Despite overwhelming evidence on the effectiveness of refractive error correction in improving education, productivity, and well-being, most low- and middle-income countries (LMICs) have yet to fully integrate refractive error services into their public health systems. The dominant global narrative continues to focus on generating more evidence of effectiveness, while the real challenge lies in understanding how to implement sustainable, scalable programs within resource-constrained health systems.

This presentation challenges the conventional research focus and shifts attention to implementation science—a field that examines how to translate proven interventions into real-world practice. We will explore how refractive error programs can move beyond reliance on NGO-driven models toward long-term government ownership. Key discussion points include political commitment, financing mechanisms, workforce capacity, and health system integration.

By shifting the focus from proving that refractive error correction works to proving how to implement it sustainably, we can accelerate progress toward equitable and government-led vision care services in LMICs.

OPTICAL PRESCRIPTIONS FOR LOW VISION

ANISEIKONIA MANAGEMENT THROUGH AN EFFICACY CHOICE OF SPECIFIC LENS PARAMETERS: BASE CURVE, THICKNESS, VERTEX DISTANCE

Riccardo Cervio
(Italy

Aniseikonia is a binocular condition characterized by disparities in the apparent sizes of images perceived by each eye. This difference poses significant challenges for the visual system in merging these dissimilar images into a single, unified perception. Clinically, aniseikonia is often linked to anisometropia, a refractive condition where the two eyes differ in power by 1 diopter (D) or more in one or multiple meridians. Anisometropia can be further categorized as compound astigmatic, hyperopic, myopic; simple astigmatic, hyperopic, myopic; vertical anisometropia; and mixed anisometropia or antimetropia. If left uncorrected, anisometropia can lead to persistent visual disparities between the eyes, contributing to amblyopia, asymmetric accommodative demands, difficulties in fusion, reduced binocular contrast sensitivity, and symptoms of visual inefficiency. These symptoms often include squinting, frowning, excessive blinking, eye rubbing, close working distance, head tilting, asthenopia, and double vision.

To manage aniseikonia effectively and restore comfortable binocular vision, reducing image size differences -both overall and meridional- is crucial. Solutions can be symmetric or asymmetric depending on the needs of the individual. Advances in spectacle lens technology have significantly improved aniseikonia management. Innovations like free-form technology, semi-finished lens designs, and precise adjustments in base curve, thickness, and vertex distance provide tailored options to minimize visual disparities and enhance visual performance.

These advancements have transformed the approach to aniseikonia correction, making it more accessible and effective. Spectacle lenses designed with these technologies offer patients a chance to achieve better fusion of images, improved binocular function, and reduced symptoms associated with visual inefficiency. By addressing the unique refractive differences in each eye, these solutions allow individuals to regain stable and clear binocular vision.

In conclusion, technological progress in spectacle lens design has become a cornerstone in managing aniseikonia, emphasizing the importance of personalized strategies to overcome visual challenges and improve overall visual comfort.

OPTICAL PRESCRIPTIONS FOR LOW VISION

SELECTIVE FILTERS FOR LOW VISION: INNOVATION, FUNCTIONALITY, AND CLINICAL EFFECTIVENESS

Simone Santacatterina
Italy

Visual perception occurs when radiation with wavelengths between 400 and 760 nm reaches the retina. Photoreceptor cells, specialized to capture photons and initiate visual transduction, face a high risk of phototoxic damage due to their significant metabolic demand and constant exposure to light, particularly in oxygen-rich environments.

Studies on Light-Induced Retinal Degeneration (LIRD) highlight the roles of caspase-dependent and independent apoptosis, as well as necrosis, while pyroptosis, parthanatos, and ferroptosis are less explored. The impact of light dose and spectrum is critical in determining cell death pathways. Low doses (<5 J/cm^2) of blue, white, and green light can induce caspase-independent apoptosis and necrosis, but necrosis is absent below 0.5 J/cm^2. Pyroptosis emerges at low doses (2 J/cm^2) for white and green light and at high doses (126 J/cm^2) for blue light, while ferroptosis occurs at very high doses (53 J/cm^2) of blue light. Conversely, red light causes minimal damage and can even be protective. Further research is required on autophagy and the interplay of these mechanisms.

Blue light is notably harmful due to its high energy, increasing retinal risks, especially after cataract surgery when the natural lens is removed. Photoselective filters are crucial for individuals with retinal vulnerabilities, such as age-related macular degeneration (AMD) or retinal dystrophies, as they limit harmful wavelengths while preserving visual function, offering tailored retinal protection.

The UNI 62471 standard provides essential guidelines for mitigating phototoxic hazards, categorizing risks related to skin and eye exposure to light sources. Adhering to this standard ensures safer designs for medical and optical devices, particularly those involving LEDs and blue light.

Understanding photochemical damage pathways and employing photoselective filters alongside safety standards is vital for advancing retinal protection. A series of photoselective filters will be analyzed to evaluate their energy impact and photoprotection capabilities in relation to the phototoxicity of the visible light they permit to pass.

OPTICAL PRESCRIPTIONS FOR LOW VISION

OPTICAL VISION AIDS IMPACT ON LOW VISION PATIENTS' REHABILITATION AND QUALITY OF LIFE

Andrea Pirotta
Italy

The quality of life for individuals with low vision is undoubtedly limited compared to those with normal vision. Numerous congenital and acquired conditions compromise visual capacity, and effective treatments remain elusive for many. Measurement of visual acuity and visual field is essential for evaluating disease progression, complemented by objective tests and clinical observations. These measurements also quantify residual vision, guiding the prescription of magnifying aids. Management of low vision focuses on residual visual capacity, utilizing optical and electronic aids to enlarge images or alter their perceived position, thereby employing unaffected visual areas.

Neurological rehabilitation for low vision patients using optical devices focuses on both restorative and compensatory strategies. Restorative therapies aim to reactivate inactive neurons within or around the damaged visual cortices, while compensatory strategies enhance the use of the remaining intact visual field. Optical devices, such as magnifiers and telescopic systems, play a crucial role in these approaches by bypassing visual deficits and improving functional vision. Training eye movements, visual scanning, and multisensory stimulation are common techniques used to enhance visual processing and improve daily living activities. The brain's plasticity is key in adapting to visual deficits, and effective rehabilitation can significantly enhance patients' quality of life.

It is crucial to emphasize the importance of adaptation and training in effectively using low vision aids. Over time and with practice, individuals with low vision can learn to interpret distorted images and compensate for distortions. The appearance of distorted images can vary depending on the type and severity of the visual impairment, the type of aid used, and individual cognitive and adaptive capabilities.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 1

KEYNOTE LECTURE: NEUROMODULATION AND BRAIN PLASTICITY FOR VISION RESTORATION

Bernhard Sabel
Germany

It is generally thought that vision loss after damage to the retina, optic nerve or brain is irreversible. However, new research shows that the future is rather optimistic for patients who do not have to fear of going blind. Novel treatments are already in clinical use such as vision training, relaxation exercises and neuromodulation of the eyes and brain using microcurrents. These procedures can trigger visual field recovery in patients with glaucoma, optic nerve damage and other diseases of the central visual pathway such as long-COVID or brain damage. The therapies are designed to help improve both vascular dysregulation and neural network synchronization in the eye and brain. The net-effect is the reactivation of "silent" (hypo-metabolic) neurons which can explain vision restoration as evidenced by enlarging visual field size, reducing foggy vision, improving contrast sensitivity and acuity. Both efficacy and safety was reported in small-sample RCT- clinical trials and are now also confirmed by the analysis of clinical data of >1.000 patients treated in the SAVIR-Center and other independent laboratories. Vision restoration is a new reality which can no longer be ignored by clinical ophthalmology and provides new opportunities for centers of visual rehabilitation.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 1

OPTIC NERVE REGENERATION: CELL-INTRINSIC AND -EXTRINSIC REGULATION

Larry Benowitz
USA

Like other mature CNS pathways, the optic nerve, which conveys information from the retina to central visual relay areas, cannot regenerate when injured, resulting in irreversible vision loss after traumatic, ischemic, or degenerative damage. Dr. Benowitz and colleagues have focused much of their efforts on identifying cell-intrinsic and -extrinsic factors that limit regeneration, and that, when counteracted, enable appreciable levels of optic nerve regeneration. This talk will describe recent discoveries on novel growth factors, receptors, transcription factors, and signaling pathways among retinal interneurons that influence retinal ganglion cells' ability to regenerate injured axons.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 1

BIOMARKERS AND NEW THERAPEUTICS FOR NEUROPROTECTION IN GLAUCOMA

Jeffrey L. Goldberg
Professor and Chair of Ophthalmology, Byers Eye Institute, Stanford University, USA

Glaucoma is a common neurodegenerative disease associated with progressive axon degeneration and cell death of retinal ganglion cells (RGCs). Here we will review recent steps forward revealing the pathophysiology of RGC degeneration, and the therapeutic targets to promote RGC neuroprotection and regeneration. Translating these advances from lab-based research in animal models into human clinical trials with patients has begun in earnest, but will likely rely on development of additional biomarkers for measuring relevant structural and functional outcomes in disease and its treatment. We will discuss recent data from the lab on advances in measuring RGC function in animal models in vivo, and in non-invasively measuring RGC structure, function, and metabolism in human patients, in the context of our latest data on neuroprotection candidate therapies for vision protection or vision restoration in glaucoma.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 1

RETHINKING THE SENSORY-DEPRIVED BRAIN: HOW SENSORY DEPRIVATION IMPROVED OUR VISION ON BRAIN FUNCTION

Emiliano Ricciardi
Italy

The sensory-deprived brain has always been considered a stimulating subject of research for the understanding of human cognition and behavior. Like other research fields fostered by the neuroimaging drive, the number of studies addressing the functional and structural neuroanatomy in congenital, early or late blind and deaf humans has been constantly and significantly increasing in the last years. Furthermore, these observations have oBered scientists a unique opportunity to understand to what extent sensory experience - or the lack of it – is necessary to shape the development and the functioning of the brain organization. While certainly the sensory-deprived brain undergoes detectable structural and functional reorganization because of the lack of a sensory modality, current observations agree that most of the fascinating, large-scale architecture of the human brain develops and functions in individuals who lack sensory inputs since birth as well. This perspective favors a supramodal hypothesis that cortical modules are able to process information in a modality independent manner and, in turn, implies that the human brain is somewhat pre-programmed to develop and function in the way it does. This presentation will particularly focus on the visually deprived brain and will evaluate an up-to-date overview of the experimental neuroscientific research on sensory deprivation, presenting original perspectives on development and experience-dependent refinement of brain structure and function.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 1

PRIMARY VISUAL CORTEX REMODELING IN PATIENTS WITH CENTRAL SCOTOMAS

Janet S. Sunness
USA

Much interest has focused on the nature, and presence, of remapping of the primary visual cortex (V1) following central visual loss in conditions such as Stargardt disease and age-related macular degeneration. This can be assessed using functional MRI and various images or stimuli. Does the area of V1 corresponding to the retinal area of the scotoma (lesion projection zone, LPZ) remain silent or does it gain activity? There are a number of mechanisms through which remapping may occur. The LPZ may be recruited by surrounding areas by either the formation of new connections to other neurons or changes in the connections' strength. Or the LPZ can be activated by 'top-down' features that are normally inhibited in the presence of normal vision.

There have been a range of findings in various studies. There are studies that show no remapping, and studies that find that remapping is present. This remapping may be task-dependent, rather than with passive viewing. Stimulation in the area of the preferred retinal locus for fixation, as well as other retinal areas may demonstrate remapping. Loss of foveal vision is necessary for remapping to occur. Remapping may be responsible for perceptual completion of an image. Top-down cortex remapping may occur when presented with a face or other salient images

Insight into the nature of remapping of the primary visual cortex may provide avenues of enhancing vision for patients with central scotomas. It may inform rehabilitation strategies or interventions that promote remapping.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 1

TOWARDS A BIDIRECTIONAL CORTICAL VISUAL PROSTHESIS: RECENT STUDIES IN FOUR HUMAN VOLUNTEERS

Eduardo Fernández
University Miguel Hernández, Spain; John Moran Eye Center, University of Utah, USA, and Radboud University, The Netherlands

We will present our recent results regarding the implantation of intracortical microelectrodes in four blind volunteers (ClinicalTrials.gov identifier NCT02983370). Our findings demonstrate the safety and efficacy of chronic intracortical microstimulation via a large number of electrodes in humans, showing its high potential for restoring functional vision in the blind. The recorded neural activity and the stimulation parameters were stable over the whole experimental period, and multiple electrode stimulation evoked discriminable patterned perceptions that were retained over time. These evoked perceptions enabled subjects to identify alphanumeric characters, recognize object boundaries, perform daily activities, and even perform mobility tasks. Additionally, our results show that we can accurately predict phosphene thresholds, brightness levels, and the number of perceived phosphenes from the recorded neural signals, paving the way for future closed-loop systems. These results highlight the potential for utilizing the neural activity of neighboring electrodes to accurately infer and control visual perceptions. However, there are still a significant number of open questions that must be resolved before the clinical goals envisioned by this technology can be realized.

EUROPEAN SOCIETY OF LOW VISION RESEARCH AND REHABILITATION (ESLRR) SESSION

LOW VISION SERVICES IN THE NETHERLANDS

Bart Melis-Dankers
The Netherlands

In the Netherlands (Europe; 18.1 million inhabitants) approximately 225,000 people have moderate to severe low vision and another 75,000 are blind according to the WHO-criteria. Approx. 85% of them is 50 years or older, twice as many women as man. Age-related macular degeneration, glaucoma and retinitis pigmentosa are the most common ophthalmological causes of low vision and blindness. In addition about 1 million people have visual complaints due to acquired brain injury (e.g. CVA) or neurodegenerative diseases (e.g. Multiple Sclerosis, Parkinson's disease, dementia).

People with visual complaints are referred to an ophthalmologist (660) by their optometrist (1,100) or general practitioner (13,000). If someone fulfils the WHO-criteria for moderate or severe low vision or has visual problems that can not be solved elsewhere, this person should be referred to third line vision care. These services are delivered by three Organisations of Expertise for blind and partially sighted people: Royal Dutch Visio (2,650 employees; 1,900 full time equivalent; 35 locations; www.visio.org), Bartiméus (1,700; 1,250; 14; www.bartimeus.nl) and Robert Coppes Foundation (160; 110; 4; www.robertcoppes.nl). In general each organisation offers Education (primary and secondary schools and ambulant services), Housing and Daycare services as well as Rehabilitation services (0-4y; 4-18y;18+y; including special services for people with multiple disabilities). Rehabilitation services are organised according to an interdisciplinary rehabilitation model and the WHO International Classification of Functioning, Disability and Health (ICF). Over 15 different professional disciplines are involved in this rehabilitation care. Costs for rehabilitation services are (almost) fully reimbursed to patients by their health care insurance.

The three organisations join forces with the two largest low vision patient organisations in order to develop and share expertise about vision impairments, rehabilitation and research (including acquired brain injury and neurodegenerative diseases). This network is called Kennis Over Zien ('Knowledge on Vision'; www.kennisoverzien.nl).

EUROPEAN SOCIETY OF LOW VISION RESEARCH AND REHABILITATION (ESLRR) SESSION

LOW VISION SERVICES IN ITALY

Valeria Silvestri
Italy

The presentation will aim to offer an overview of low vision services in Italy. Data collected from the yearly report on the state of implementation of policies relating to the prevention of blindness, education and vision rehabilitation, according to the Law 284/97 which was passed by the Italian Ministry of Health, Department of Health Prevention, will be presented in order to profile vision rehabilitation centers and human resources involved. Data review will span a period of more than 15 years in order to identify the national situation throughout the years.

EUROPEAN SOCIETY OF LOW VISION RESEARCH AND REHABILITATION (ESLRR) SESSION

LOW VISION SERVICES IN SPAIN

Joaquín Herrera Medina
Spain

In Spain, visual impairment affects a significant segment of the population. According to the latest data from the National Institute of Statistics (INE), approximately 3% of the general population, or around 1.2 million people, has some form of visual disability. The incidence is higher among older adults and males, with prevalence increasing significantly with age. Among those aged 65 and older, around 30% are affected. In 2021, over 1 million individuals above this age had some degree of visual disability. Geographic location also plays a role, with higher rates in rural areas where access to medical services is limited.

The most common causes of visual impairment in Spain include degenerative diseases such as diabetic retinopathy and age-related macular degeneration (AMD), as well as congenital conditions. AMD affects approximately 8-10% of those over 65, while glaucoma prevalence among individuals over 40 ranges from 2% to 4%, increasing significantly in older populations. According to ONCE, more than 70,000 individuals in Spain had severe visual impairment in 2024, nearly 48% of whom were over 65, with 82% retaining some useful vision. The primary causes of severe visual impairment include high myopia, retinal degeneration, optic nerve pathologies, and maculopathies.

The impact of visual impairment on quality of life is substantial. While there is reasonable access to healthcare services, significant disparities exist between urban and rural areas. ONCE ensures the availability of specialized rehabilitation services across the entire country, advocating for improved laws that enhance the quality of life for visually impaired individuals. Spain has legislation that protects the rights of people with visual disabilities, including the General Law on the Rights of Persons with Disabilities, which ensures accessibility, non-discrimination, and the provision of specific resources.

Reflecting on the current situation, it is evident that, despite notable advancements, significant challenges remain. The future of visual impairment in Spain will depend on increased social awareness, improved services, and enhanced collaboration between government sectors and NGOs to ensure a dignified and fulfilling life for those affected.

EUROPEAN SOCIETY OF LOW VISION RESEARCH AND REHABILITATION (ESLRR) SESSION

LOW VISION SERVICES IN GERMANY

Kathleen Kunert
Germany

At the sole German clinic specialising in inpatient ophthalmological rehabilitation, a multi-professional team under ophthalmological guidance provides medical rehabilitation for approximately 1400 visually impaired patients on an annual basis. The rehabilitation programme is tailored to the individual needs of each patient and is focused on compensating for the impairment of visual functions, their impact on personal activity and participation in a social and professional context. The programme encompasses comprehensive medical care, supplemented by low-vision services, visual therapy (e.g. excentric view training and explorative saccadic training), balance and perception training, mobility training, workplace adjustments, and psychological and socio-legal support. Collaborations have been established with specific vocational rehabilitation providers, who, for example, implement workplace equipment, retraining, or basic technical training for the blind following medical rehabilitation. Specific funding for rehabilitation depends on the employment and insurance status of the rehab. The majority of costs are covered by German pension insurance, followed by statutory and private health insurance and statutory accident insurance. However, a significant deficit in the German care system is the lack of knowledge among ophthalmologists about rehabilitative options and the lack of a comprehensive outpatient rehabilitation network.

EUROPEAN SOCIETY OF LOW VISION RESEARCH AND REHABILITATION (ESLRR) SESSION

NAVIGATING VISION IMPAIRMENT SERVICES ACROSS TWO JURISDICTIONS: A COMPREHENSIVE OVERVIEW OF LOW VISION SUPPORT IN THE REPUBLIC OF IRELAND AND NORTHERN IRELAND

Blaithin Gallagher[1], Andrew Jonathan Jackson[2]

[1] BAM Gallagher Consulting, Leitrim Ireland

[2]Department of Ophthalmology, Belfast Health and Social Care Trust, and Northern Ireland Clinical Research Network, Belfast Health and Social Care Trust, United Kingdom

Purpose: This session provides an overview of vision impairment services across the island of Ireland, covering both the Republic of Ireland (ROI) and Northern Ireland (NI). Attendees will gain insights into available supports for individuals of all ages, highlighting key differences between the statutory-led services in NI and the government-supported charity model in ROI.

Methods: Desk research, professional contacts, and experience were used to examine the structure and delivery of low vision services in ROI and NI. The analysis explores pathways to accessing support, from early intervention to adulthood.

Results: In ROI, Vision Ireland plays a pivotal role, offering a comprehensive range of supports including functional vision assessments, assistive technology, employment guidance, mobility training, and counselling, serving 8,200 people in 2024, including 1,532 hospital patients and their families. Child Vision provides education and therapeutic services for children, including multidisciplinary assessments, school supports, and residential services while Irish Guide Dogs deliver mobility and advocacy supports. In NI, adult low vision services are coordinated from two main hospital hubs across 15 sites, with specialist services for children at two hospitals and additional neurodevelopmental support at NOVIC. Adult learning disability services operate through day centres. Optometry-led services receive support from Sensory Support Services, RNIB, QTVI services, and Guide Dogs NI. Annually, an estimated 5,000 adults and 120 children attend Low Vision services as new patients. The review-to-new-patient ratio is significantly higher for children (5:1) than adults (1:5), reflecting evolving educational needs. NI's service provision team includes 20 optometrists and an equal number of clinic support staff.

Conclusion: By comparing service models in ROI and NI, this session will enhance understanding of how vision impairment services are structured and delivered. It will foster discussions on best practices, cross-border collaboration, and innovations to address the growing demand for vision-related services.

EUROPEAN SOCIETY OF LOW VISION RESEARCH AND REHABILITATION (ESLRR) SESSION

INTRODUCTION TO OVER-THE-COUNTER (OTC) AIDS

Ashley Deemer
USA

This introduction to the session will discuss how the availability of over-the-counter (OTC) medical aids can impact patient outcomes, either positively or negatively, as accessible solutions that may or may not meet patients' specific needs. This session will begin with a broad overview and then specifically focus on OTC magnifiers for low vision. Vision rehabilitation providers can play a key role in transitioning patients from OTC magnifiers that are insufficient for their visual needs to other types of magnification devices by introducing prescribed optical or electronic magnifiers, high add spectacles for near, and/or visual assistive mobile apps. Speakers will address changing trends in the use of OTC magnifiers over the past 5 years, including practice patterns for prescribed magnification devices relative to OTC magnifiers, as well as patients' satisfaction with these aids. The session will provide perspectives from three different vision rehabilitation practice settings in the USA: an optometric teaching institution, an ophthalmic academic center, and a private practice. Concluding remarks will summarize similarities and differences across these practices, pooled findings, as well as recent longitudinal trends for patient and provider preferences for magnification aids.

FROM FRUSTRATION TO SUCCESS: SUPPORT WITH HEALTHCARE PATIENT PORTALS FOR LOW VISION PATIENTS - PART 1

USAGE OF HEALTHCARE PATIENT PORTALS BY VISUALLY-IMPAIRED PATIENTS

Ava K. Bittner
USA

Findings related to low vision patients' usage and interest in the Epic healthcare online patient portal will be summarized from the perspective of an optometrist who inquired about it during the intake, based on data obtained from over 100 patients who were seen for clinical vision rehabilitation services at UCLA in 2024-25. The vast majority (97%) of patients used an internet device (smartphone, tablet or computer), thus device ownership was not a barrier to patient portal access. About three-quarters of low vision patients had activated their patient portal account; the odds of activation were significantly higher for those who had encounters with healthcare providers outside of ophthalmology in the patient portal system (i.e., the vast majority patients). About half of low vision patients reported using the patient portal independently, while about a third relied solely on a proxy (typically a family member), and a much smaller proportion accessed it via both a proxy and themselves. Odds of independent use of the patient portal were significantly lower for patients who had worse presenting visual acuity or increased age, while self-reported difficulty with seeing their internet devices was unrelated to independent use. About a third of patients indicated they were interested to receive training to use patient portal features independently, while about half were not interested. Odds of being not interested in patient portal training were significantly greater among patients age 90+ years (i.e., nearly a fifth of patients) or those who indicated no difficulty with seeing their internet devices (smartphones, tablets, computers; 15% of patients), but lack of interest in training was unrelated to presenting visual acuity, whether a proxy accessed it, or if they had encounters with healthcare providers outside of ophthalmology in the patient portal system. These findings can help guide other vision rehabilitation providers to identify candidates for healthcare patient portal training as part of vision rehabilitation services, in order to improve their access to important healthcare information.

FROM FRUSTRATION TO SUCCESS: SUPPORT WITH HEALTHCARE PATIENT PORTALS FOR LOW VISION PATIENTS - PART 1

ACCESSIBILITY AND TRAINING TO FACILITATE LOW VISION PATIENTS' INDEPENDENT USE OF HEALTHCARE PORTAL SERVICES

Kayla Gan
USA

With the growing prevalence of online patient portals, many patients are interested in increasing their independence with managing their healthcare information but do not know where to start. Visual impairment can pose additional challenges to navigating online patient portals for healthcare due to inaccessible formatting. By offering training on functions and accessibility modifications for patient portals, low vision providers can support patients in playing a more active role in the crucial task of managing their health.

Findings related to low vision patients' interest to receive support to independently use the Epic online healthcare patient portal will be summarized from the perspective of an occupational therapist (OT) who offered patient portal training, based on data obtained from over 100 patients who were seen for clinical vision rehabilitation services at UCLA in 2024-25. Of those who indicated to the optometrist that they were potentially interested in patient portal training, about half received instruction with the OT. Odds of receiving patient portal training were significantly greater among patients who had encounters with healthcare providers outside of ophthalmology in the patient portal system, but lack of training was unrelated to visual acuity or whether the patient portal was accessed independently or via a proxy. Barriers to providing training to more patients included appointment cancellations, other treatment priorities, and not having the device during session.

By supporting patients with their patient portal, the OT explored what accessibility features and training strategies were effective in increasing their independence with accessing their healthcare information. Patients who received training benefitted from utilizing both device and patient portal accessibility features to increase ease of use, including text size/style, text-to-speech, color, and portal function shortcut modifications. About a quarter of all vision rehabilitation patients received training and support with the OT on the healthcare portal, indicating this as an unmet need and interest for some patients. Thus, vision rehabilitation providers should inquire and offer this type of instructional support to help enhance low vision patients' access to important healthcare information.

FROM FRUSTRATION TO SUCCESS: SUPPORT WITH HEALTHCARE PATIENT PORTALS FOR LOW VISION PATIENTS - PART 1

OVERCOMING BARRIERS TO EFFECTIVE HEALTHCARE APP USAGE

Holly Stants
USA

Healthcare providers often encourage patients to use health care plan portals to self-manage their health information, schedule appointments, and communicate with providers, as these portals can enhance patient engagement, access to health information. However, patients face several barriers, including low vision and technology challenges. Accessibility issues, digital literacy skills, reliable internet and lack of awareness make it difficult for patients with low vision to navigate these portals. Some patients also resist adopting modern technologies, preferring traditional methods of communication and record-keeping. Addressing these barriers involves asking questions, improving the design and accessibility of health care portals, increasing awareness and education about available resources, and ensuring equitable access to technology for all patients.

How do we know if patients are using the health care portals or if they have ability to complete interactions accurately and timely without error? Finding the solution often begins with the question. Findings related to questions were based during 2024-2025; during sessions with an occupational therapist (OT) with low vision specialization (SCLV, CLVT), working at the UPMC Vision Institute low vision rehabilitation clinic. The mostly white, female patient population ranged in ages from 13-90+.

The results found that over half of the group had difficulty with technology and device use, some had no difficulty; a small number sometimes had difficulty. While all of population reported that they had the portal; less than half were independent. Additionally, over a third named a proxy as wife, daughter, friend, family. Respecting training, the results were even, half would be interested, and half would not be interested, a few answered maybe. All the patients who identified that they used the portal for all their health care providers not just the vision providers.

To improve patient adoption rates, targeted strategies are essential. Education is crucial to inform patients about the value and functionalities of patient portals, helping them understand how these tools can help in managing their health care. The current culture of technology is fast moving and while providing improving ability for patients with self-management of health; not everyone is able. As providers this is an opportunity to engage and promote equitable access to patient portals, improving self-management of health.

FROM DISSATISFACTION TO SUCCESS: TRANSITIONING FROM OVER-THE-COUNTER TO PRESCRIBED VISUAL AIDS - PART 2

RECOMMENDATIONS FOR VISUAL ASSISTIVE DEVICES WHEN OVER-THE-COUNTER MAGNIFIERS ARE NOT HELPFUL

Ava K. Bittner
USA

Over-the-counter (OTC) optical magnifiers are readily available to acquire online or in brick-and-mortar stores, and most new vision rehabilitation patients have tried them with a range of different satisfaction levels. We performed a retrospective records review of clinical records at UCLA to evaluate patients' experiences from 2022-23 in comparison to 2024-25 to determine if there were any emerging new trends. Over time, slightly more patients (over two-thirds in 2024-25 vs. 59% in 2022-23) had tried an OTC magnifier, and the satisfaction ratings for OTC magnifiers remained relatively the same, but fewer patients thought OTC magnifiers were not helpful in most recent years (about a quarter of patients vs. 44% in 2022-23). Greater odds of trying an OTC magnifier in relation to increased age remained consistent for both time periods. In 2022-23, 79% of patients had a smartphone or tablet mobile device compared to 92% in 2024-25. Recommendations and training with visual assistive mobile apps (e.g., SuperVision+ magnifier, Seeing AI or Aira) were provided to a greater proportion of patients (about two-thirds) in 2024-25 compared to 48% in 2022-23. Visual assistive apps were recommended to patients with significantly worse near best-corrected visual acuity post-refraction (mean 0.55 logMAR) versus no apps for better near best-corrected visual acuity (mean 0.33 logMAR) in 2022-23, whereas app recommendations were associated with younger age in 2024-25 rather than near visual acuity. Newly prescribed hand-held optical illuminated magnifiers were recommended by the vision rehabilitation provider to about a third of patients in both time periods, indicating that there was a consistent proportion of interested candidates for upgrades to prescribed traditional optical magnifiers, either in addition to or instead of visual assistive apps. However, the newly prescribed hand-held optical illuminated magnifiers were dispensed to fewer patients in 2024-25 (about half of those for whom it was recommended) compared to two-thirds of patients who purchased prescribed optical hand-held optical magnifiers in 2022-23. These findings indicate a shift to more recommendations for free visual assistive mobile apps while there has been a reduction in purchased/dispensed hand-held optical illuminated magnifiers, supporting changing trends for provider and patients' preferences for these aids.

FROM DISSATISFACTION TO SUCCESS: TRANSITIONING FROM OVER-THE-COUNTER TO PRESCRIBED VISUAL AIDS - PART 2

FROM DISSATISFACTION WITH OTC VISUAL AIDS TO NEWLY PRESCRIBED DEVICES

Patrick Yoshinaga
USA

Patients who initially present for low vision rehabilitation services often arrive with over the counter (OTC) devices that they obtained on their own through various recommendations from friends, family members, advertisements, and from other sources in an effort to assist with their vision difficulties. In many cases patients may be disappointed with these devices as they may not have met their expectations for their specific goals and needs. Our setting is an academic optometric education school and clinic. This environment presents unique characteristics and challenges that will be discussed. Data from a retrospective review of records from academic years 2021 through 2024 will be presented describing the demographics of our patient population including age, sex, diagnosis, visual acuity, and insurance coverage. In addition, the percentage presenting with an OTC device, the type of device, and type of prescribed device that was determined at the examination will be reviewed. Descriptive findings of previous use and type of OTC devices and the reported reason for satisfaction/dissatisfaction with them will be examined. The relationship of previous use of distance devices, smart phones or tablets, and adaptive technology such as closed-circuit televisions (CCTVs) or hand-held video magnifiers to age, diagnosis, visual acuity and insurance coverage will be presented. Transition to prescribed low vision aids will be reviewed, investigating trends of recommendations and usage of optical devices vs adaptive technology, including smart phone apps. Similarities and dfferences in results between the three study sites: optometry school teaching clinic, ophthalmology academic center, and private practice will be discussed. The aim of this review is to better understand how certain characteristics such as age, diagnosis, visual acuity, and previous use of devices among others are related to the type of prescribed low vision devices that are accepted by visually impaired individuals to meet their visual needs.

FROM DISSATISFACTION TO SUCCESS: TRANSITIONING FROM OVER-THE-COUNTER TO PRESCRIBED VISUAL AIDS - PART 2

OUTCOMES IN A PRIVATE PRACTICE: TRANSITIONING FROM HIGH USAGE RATES OF OTC MAGNIFIERS BY AMD PATIENTS

John Kaminski
USA

This portion of the session will discuss outcomes in a private Optometry family practice having a sub-specialty in low vision rehabilitation located in Midland, Michigan, USA (population 50,000). Usage rates of OTC hand-held magnifiers by mostly AMD patients were evaluated and the prescribing patterns to transition these patients to improved spectacle corrections and devices are reported.

In 2024-25, the vast majority of patients (86%) had AMD compared to 72% in 2022-23. Only a small proportion (less than a fifth) of patients used OTC near glasses and they were rated as somewhat helpful by most who used them. In both time periods (2022-23 and 2024-25), the majority (about three-quarters) had tried an OTC magnifier and the majority (over half) felt it was only somewhat helpful. In both time periods, a prescribed hand-held magnifier was recommended to the vast majority of patients (80-85%) and it was dispensed to nearly half of the patients to whom it was recommended. In 2024-25, digital magnification via a smartphone or tablet was recommended in nearly all cases when a prescribed hand-held magnifier was not recommended; whereas CCTVs were only rarely recommended and dispensed. When compared to presenting or baseline near visual acuity with habitual glasses, it improved post-refraction by 0.1 logMAR on average and improved with the prescribed hand-held optical magnifier by 0.3 logMAR on average in 2024-25. At follow-up, the majority (about two-thirds) indicated that the prescribed magnifier was helpful, while about a third said it was somewhat helpful and none reported it was not helpful. At the same follow-up session, slightly less than half reported that their OTC aid was helpful and about two-thirds indicated that they preferred the prescribed magnifier instead of the OTC aid and less than a third said they were equally valuable.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 2

RETINAL IMAGING IN BRAIN DISEASE

Leopold Schmetterer
Singapore

The retina provides a unique opportunity to study neurons and microvessels in vivo. Hence, there is considerable interest to use retinal imaging as a biomarker for brain disease. Frequently used imaging modalities for this purpose include fundus photography, optical coherence tomography (OCT) and optical coherence tomography angiography (OCTA). These techniques have been frequently used for detection of diseases such as Alzheimer, multiple sclerosis and Parkinson's disease. For several parameters extracted from these images high sensitivity and specificity have been reported. More recently deep learning techniques have boosted the diagnostic performance although the full potential of these techniques has not yet been exploited, because of lack of data. Moreover, recent studies have shown that retinal images may be predictive of future progression of brain disease.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 2

PARALLEL VENTRAL AND DORSAL SUB-ROUTES FOR VISUAL INFORMATION PROCESSING IN HEALTH AND DISEASE

Ferdinand Binkofski
Germany

Visual information is processed in two main information streams: the dorsal stream for action and the ventral stream for perception and semantic processing (Ungerleider and Mishkin 1982). Binkofski and Buxbaum (2013) have proposed that in the human brain the dorsal stream is divided into the dorso-dorsal stream for online action processing and the ventro-dosal stream for more knowledge based action processing. Very recent data suggest that there is an additional mesio-dorsal stream in between for direct interaction with objects (Jüchtern et al., 2014). On the other hand Wurm and Caramazza (2022) suggest two parallel substreams for the ventral stream: a latero-ventral sub-stream for action recognition, processing both semantic and kinematic information, and an infero-ventral sub-stream focused on pure semantic data related to object categories and identity. This forms a dorsal-ventral distinction for animate and inanimate action aspects.

By taking a closer look at the new sub-parcellation of the dorsal and the ventral streams I can propose a unified model of parallel processing of visuo-motor information in the two streams with a ventral to dorsal gradient: the dorsal stream focuses more on action, while the ventral stream handles more semantic processing, though both streams overlap. The dorso-dorsal sub-stream handles pure action, and the infero-ventral sub-stream focuses on pure semantics, with varying degrees in between. This framework can explain the manifold proposed dorsal-ventral segregations between lesion maps associated with different functions, such as impairments in tool selection for novel versus familiar tool use, or manipulation versus functional action knowledge. Moreover, the assumption of gradually changing dominance of functions across the streams helps to understand discrepancies between the interpretation of lesion study results in the realm of apraxia and visual agnosia as these may depend on slight differences in the assessed tasks and aspects.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 2

CEREBRAL VISUAL IMPAIRMENT AND BRAIN LESIONS

Francesca Tinelli
IRCCS Fondazione Stella Maris, Italy

CVI is a verifiable reduction i n lower- and higher-order visual function abilities associated with a brain disorder, injury, or malfunctioning of the cerebral visual pathways and networks. These can present in different combinations and severity range and may be viewed as a spectrum disorder. Usually children with CVI may have trouble in responding to the things they see, seeing certain parts of what is in front of them, like busy moving scenes, recognizing faces and objects, recognizing things in cluttered spaces, reaching for something while they're looking at it, understanding what they're looking at. Parents may also notice that their child with CVI reacts slowly to visual cues, prefers to look at things that are moving, prefers to look at things in a certain part of their vision, like with their peripheral (side) vision. There are, however, forms of CVI that are more difficult to understand in children such as orientation agnosias or deficits in the perception of specific types of movement of which we will present a few examples.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 2

VISUAL IMPAIRMENT AND DEVELOPMENT OF MULTISENSORY SKILLS AND TECHNOLOGY

Monica Gori
Italy

An organism's ability to engage with the external world relies on its capacity to process and interpret environmental information accurately. Our senses serve as the window through which we interact with the world. For instance, while sight helps us navigate the environment and locate objects, hearing informs us about important events, like the approach of a car or the presence of people nearby. These simple actions result from complex processes of sensory information processing. Despite having multiple sensory modalities, the brain integrates these signals to create a coherent perception of the world. Multisensory integration is a crucial process that enhances perception by combining sensory inputs, improving reaction time, precision, and accuracy. However, the mechanisms underlying multisensory development are still not fully understood.

Recent studies have emphasized the significance of sensory interaction in supporting multisensory integration processes. Our research demonstrates that the visual modality plays a critical role in the development of audio and tactile integration. For individuals who are blind, the absence of vision alters their ability to integrate auditory and tactile information, which can be reduced or disrupted compared to sighted individuals. During infancy (ages 5-36 months), sighted infants exhibit strong audio-tactile integration for spatial localization, while blind infants show a reduction in multisensory integration. At the tactile level, body representation in space is also affected, with EEG data revealing distinct cortical processing in blind infants compared to sighted ones when hands are placed in canonical or un-canonical positions.

In childhood (ages 5-14 years), sighted children show a late development of audio-tactile integration, particularly in tasks like the ventriloquist effect, the rubber hand illusion, and the temporal binding window. However, no such multisensory integration is observed in blind peers. These findings suggest that sensory interaction is a fundamental component of multisensory development. Understanding the close link between sensory interaction and multisensory integration can provide a framework to better comprehend how we learn to interact with a multisensory environment and inform the development of science-driven technologies aimed at improving the quality of life for sensory-impaired individuals.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 2

HOW BRAIN INJURY LEADS TO VISUAL DEFICITS IN CHILDREN WITH UNILATERAL CEREBRAL PALSY

Els Ortibus
Belgium

Imagine trying to catch a ball, a task. For children with unilateral cerebral palsy (uCP), this can be particularly challenging due not only to motor impairments but also visual difficulties (i.e., visual function and functional vision). While much research has focused on motor impairments, children with uCP are also at high risk for visual impairments (VI), which can affect motor function (e.g., bimanual function) and daily activities. Additionally, the neurological correlates of VI in uCP are not fully understood, highlighting the need for detailed evaluations of visual outcomes and their relation with brain damage. Therefore, we aimed to perform a comprehensive investigation of the broad spectrum of VI, and explore their relation with bimanual function and brain damage in children with uCP. First, we showed that children with uCP present with different significantly reduced visual functions compared to peers with neurotypical development. Additionally, compared to peers, only children with left-sided uCP showed greater impairments in stereoacuity, which, along with visual-perceptual functions, correlated with functional vision. Moreover, decreased visual perception was related to reduced bimanual dexterity, coordination, and functional hand use while impaired functional vision was only related to functional hand use. Our systematic review highlighted the lack of studies on the association between VI and specific brain structures, particularly in children with uCP. Therefore, we performed two neuroimaging studies, showing that visual functions are controlled by complex neural networks rather than single brain regions. However, on structural MRI, damage to the parietal lobe and corpus callosum was predictive of stereoacuity impairments, while occipital and temporal lobe lesions were predictive of deficits in visuomotor integration. Our advanced diffusion MRI analysis revealed hemisphere-specific differences in visual pathways, particularly in the superior longitudinal fasciculus, with reduced visual outcomes associated with reduced fiber density and bundle size in different WM tracts. These studies suggest that conventional MRI methods could help clinicians prioritize specific visual assessments during initial evaluations, while advanced techniques such as fixel-based analysis may offer deeper insights into the lateralization and complexity of the visual system in uCP.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 2

CHILDREN WITH BLINDING ROP (STAGE 4 AND 5): HABILITATION AND REHABILITATION SERVICES

Suraj Singh Senjam, Rajendra Prasad
Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India

The habilitation services focus on a disabled child learning to do something for the first time. Various life skills must be taught to these children who have never done those skills before. Among children with blindness, blinding Retinopathy of Prematurity (ROP) children, due to their premature and extremely low birth weight, pose a unique challenge compared to babies born with full-term and normal birth weight in providing habilitation services. For example, many children with stage 5 ROP cannot walk even after attaining age 2 years and 6 months in our rehabilitation clinic. All children with blindness need special attention and early intervention to improve mobility, cognitive, communication, social, and language development, academic learning, problem-solving, participation, self-confidence development, and independent living skills. To date, there are no or seldom visual habilitation guidelines (age-appropriate) for early care and family support plans for blinding ROP children anywhere in the world. ROP children are not like other blind children with normal APGAR scores. During early childhood periods (up to 9 years of age) children usually experience rapid and significant transition phases in acquiring new knowledge, and social skills, encompassing several aspects of well-being in terms of social and emotional, cognition, and physical and mental. Therefore, early intervention services in the form of habilitation and rehabilitation, including family support planning need to be done as early as possible, given maximum neuroplasticity at this age, e.g., at around toddlers. Given the Retinopathy of Prematurity (ROP) as a leading cause of childhood blindness in low- and middle-income countries (LMICs), including India such services is the need of the hours. Therefore, for the first time, we developed early habilitation and rehabilitation services packages for blinding ROP using age-appropriate habilitation products. Such habilitation services can be taught and trained in the form of early essential life skills, e.g., standing independently, mobility, communication, and language, and instrumental life skills, e.g., brushing teeth, washing hands, object identification.

LOW VISION AND THE BRAIN: FUNCTION, PLASTICITY AND RESTORATION - PART 2

COMMON NEURODEGENERATION MECHANISMS SHARED BY NORMAL TENSION AND OCULAR HYPERTENSION GLAUCOMA MODELS

Yang Hu
USA

There is no curative neuroprotective or restorative regeneration therapy for CNS neurodegeneration, which is a central challenge for human health. Axonopathy is a common early feature of CNS neurodegenerative diseases, including glaucoma and ALS. Optineurin (OPTN) mutations are linked to normal tension glaucoma (NTG) and ALS, but the molecular mechanisms underlying neurodegeneration are unknown. We found that OPTN C-terminus truncation (OPTNΔC) causes late-onset neurodegeneration of retinal ganglion cells (RGCs), optic nerve (ON), and spinal cord motor neurons, preceded by a striking decrease of axonal mitochondria. Surprisingly, we discover that OPTN directly interacts with both microtubules and the mitochondrial transport complex TRAK1/KIF5B, stabilizing them for proper anterograde axonal mitochondrial transport, in a C-terminus dependent manner. Encouragingly, overexpressing OPTN/TRAK1/KIF5B prevents not only OPTN truncation-induced, but also ocular hypertension-induced glaucomatous neurodegeneration, and promotes striking ON regeneration. Therefore, our results establish OPTN as a novel facilitator of the microtubule-dependent mitochondrial transport necessary for adequate axonal mitochondria delivery, and its loss as the likely molecular mechanism of normal tension and ocular hypertension-induced glaucomatous neurodegeneration.

Relevant publication

1. Liu, D., Webber, H. C., Bian, F., Xu, Y., Prakash, M., Feng, X., Hu, Y. Optineurin-facilitated axonal mitochondria delivery promotes neuroprotection and axon regeneration. Nature Communications. 2025. Feb 20;16(1):1789. doi: 10.1038/s41467-025-57135-8.

OUTCOME MEASURES IN VISION RESTORATION CLINICAL TRIALS

PATIENT REPORTED OUTCOMES

Judy Goldstein
USA

This session will review patient-reported outcome measures (PROs) and how we as a field move forward being practical in approach to measuring function and rehabilitation outcomes. PROs have become an essential component in assessing the impact of vision impairment on daily life. However, current Visual Function Questionnaires (VFQs) have limitations, including outdated items, lack of adaptability, and failure to account for comorbidities. Discussion items include the challenges of combining datasets for large- scale vision restoration clinical trials. This is timely given the recently approved treatments aimed at slowing down degeneration (e.g., non-neovascular macular degeneration, idiopathic macular telangiectasia, etc.) in contrast to restorative treatments. We will also reference the use of Rasch modeling to refine person-item measures and the importance of establishing clinically meaningful change thresholds (MCID). Additionally, we consider the influence of comorbid conditions—physical, emotional, and cognitive—on PRO results and propose strategies for integrating these factors into a unified patient function measure

This presentation explores the next steps in PRO measurement, focusing on modern psychometric techniques, adaptive testing, and improved modeling to enhance the validity and precision of visual ability assessments. Moving forward, PRO tools must be population-specific, adaptive, and sensitive to ceiling and floor ePects. The implementation of computer adaptive testing and calibration by disorder will improve measurement accuracy, reduce survey burden, and enhance clinical decision-making. By modernizing VFQs, refining measurement methodologies and using artificial intelligence, we can ensure that PROs remain a robust and meaningful tool for assessing patient experiences and treatment outcomes.

OUTCOME MEASURES IN VISION RESTORATION CLINICAL TRIALS

MOBILITY ASSESSMENT IN VISION RESTORA2ON CLINICAL LOW VISION TRIALS

Duane Geruschat
USA

There are many challenges and opportuni2es when selec2ng mobility as an outcome measure in vision restora2on clinical low vision trials. Because the challenges are unique, this presenta2on will concentrate exclusively on the assessment of vision restora2on rather than the assessment of na2ve low vision. This is because experience suggests the type and quality of vision need to be considered when selec2ng items to assess. Two vision restora2on clinical trials (Optobionics and Second Sight Medical Products) demonstrate the importance of making sure the proper assessment elements are included. The Optobionics trial selected items which were beyond the abili2es of the implanted subjects and did not find treatment effects. The FLORA (an assessment developed by Second Sight) provides assessment items that were a beNer match and have the highest poten2al to show treatment effects.

Key ques2ons need to be answered as you develop or select your assessment.

1. What is the expected clinical vision endpoint of the trial popula2on (visual acuity and visual field)?
2. What do we expect the func2onal vision poten2al might be with these clinical expecta2ons?
3. Will the mobility data be used as a Primary, Secondary, or Ter2ary outcome measure?

The answers to these 3 ques2ons will provide direc2on to the types of items to include in the assessment.

All current treatments to restore vision that appear in the literature provide very limited vision, which can be described as ultra low vision (ULV). Because ULV is limited, it is important to dis2nguish between an assessment of orienta2on and an assessment of mobility. With ULV, the expected benefit is with orienta2on rather than mobility. Mobility is best addressed with the long cane or guide dog. A descrip2on of the elements of orienta2on that may provide the most impact will be described.

The lessons learned from prior clinical trials demonstrates the importance of selec2ng the proper ac2vi2es to be assessed if you want to document improvements of performance with orienta2on and mobility in vision restora2on clinical trials.

OUTCOME MEASURES IN VISION RESTORATION CLINICAL TRIALS

VIRTUAL REALITY: A NOVEL WAY OF MEASURING MOBILITY

Arathy Kartha
USA

The number of individuals with visual impairment is expected to double by 2050. This along with the development of vision restoration treatments for the blind, presents us with unique challenges for developing outcome measures that could be used in trials as well as vision rehabilitation. In this talk, I will be presenting a virtual reality (VR) based assessment of visually guided wayfinding (WilmerVRW) for individuals with ultra-low vision (ULV). WilmerVRW involves wayfinding in three scenarios – a street crossing, a cafeteria and a metro station. Each scenario was presented under three different levels of visual clutter. The primary outcome measures were - number of collisions, time to initiation, and completion time. The secondary outcome measures were head movement patterns extracted using a data visualization module. In addition, we also included a psychometric analysis to estimate and calibrate item (difficulty) and person (ability) measures and compare these with other performance measures - visual information gathering (Wilmer VRI) and hand-eye coordination (Wilmer VRH), along with self-reports (ULV-VFQ). Ten individuals with normal vision and twenty-two individuals with ULV completed Wilmer VRW. The normally sighted group completed Wilmer VRW under normal vision (NV) and simulated ULV conditions (sULV) using Bangerter filters. The habitual cane users in the ULV group completed WilmerVRW with and without cane. We found significant differences between NV and sULV and ULV groups in all the outcome measures. There were also significant differences between performance with and without cane among habitual cane users in ULV. Therefore, Wilmer VRW can be used as a reliable assessment of wayfinding in ULV by researchers and clinicians so that they can compare changes across individuals and centers during clinical trials by having all measures on a common equal interval scale. Furthermore, VR helps standardizing settings across participants and centers while also providing an opportunity to test in people's home or community for those who cannot travel.

MOLECULAR GENETICS AND VISUAL REHABILITATION IN INHERITED RETINAL DISEASES (IRDs)

MOLECULAR GENETICS AND MULTI-OMICS APPROACHES TO UNVEIL NEW MECHANISMS FOR TRANSLATIONAL RESEARCH ON IRDs

Luigi Donato[1,2], Simona Alibrandi[1,2], Concetta Scimone[1], Domenico Mordà[1,2,3], Giorgia Abbate[1], Carmela Rinaldi[1], Rosalia D'Angelo[1] and Antonina Sidoti[1]

[1]Department of Biomedical and Dental Sciences and Morphofunctional Imaging, Division of Medical Biotechnologies and Preventive Medicine, University of Messina, Messina, Italy; [2]Department of Biomolecular Strategies, Genetics and Cutting-Edge Therapies, I.E.ME.S.T., Palermo, Italy; [3]Department of Veterinary Sciences, University of Messina, Messina, Italy

Inherited retinal diseases (IRDs) encompass a genetically and clinically heterogeneous group of disorders leading to progressive retinal degeneration and vision loss. With over 400 disease-causing genes identified to date, the genetic landscape of IRDs remains only partially understood, especially in cases with unexplained heritability. The integration of molecular genetics and multi-omics technologies - genomics, transcriptomics, proteomics, metabolomics, and epigenomics - has become pivotal for uncovering novel pathogenic mechanisms and therapeutic targets.

Next-generation sequencing (NGS), especially whole-genome and long-read sequencing, has significantly improved variant detection in both coding and non-coding regions, enhancing diagnostic yield and revealing rare and complex structural variants. Beyond genomics, multi-omics approaches allow the functional interpretation of these variants, integrating transcriptomic dysregulations, proteomic alterations, and epigenetic modifications. For instance, single-cell RNA sequencing has shed light on cell-type-specific gene expression changes in retinal organoids and post-mortem tissues from IRD patients, enabling a more precise molecular taxonomy of retinal pathology.

Moreover, metabolomic profiling has identified disease-specific metabolic shifts in photoreceptors and retinal pigment epithelium, while spatial transcriptomics and proteomics have unraveled cellular and subcellular molecular landscapes, offering insights into cell-cell communication and microenvironmental disruptions in IRDs.

The convergence of omics datasets through systems biology and machine learning facilitates the discovery of new pathogenic pathways and biomarkers, essential for patient stratification and therapeutic decision-making. These integrative approaches are already informing gene therapy trial design, antisense oligonucleotide development, and CRISPR-based editing strategies. In parallel, patient-derived iPSC models and retinal organoids serve as powerful platforms for validating multi-omics findings and testing translational hypotheses.

Despite these advances, challenges persist in data harmonization, inter-individual variability, and functional validation of multi-omics predictions. Nevertheless, the omics-driven paradigm holds great promise to reshape the translational research landscape of IRDs.

In conclusion, the convergence of molecular genetics and multi-omics approaches is redefining our understanding of IRDs, uncovering novel pathogenic pathways and enabling the rational design of targeted, mutation-independent therapies. These integrative strategies are poised to transform translational research in retinal diseases, paving the way toward precision medicine and personalized care.

Keywords: Inherited Retinal Dystrophies (IRDs); Multi-Omics Integration; Molecular Mechanisms; Translational Genomics.

MOLECULAR GENETICS AND VISUAL REHABILITATION IN INHERITED RETINAL DISEASES (IRDs)

POST-DEVELOPMENTAL RESTORATION OF VISION BY REWIRING PHOTORECEPTOR SYNAPSES

Kirill Martemyanov
USA

Formation of neural circuits occurs in a programmed fashion, but proper activity in the circuit is essential for refining the organization necessary for driving complex behavioral tasks. In the retina, sensory deprivation during the critical period of development is well known to perturb organization of the visual circuit making the animals unable to use vision for behavior. However, the extent of plasticity, molecular factors involved and malleability of individual channels in the circuit to manipulations outside of the critical period are not well understood. In this study we selectively disconnected and reconnected rod photoreceptors in mature animals after completion of the retina circuit development. We found that introducing synaptic rod photoreceptor input post-developmentally allowed their integration into the circuit both anatomically and functionally. Remarkably, adult mice with newly integrated rod photoreceptors gained high sensitivity vision even when it was absent from birth. These observations reveal plasticity of the retina circuit organization after closure of the critical period and encourage development of vision restoration strategies for congenital blinding disorders.

MOLECULAR GENETICS AND VISUAL REHABILITATION IN INHERITED RETINAL DISEASES (IRDs)

H105A PEPTIDE EYE DROPS PROMOTE PHOTORECEPTOR SURVIVAL IN MURINE AND HUMAN MODELS OF RETINAL DEGENERATION

Alexandra Bernardo-Colón[1], Andrea Bighinati[2], Shama Parween[3], Subrata Debnath[1], Ilaria Piano[4], Elisa Adani[2], Francesca Corsi[4], Claudia Gargini[4], Natalia Vergara[3,5], Valeria Marigo[2]* and S. Patricia Becerra[1]

[1]Section of Protein Structure and Function, Laboratory of Retinal Cell and Molecular Biology, National Eye Institute, National Institutes of Health; Bethesda, MD, USA; [2]Department of Life Sciences, University of Modena and Reggio Emilia, Modena, Italy; [3]CellSight Ocular Stem Cell and Regeneration Program, Sue Anschutz-Rodgers Eye Center, University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA; [4]Department of Pharmacy, University of Pisa; 56126 Pisa, Italy; [5]Gates Center for Regenerative Medicine, Linda Crnic Institute for Down Syndrome and University of Colorado Alzheimer's and Cognition Center, University of Colorado Anschutz Medical Campus; Aurora, Colorado, USA

One Sentence Summary: Neurotrophic PEDF peptides delivered as eye drops preserve photoreceptor viability, morphology, and function in models of human retinal diseases.

Photoreceptor death causes blinding inheritable retinal diseases, such as retinitis pigmentosa (RP). As disease progression often outpaces therapeutic advances, finding effective treatments is urgent. This study focuses on developing a targeted approach by evaluating the efficacy of small peptides derived from pigment epithelium-derived factor (PEDF), known to restrict common cell death pathways associated with retinal diseases. Peptides with affinity for the PEDF receptor, PEDF-R, (17-mer and H105A) delivered via eye drops reached the retina, efficiently promoted photoreceptor survival, and improved retinal function in RP mouse models based on both the rd10 mutation and the rhodopsin P23H mutation. Additionally, intravitreal delivery of AAV-H105A vectors delayed photoreceptor degeneration in the latter RP mouse model. Furthermore, peptide H105A specifically prevented photoreceptor death induced by oxidative stress, a contributing factor to RP progression, in human retinal organoids. This promising approach for peptide eye drop delivery holds significant potential as a therapeutic for preventing photoreceptor death in retinal disorders, offering a high safety profile, low invasiveness, and multiple delivery options.

MOLECULAR GENETICS AND VISUAL REHABILITATION IN INHERITED RETINAL DISEASES (IRDs)

ALBINISM BEYOND GENETICS

Andrea Cristiano Piantanida
Italy

Albinism may be defined as “an heterogeneous group of genetically determined disorders characterized by disrupted synthesis of melanin and a range of developmental ocular abnormalities”. The mean global incidence of albinism is 1:20,000 individuals, with a lower rate in the USA (1:37,000), while the highest rate is amongst the Cuna indigenous people in Panama and Colombia, who have an incidence reported in the literature of 6.3 per 1000 population. High rates have also been reported in Africa especially in South Africa where albinism is considered a relatively common hereditary condition among its population. Actually 19 genes have been linked to the different clinical presentations of albinism, including seven for OCA. However it remains a substantial number of albinism cases without molecular identification, suggesting that more genes are associated with the condition. The main ocular features common to both oculocutaneous albinism (OCA), and ocular albinism (OA) include reduced visual acuity (glare can result in a lower visual acuity), refractive errors, foveal hypoplasia, congenital nystagmus, iris and fundus hypopigmentation and visual pathway misrouting. Misrouting of the optic nerves is a characteristic finding, resulting in strabismus and reduced stereoscopic vision, but clinical signs vary and there is phenotypic overlap with other pathologies. Correction of strabismus and nystagmus is necessary and the use of prism may ameliorate these conditions, modifying the anomalous head posture. It is mandatory to have a correct refraction obtained with cycloplegia for glasses prescription that is one of the way to ameliorate the visual acuity in these patients. Glasses, dark glasses, photocromic lenses or the use of medical coloured filters may offer an help for reduced visual activity and photophobia. All these solutions are not well accepted by albino patients that usually prefer a traditional white lens with the consequence of a great glare and a poor visual acuity. Recently a new achromatic doublet lenses called Chromatic Aberration Reductive Lenses (CARL) significantly decreased light transmittance in the blue-violet range, reducing Longitudinal Chromatic Aberrations phenomena of the eye: this caused an improvement of the best corrected visual acuity, the visual acuity after glare, the near visual acuity and the contrast sensitivity.

LOW VISION PRACTICES IN ASIA

TECHNOLOGY IN LOW VISION

Anna Tan
Singapore

The presentation focuses on the "Building a Smart Generation" initiative launched in 2019, aimed at improving awareness of accessibility features among patients and caregivers at the Singapore National Eye Center (SNEC), especially those with low vision2. The initiative's goals include enabling patients to use SMART devices to enhance their daily functions, improving the waiting experience at SNEC, and gathering patient feedback for future educational programs. The initiative has seen significant success, with over 500 medical staff, patients, and caregivers attending accessibility workshops. Feedback from these workshops has been overwhelmingly positive, with high satisfaction rates among participants.

The presentation also addresses the impact of the COVID-19 pandemic on ophthalmology patients, highlighting the need to balance infection risk with continued care provision5. Digital technology solutions and telemedicine are proposed as viable alternatives to traditional care models5. The importance of digital access for patients and caregivers is emphasized, along with the need to assess the effectiveness of digital health technologies.

The presentation highlights the digital inequalities faced by visually impaired and older persons, with a significant portion unlikely to use digital medical services. The SMART Technology Active Ageing Resource (STAAR) Corner is proposed as a solution to these inequalities9. The presentation concludes with proposed strategies for accessibility training, including self-directed instructional videos, small group workshops, and individual digital clinics.

Telemedicine and digital technology are identified as future models of care, with a focus on improving digital readiness among patients12. The SMART Technology Active Ageing Resource Questionnaire (STAAR-Q) is introduced as a tool to assess digital readiness and training solutions.

Innovations such as smart technology, wearables, augmented and virtual reality, and patient education are discussed as potential ways to revolutionize visual rehabilitation and promote better outcomes.

Finally, the presentation addresses the challenges to implementing digital technology in eye care, such as quality control, language barriers, and costs. It suggests that a global digital task force could provide best-practice guidelines for the implementation of digital health tools in eye care delivery. The future of visual rehabilitation technology is seen as bright, with increasing interest from developers and companies in untapped markets.

LOW VISION PRACTICES IN ASIA

A BAG OF LV FROM THE PHILIPPINES

Sheila Santos-Jimenez
Philippines

The Philippines, as a developing country, continues to face significant challenges in providing comprehensive vision rehabilitation services for individuals with visual impairments. While there are government initiatives and organizations working tirelessly to improve eye care, the journey toward inclusive, accessible services is still in progress.

Despite these challenges, many organizations and community-based programs are playing pivotal roles in addressing the needs of those with low vision, offering hope for progress. As an advocate and practitioner of vision rehabilitation, I share my personal experiences in overcoming these hurdles, drawing on my knowledge to offer insights into the development of low vision services in the Philippines.

By sharing my journey, I hope to not only raise awareness but also foster collaboration with other countries and organizations that may offer guidance and support. The talk aims to shine a light on the ongoing struggle for accessible, effective vision care and explore potential solutions to improve the lives of individuals living with low vision in the Philippines and in the world.

LOW VISION PRACTICES IN ASIA

THE ROLE OF OPHTHALMOLOGIST IN VISION REHABILIATION

Yanhong Zou
China

China, home to over 1.4 billion people, has an estimated 17 million individuals living with visual impairments. The primary causes include cataracts, glaucoma, diabetic retinopathy, and age-related macular degeneration. However, the country faces a significant shortage of eye care professionals, with only 3 ophthalmologists and 2 optometrists per 100,000 people.

To alleviate the burden of visual impairment, improve patient outcomes, and enhance quality of life, ophthalmologists must take a multifaceted approach:

Strengthen Collaboration with Government: Expand access to eye care, particularly in underserved rural areas.

Enhance Professional Training: Continuously update skills in diagnosis, treatment, and rehabilitation technologies.

Advance Research & Innovation: Develop AI-driven tools and cost-effective treatment solutions.

Foster Multidisciplinary Care: Work alongside psychologists and other specialists to help patients cope with the psychological impact of vision loss.

Deliver Comprehensive Care: Provide low-vision aids, rehabilitation training, and tailored support.

Improve Patient Education: Equip patients and families with knowledge on managing their condition, using assistive devices, and accessing support services.

Promote Social Inclusion: Advocate for policies that reduce stigma and improve accessibility in public spaces, transportation, and digital platforms.

Raise Public Awareness: Increase understanding of visual impairment to foster a more inclusive society.

By implementing these measures, meaningful progress cab be made in supporting individuals with visual impairments.

LOW VISION PRACTICES IN ASIA

ROLE OF A SOCIAL WORKER IN LV REHABILITATION - A SINGAPORE EXPERIENCE

Priscilla Lim
Singapore

Low vision in Singapore is a significant health concern, particularly given the country's aging population. An aging population is likely to increase the prevalence of low vision in coming years.

The low vision rehabilitation team in Singapore includes Ophthalmologist, low vision Optometrist, low vision Occupational Therapist and low vision Social Worker.

The role of a social worker in vision rehabilitation is multifaceted and crucial for supporting individuals with low vision. Our role includes assessment and case management, counselling and family support, resource coordination, advocacy, education and skills training, employment support and community integration etc.

LOW VISION PRACTICES IN ASIA

AI IN LV

Lisa Ong
Singapore

Artificial Intelligence (AI) is becoming a key driver in the development of assistive technology for people with low vision. This presentation explores how AI is moving beyond traditional tools such as magnifiers and screen readers – towards systems that can interpret, respond and adapt in real time.

Core concepts such as machine learning, computer vision, and natural language processing will be introduced in simple, accessible terms. These technologies are helping shape emerging tools that can support tasks such as reading, navigation, and object recognition, making everyday activities more manageable and interactive.

The session offers a broad overview to help attendees better understand how AI is beginning to shape low vision support. Real world examples will illustrate current uses, while also acknowledging some of the broader issues these technologies raise – including privacy, access and inclusion.

The presenation encourages thoughtful engagement with the evolving role of AI in this space and how it may continue to impact the future of assistive technology.

LOW VISION PRACTICES IN ASIA

ESTABLISHING MULTI-DISCIPLINARY LOW VISION SERVICE IN THAILAND: LESSONS LEARNED FOR SUCCESSFUL MODEL AND CHALLENGES

Suksri Chotikavanich
Thailand

Most low vision patients live in developing countries, with around 2 million in Thailand. Over the past decades, the national health policy has made significant efforts to establish low vision services across the country. However, the outcomes have not met expectations due to many challenges. For instance, there is a lack of knowledge about low vision among ophthalmologists and medical personnel. More importantly, the service was expected to be led by ophthalmologists in government hospitals, who already had heavy medical and surgical workloads, making it difficult to expand their continuing care for low vision patients.

In recent years, however, the Department of Ophthalmology, with full support from the Faculty of Medicine Siriraj Hospital, has successfully established the first multidisciplinary low vision center in Thailand. The Siriraj Vision Rehabilitation Center is led by full-time staff and has two main objectives.

First, to deliver tertiary low vision services, including the provision of visual aids, orientation and mobility training, developmental stimulation for children, and the development of innovations and research in related fields.

Second, to address the national shortage of low vision services through the 'WE TEAM' project. This initiative builds a network supported by the Siriraj tertiary low vision center, but the services are operated locally by medical personnel - mainly nurses or optometrists - who provide primary and secondary low vision care.

The sustainability of this model is promising, with a long-term strategy in place to support its success.

PEDIATRIC VISUAL REHABILITATION

HOW TO ESTABLISH A REHABILITATION PROGRAM - THE NORTH AMERICAN EXPERIENCE

Linda Lawrence
USA

Cerebral visual impairment is being increasingly recognized as a major cause of childhood low vision and blindness, as the better paediatric and neonatal care allows for more survival of babies that may have underlying risks for CVI, not only in the developed world, but also the developing world. How do we start the assessments for CVI and who do we recruit for our intervention teams? Every community and country have resources that exist, and resources that are non-existent.

Developed countries like the USA still have most assessment and intervention at the community level, with a few available large medical based centres, or NGOs that are spread across a large geographic area and serve as resources for parents and teachers, as well as physicians. However, many families are not able to travel these great distances. A program from rural Kansas will be featured to show one incentive to address the needs for families with CVI.

Several African countries are now more involved with the early identification and intervention for CVI, including Nigeria, and Liberia, and soon Uganda as they see higher survival rate of premature infants and survivors of birth hypoxia.

India has several major hospitals that address CVI, and they also have unique outreach program through telemedicine.

In Haiti, the lone Paediatric ophthalmologist is actively looking for children with CVI to assist the families.

Several examples of CVI, interdisciplinary programs from around the world will be presented.

PEDIATRIC VISUAL REHABILITATION

HOW TO ESTABLISH A REHABILITATION PROGRAM – THE INDIAN EXPERIENCE

Sandra Chandramouli
India

Currently, their numbers of children with CVI are increasing in India, which is best attributable to increased survival of preterm and at risk neonates.

In a study done in our hospital in 2016, CVI attributed to 26% of moderate to severe vision loss in children <. 3years, the next close contender being ROP at 16%.

We started with CVI clinic in 2015, with focus on structured history taking, documenting characters of CVI and grading severity . We had to gain knowledge, train our optometrists and rehabilitationist, network with therapists and paediatricians, teachers and general public . As there are no integrated public health systems in place to help these families, the big challenge is to help the family get the needed resources and interventions.

A nationwide COVID lockdown was in place from April 2020, and there were a lot of restrictions put in place . Parents, doctors and therapists found it difficult to connect with each other . The most vulnerable were hence at a disadvantage.

At this point there was a lot of provider interest in Telehealth and we zeroed in on the 'Hybrid Care' model for CVI .We devised a system where there is an initial in person visit followed by online interim consults.

Following initial evaluation,an individualised plan is made for each child which includes interventions for building visual behaviour, integrating vision with play and daily care activities . Prior to the online review, the parents send in advance filled in questionnaire and the videos of the child demonstrating the visual functioning in home environment . We try to connect with the Childs paediatrician, therapist and others based on availability . The live session allows the child to be examined in comfortable home environment. Every 3 months, the parents were asked to review in the base hospital.

Over 80% of caregivers responded that the hybrid model of in-person visits with interval online consultations was very helpful in ensuring continued care and regular follow up. This delivery model provides support to families that are isolated, in quarantine, lockdown, or unable to travel.

PEDIATRIC VISUAL REHABILITATION

HOW TO ESTABLISH A VISION REHABILITATION PROGRAM - THE AFRICAN EXPERIENCE

Adedayo Adio
Nigeria

A vision rehabilitation program in Africa requires a comprehensive approach that addresses unique challenges and opportunities. This includes a thorough needs assessment, strategic planning, and service delivery components. Human resource development is crucial, and community outreach and education are essential for raising awareness. Challenges include limited resources to assistive devices, lack of public awareness, cultural barriers and geographical accessibility. Opportunities that have been leveraged upon include growing demand and awareness especially among eyecare workers, government initiatives spelling out the rights of the disabled, partnerships with international organizations, NGOs, and private sector entities, and innovative solutions like telemedicine and zoom lectures from invited faculty to teach low vision and rehabilitation methods and the possibilities available when deploying mobile health. Key components of vision rehabilitation services include comprehensive assessments of the individual, personalized rehabilitation plans when required, low vision therapy/training, appropriate assistive technology counseling and support. Success stories like the Lens Rehabilitation Center for the Blind have shown capacity in providing services to cater for patients/eyecare workers across Nigeria and the west African subregion. Recommendations include developing national policies, building capacity and infrastructure, promoting awareness and education, and fostering partnerships and collaborations to advance the work in a more visible way.

PEDIATRIC VISUAL REHABILITATION

HOW TO ESTABLISH A REHABILITATION PROGRAM - THE AUSTRALIAN EXPERIENCE

Swetha S. Philip
Paediatric Ophthalmologist, Australia

Damage to the developing brain results in a complex and wide range of clinical manifestations that has a debilitating impact on quality of life (QoL) of a child. Insult to the retrogeniculate visual association cortices and their interconnecting pathways results in: i) developmental and motor incoordination-Cerebral Palsy (CP) and ii) visual cognitive and perceptual impairment- Cerebral Visual Impairment (CVI). In a child with brain insult, it is not only the physical disability that needs to be addressed but also visuo-cognitive dysfunction. Currently, both in the developing and developed countries, the rehabilitation program for children with brain injury focuses mainly on activity based, goal directed, strength and balance training strategies. CVI is unrecognised and thus being under reported, with many children labelled with an alternate diagnosis. This stems from the fact that assessment and understanding the visual perceptual and cognitive behaviour in these children is difficult. This has adversely affected the habilitation of children with CVI. The importance of addressing the visual difficulties, in the rehabilitation programs structured to help with physical disability, is often overlooked despite evidence in literature that 1 in 10 children with early brain injury have visual perceptual and cognitive problems. It has been my experience, working both in India and Australia, that setting up the visual rehabilitation service for children with CVI is challenging but not as complex as it may appear. Through my talk I aim to address 1) why is it important to assess the visual and perceptual behaviour of a child with brain injury?, 2) the challenges in providing comprehensive service to the child with CVI and their families based on a holistic, multidisciplinary, child and family centered approach and 3) to increase the awareness of CVI among the medical fraternity, parents and caregivers with regards to understanding the visual difficulties experienced by these children which will improve their quality of life.

PEDIATRIC VISUAL REHABILITATION

HOW TO ESTABLISH A REHABILITATION PROGRAM - THE EUROPEAN EXPERIENCE

Els Ortibus
Belgium

This talk will focus on childhood onset cerebral visual impairment (CVI), nowadays in Europe the more frequent cause of low vision certificates. Early recognition of CVI is mandatory to be able to introduce early (re)habilitation. Naturally, if one could prevent the causes by lowering the incidence of the most frequent associated conditions (prematurity and cerebral palsy), that would be a leap forward. In the meantime, the first key step is to follow-up closely on these at-risk groups through well set up surveillance programs. The detection of severe problems (often associated with measurable vision loss), is often easier, as it usually occurs in children with complex multiple disabilities. Those born preterm without brain lesions (but nevertheless altered brain maturation) often present, from early toddlerhood onwards, with a seemingly milder problem, with normal visual acuity but nevertheless potentially severe visuoperceptual deficits. After detection of CVI features, referral for a comprehensive assessment by expert multidisciplinary teams is needed, to (visually) profile the child and assess how this impacts on daily life, academic achievements and participation. The clinical picture of CVI is very diverse and, therefore, a standard treatment is an illusion. Evidently, as vision plays an important role in early development and intervention is most effective during the critical periods of brain development, early visual intervention programmes should start as early as possible. An important component of these programmes is the enrichment of infants' environments, whereby engagement of the caregivers and stimulation of active play have been reported to be the most effective. Also, studies in older children have shown that therapy needs to be specific, focused, repetitive, and intense to have a superior effect. New research therefore has focused on training of specific areas of vision dysfunction like figure-ground discrimination, with promising results. Lastly, motivation plays a crucial role in achieving optimal results. Therefore, customized, adaptive rehabilitation may be needed for optimal treatment outcomes, taking into account the child's overall developmental status and changing needs and this may be enhanced by using serious games More research is needed on the efficacy of visual interventions to draw recommendation guidelines on visual deficit treatment.

BRAIN INJURY REHABILITATION FOR HOMONIMOUS VISUAL FIELD DEFECTS

REHABILITATION OF VISUAL FIELD WITH PRISMS IN HEMIANOPIA

Giovanni Sato
Italy

The scenario in patients with hemianopsia is dramatic with severe difficulties in daily life activities, severe difficulties in orientation and mobility, frequent falls, bumping into objects and people located on the blind side, inability to drive motor vehicles. Rehabilitation with prisms allows an improvement in the visual field allowing the patient to see on the hemianopsic side.

BRAIN INJURY REHABILITATION FOR HOMONIMOUS VISUAL FIELD DEFECTS

WHEN HEMIANOPIA OVERLAPS WITH ALTERATIONS IN OCULAR MOTILITY, WHAT REHABILITATIVE

Roberta Rizzo
Italy

Oculomotor disorders frequently occur in association with hemianopic defect secondary cerebral lesions: acute cerebral ischemia, cerebral hemorrage due to a breaking of aneurism, cranial-cerebral trauma, cerebral neoplasia, infective or degenerative causes. These pathologies can affect different age groups and presente high complexity. So the rehabilitation requires an integrated multidisciplinary approach. Orthoptic is important for diagnostic, therapeutic and rehabilitative potential and neuro-orthoptic rehabilitation should be undertaken as soon as possible to recovery the efficiency of the visual system and the ability to see, look, understand and for quality of life . Orthoptic is essential for a good recovery of any other associated damage of the brain; we mean motor, cognitiv, expressive functions. No less important are the repercussions on the social, affective, emotional state and overall well-being of the subjects. After general clinical and ophthalmological examination, it is important to collect information on the family, economic status, social health.Then we perform an accurate orthoptic evaluation with measurement of deviation, study of vertical and horizontal diplopia, examination of potential fusion, measurement of fusional vergences in convergence and divergence, study of the stereoscopic sense, Hess Lancaster test, study of cyclodeviations and analysis of the fixation by Microperimeter. A neuro-orthoptic rehabilitation is then scheduled.

BRAIN INJURY REHABILITATION FOR HOMONIMOUS VISUAL FIELD DEFECTS

VISUAL SCANNING TRAINING FOR THE TREATMENT OF HEMIANOPIA

Fiona Rowe
United Kingdom

Homonymous hemianopia is a common type of visual field loss following acquired brain injury. The varying treatment options include compensatory, substitutive or restitutive therapies. Of these three options, compensatory is the most widely used within clinical settings and with visual scanning/search training being the most frequent type of compensatory therapy. In this presentation, types of visual scanning/search training will be reviewed along with dose and training requirements, and reported outcomes and impact.

BRAIN INJURY REHABILITATION FOR HOMONIMOUS VISUAL FIELD DEFECTS

HEMIANOPIA AND DRIVING

Joanne M. Wood
Centre for Vision and Eye Research, Optometry and Vision Science, Queensland University of Technology, Brisbane, QLD, Australia

Visual fields are believed to be important for safe driving and are included in licensing standards worldwide. Defining the visual field extent required for safe driving has challenged researchers and policy makers over many years. This is largely due to conflicting findings regarding the impact of visual field loss on driving safety for different populations, and the use of different methods to measure and classify visual field loss.

Homonymous hemianopic field loss, where field loss affects one half of the field on the same side in visual space, is one of the most common vision impairments resulting from stroke. Persons with hemianopic field defects are not allowed to drive in many countries, even though there have been only limited numbers of studies that have explored driving performance and safety in this population.

This presentation will discuss the impact of hemianopic visual field loss on driving performance and safety. Research evidence will be drawn from studies of self-reported driving difficulties in this population, as well as from studies of driving performance assessed using a range of different driving simulators and on-road studies of driving performance measured under in-traffic conditions. The presentation will also discuss findings from studies that have demonstrated that some drivers with hemianopic field loss can maintain safe driving through compensatory eye and head movements. The option of conditional licensing for driving for those with hemianopic field loss, that is available in some countries, will also be discussed.

BRAIN INJURY REHABILITATION FOR HOMONIMOUS VISUAL FIELD DEFECTS

HEMIANOPIA IN CHILDREN: SPECIAL FEATURES AND REHABILITATION

Susanne Trauzettel-Klosinski
Germany

The prevalence of hemianopia in children is growing, due to an increase of premature births and epilepsy surgery affecting the visual pathways. Visual field examinations require special techniques in children with limited co-operation. Adaptive mechanisms can be unfavorable, such as head turn and strabism. Some are helpful, such as eye movements towards the hemianopic side, which can be supported by visual search training. Computer-based exploratory saccade training, performed at home for 6 weeks, improved reaction times and scanning behaviour on a screen and in a natural search task. The newly learned strategy was transferred to real-life situations and improved quality of life and mobility. An ongoing study examines, if the benefit is influenced by the time of training begin after the lesion.

ENHANCING VISUAL FUNCTION AND PROMOTING ACCESSIBILITY

ENHANCING FUNCTIONAL VISION OF PEOPLE WITH CENTRAL VISION LOSS THROUGH PERCEPTUAL LEARNING

Susana Chung
USA

Perceptual learning refers to long-term improvements in visual performance that result from experience or practice. It has shown great effectiveness in enhancing visual function in both normal and amblyopic visual systems. In this talk, I will present findings from several studies in my lab that explore perceptual learning as a tool to improve functional vision in adults with central vision loss caused by age-related macular degeneration or Stargardt disease. Our results show that after just five to six training sessions (each lasting 1 to 1.5 hours), participants demonstrated significant improvements in their training tasks. These benefits were observed across various training tasks, including reading, letter recognition, and face discrimination. Our findings highlight the potential of perceptual learning as a powerful approach to enhancing functional vision in individuals with central vision loss.

ENHANCING VISUAL FUNCTION AND PROMOTING ACCESSIBILITY

MOTION PARALLAX ENHANCES DEPTH PERCEPTION IN MACULAR DEGENERATION

Jade Guénot and Preeti Verghese
Smith-Kettlewell Eye Research Institute, San Francisco, USA

In normal vision, each retina captures a slightly different image of the world, referred to as disparity, which provides depth information. In individuals with central field loss (CFL), this binocular depth information is impacted in regions of the visual field where there is vision loss in either eye, called the stereo scotoma. However, depth information can also be extracted using monocular cues like motion parallax. This study aims to determine if combining disparity and motion parallax can improve depth perception and compensate for the loss of fine binocular depth cues when foveal vision is lost. Eleven patients with CFL and seventeen controls viewed stimuli consisting of random dots made up a sine wave profile in depth, defined by disparity and/or motion parallax. Participants had to report which half of the sine-wave cycle appeared farther away from the fixation cross. We measured thresholds for disparity and motion parallax alone, as well as for their combination, i.e., we measured thresholds for motion parallax added to the threshold disparity value, and vice versa. For control participants, these thresholds were assessed with foveal vision and with simulated scotomata of 4°, 6° and 8° diameter, while patients performed the task with their natural scotoma. Results show significantly reduced thresholds (better ability to discriminate depth) in the control group when disparity and motion parallax were combined, even in the presence of a scotoma, consistent with optimal cue integration. Thresholds measured in patients were highly variable and dependent on their stereo scotoma size, and were on average higher than for controls. However, improvements were also observed for most of them in the combined conditions despite a sub-optimal cue integration, with the largest improvements for disparity thresholds when motion parallax was added. Our results suggest that peripheral disparity and motion parallax together can enhance depth perception in patients with central field loss.

ENHANCING VISUAL FUNCTION AND PROMOTING ACCESSIBILITY

ACCESSIBILITY FOR LOW VISION: MOVING TOWARDS OBJECTIVE APPROACHES

Yingzi Xiong
USA

Most people with low vision still use their vision in navigating everyday environment, and the visual accessibility of an environment is key to the effectiveness with which vision can be used in navigation. Traditionally, visual accessibility evaluation is observational and qualitative, relying on judgements by vision rehab professionals. However, it is difficult for a person with normal vision, even those with rehab expertise, to judge whether something is visually accessible for a specific level of low vision.

We propose an objective approach for evaluating visual accessibility, the core of which is a computational model that predicts the visibility of objects based on specified levels of low vision characterized by visual acuity, contrast sensitivity, and other essential vision characteristics. The evaluation entails detectability and recognizability of an object, and visibility of the boundaries that may cause tripping or bumping hazards.

The development and validation of this approach relies on the "ground truth" visibility report on everyday objects from low vision individuals. To this end, we developed a novel "Walk, See, and Trace" task, in which participants detect, recognize, and hand-trace the boundaries of objects in common environments. In a 2D setup, participants observe photorealistic digital scenes and complete the task using a tactile screen. In a 3D setup, participants walk in real environments and hand-trace objects, with the egocentric videos of tracing trajectory captured by light-weight glasses with scene camera. The validity of our approaches was confirmed by normally sighted participants (N = 12) who completed the tasks with normal and simulated low vision, under normal and low lighting conditions. With low vision and low lighting, the detection and recognition performance reduced significantly, with large deviations and misses in boundary tracing even with correct recognition, demonstrating the importance of boundary visibility. Data collection with actual low vision participants are undergoing.

This dataset with 2D/3D object visibility reported by low vision individuals, along with detailed vision parameters, is fundamental to the visibility prediction model that we will create. We are committed to publicize this dataset to the research community for a collective effort towards objective approaches for enhancing accessibility for low vision.

ENHANCING VISUAL FUNCTION AND PROMOTING ACCESSIBILITY

AUDIOM: AN AUDITORY MAP INTERFACE FOR BLIND AND LOW VISION TRAVELERS

Brandon Biggs
USA

Audiom is the first digital map everyone can use. You can view and create maps in Audiom visually, auditorily, and through text on any platform. You can access Audiom through headphones, a screen, and or a braille display through a web browser. Most geographic maps are inaccessible to low literacy, blind, low vision, mobility impaired, colorblind, and many other disabled users, which is against the law. Typical geographic maps are read as “blank” to blind users, for example. Turn-by-turn directions, tables, or other kinds of alternative text remove the spatial information that makes a map a map. Audiom can be placed alongside an existing visual map to make it accessible. It can also completely replace an existing inaccessible map viewer. It runs on the same geographic data (geojson) that the visual map runs on. Audiom is EAA, 508, 504, ADA, and Web Content Accessibility Guidelines (WCAG) AAA compliant, according to LevelAccess. It can bring this compliance to any existing visual only map. Audiom has been used for showing referential maps like campuses, exhibit halls, airplane seat maps, and buildings. Audiom has been evaluated in nine academic studies on over 100 blind and low vision participants, and 30 sighted participants. In the most recent evaluation where 20 sighted participants answered spatial questions in two conditions, visual and non-visual, no significant difference was found between the two conditions ($P>0.05$). This suggests the non-visual version Audiom may communicate similar information as a visual map.

ENHANCING VISUAL FUNCTION AND PROMOTING ACCESSIBILITY

POINT AND LISTEN: MAKING 3D MAPS AND MODELS ACCESSIBLE WITH NATURAL INTERACTIONS

James Coughlan
USA

Point and Listen: Natural Interactions to Help Blind Individuals Access Maps and Physical Models

Blind individuals often face barriers in accessing a range of informative physical objects, including tactile (2D) and relief (3D) maps, tactile graphics and 3D models (e.g., biological skeletons, architectural models or chemistry molecules). Even when features on these objects are described with braille labels, there is typically only enough space for a small number of highly abbreviated labels, and the labels are inaccessible to people who don't read braille.

We describe a natural interaction paradigm enabled by computer vision and AI that addresses this problem. In this paradigm, the user can elicit information about a feature on an object by pointing their finger to it, which triggers the announcement of one or more audio labels describing the feature. The user can request real-time guidance to locate a feature of interest and can also ask arbitrary verbal questions about the object, such as, "Where is the nearest sushi restaurant that is open after 9 pm?" on a tactile map, or "Which bones are connected to this one?" on a skeleton. In addition, we describe preliminary experiments exploring the utility of adding virtual (non-tactile) features to an object, each represented by its own audio label at a specific location. (For example, a tactile map with streets represented by raised lines can be augmented with virtual building features situated in appropriate locations along the streets.)

Finally, we conclude by describing how this interaction paradigm fulfills universal design principles, and thereby has the potential not only to enhance access for blind individuals, but can also benefit fully or partially sighted learners interacting multimodally with objects using vision, touch, hearing and speech.

LOW VISION ACADEMY ROUND TABLE - VISUAL IMPAIRMENT BEYOND MAGNIFICATION: BIOLOGICAL AND PHYSICAL VISUAL REHABILITATION

NUTRITION FOR VISUAL PERFORMANCE

Debora Cantarutti
Italy

Oxidative stress, chronic inflammation and high photoreceptor metabolism, leads to retinal tissue damage. Nutrition plays a key role in visual protection, with emerging evidence highlighting the gut-microbiota-eye axis as a crucial modulator of visual health. Compromised intestinal barrier function and microbiota imbalances are strongly associated with inflammatory cascades that exacerbate retinal degeneration. Restoring intestinal epithelial stem cell function is essential to reestablish mucosal integrity, fostering a microbiota-rich environment conducive to ocular health. Notably, the gut microbiota plays a fundamental role in the biotransformation of dietary polyphenols, enhancing their bioavailability and facilitating the delivery of bioactive metabolites to the visual system. These molecular interactions underpin key antioxidant, immunomodulatory, and regenerative mechanisms, which are essential for maintaining retinal function and visual performance.

LOW VISION ACADEMY ROUND TABLE - VISUAL IMPAIRMENT BEYOND MAGNIFICATION: BIOLOGICAL AND PHYSICAL VISUAL REHABILITATION

CELL AND SECRETOMA THERAPY IN LOW VISION

Paolo G. Limoli
Italy

Patients with irreversible visual impairment are defined as those with low vision. Causes include diseases such as diabetes, degenerative diseases or ageing, which affect the retina through neurotrophic changes, apoptosis, oxidation and inflammation. This leads to significant and progressive damage to sensory circuits.

Once visual impairment develops, the only current therapy is visual rehabilitation based on the use of devices to magnify the image, improve contrast and illumination.

The progressive damage caused by the continuous loss of retinal cells severely impairs vision, forcing a review of the tools used for rehabilitation and reducing the person's visual autonomy.

However, cell therapies are emerging as a possible complement.

The aim of such therapies is to improve the survival of retinal cells and stimulate their regeneration: mesenchymal cells (stem, stromal or platelet cells) are the most promising. They act in a paracrine manner through a secretion they produce, the mesenchymal secretome, whose therapeutic activity is expressed through a haemoreological, antioxidant, anti-inflammatory, anti-apoptotic and neuroprotective action.

This is possible thanks to the large number of substances it contains, such as growth factors, cytokines, exosomes with mRMA molecules, ribosomes and mitochondria, which play a trophic and stabilising role on damaged retinal cells and promote tissue repair.

There are several ways to implant these cells into the retina. Suprachoroidal auto-transplantation of MSCs takes advantage of their biological effect on residual retinal cells, making it ideal for the treatment of neuroretinal diseases. It can be used in 80% of irreversible eye diseases that gradually progress to a state of progressive blindness. The treatment has no side effects, but it is important to treat patients before the degenerative disease progresses.

As retinal cells cannot replicate, it is essential that the retina retains sufficient residual cells for therapy to promote neuroenhancement and preserve residual vision for a very long time by optimising the use of prescribed aids.

LOW VISION ACADEMY ROUND TABLE - VISUAL IMPAIRMENT BEYOND MAGNIFICATION: BIOLOGICAL AND PHYSICAL VISUAL REHABILITATION

VISUAL REHABILITATION WITHOUT AND WITH CELL THERAPY: DIFFERENCES AND EVIDENCE

Ilaria Ciochetta
Italy

Visual rehabilitation relies on the residual functional areas of the retina to optimize visual function. Recent studies suggest that cell therapy can enhance retinal sensitivity, increasing the effectiveness of visual rehabilitation. A comparative analysis of multiple studies highlights this synergistic relationship.

Mesenchymal stem and non-stem cell surgery, rescue, and regeneration in glaucomatous optic neuropathy

This study demonstrated a significant improvement in BCVA and microperimetric sensitivity in patients with glaucomatous optic neuropathy (GON) treated with Limoli Retinal Restoration Technique (LRRT). The results suggest that cell therapy can enhance retinal responsiveness, facilitating more effective rehabilitation strategies.

Stem cell surgery and growth factors in retinitis pigmentosa patients: pilot study after literature review

This study showed that patients with greater residual retinal thickness (FT >190 μm) benefited more from LRRT, suggesting that cell therapy preserves and enhances residual retinal function. The findings imply that the effectiveness of visual rehabilitation is higher when retinal tissue remains functional, making early intervention crucial.

Regenerative therapy by suprachoroidal cell autograft in dry age-related macular degeneration: preliminary in vivo report

Patients with dry age-related macular degeneration (AMD) treated with LRRT showed a 32.2% improvement in BCVA and increased microperimetric sensitivity. The grafted autologous cells ensured continuous secretion of growth factors (GFs), sustaining retinal function over time. This suggests that cell therapy not only preserves but also improves residual retinal sensitivity, allowing for more effective visual rehabilitation.

A recent pilot study compared visual rehabilitation with and without cell therapy in patients with maculopathy, myopic choroidosis, Purtscher-like retinopathy, diabetic retinopathy, and opticopathy. The results revealed greater improvements in near vision and MAIA sensitivity in patients receiving cell therapy alongside rehabilitation.

These studies indicate that cell therapy enhances retinal function, increasing the effectiveness of visual rehabilitation by expanding the usable residual areas of the retina. This combined approach could represent a breakthrough in treating degenerative retinal diseases, but further research on larger cohorts is needed to optimize treatment protocols.

LOW VISION ACADEMY ROUND TABLE - VISUAL IMPAIRMENT BEYOND MAGNIFICATION: BIOLOGICAL AND PHYSICAL VISUAL REHABILITATION

QUANTUM BIOMODULATION AND STRUCTURAL VISUAL

Sergio Scalinci
Italy

Purpose: Mitochondria, as key elements in cellular bioenergetics, regulate the respiratory response through ATP synthesis, thereby influencing retinal metabolism. Oxidative stress corresponds to the structural damage caused by free radicals, also known as reactive oxygen species (ROS), within the cell when they are in excess. New therapeutic strategies are required to limit the production of free radicals and reduce cellular oxidative stress, which characterizes many degenerative diseases of the human body. We aimed to analyze the effect of Quantum Molecular Resonance (QMR) on various ocular pathologies with a neurodegenerative aspect affecting the retina and the optic nerve. QMR exerts its effects by enhancing the anti-inflammatory and immunomodulatory response at both the retinal and optic nerve levels, while also modulating mitochondrial activity to optimize oxidative homeostasis. We observed its clinical efficacy in congenital degenerative retinal disorders, including Stargardt disease, Best disease, and retinitis pigmentosa, as well as in acquired conditions such as age-related macular degeneration (AMD). In glaucoma management, QMR has been shown to improve visual field indices and reduce intraocular pressure. QMR-based therapeutic strategies represent an innovative approach in the management of neurodegenerative retinal disorders, offering new perspectives in the prevention and treatment of visual impairment.

LOW VISION ACADEMY ROUND TABLE - VISUAL IMPAIRMENT BEYOND MAGNIFICATION: BIOLOGICAL AND PHYSICAL VISUAL REHABILITATION

AEROBIC ACTIVITY AND VISUAL REHABILITATION

Stefano Casaro
Italy

All human organs and tissues, particularly muscles, utilize ATP (adenosine triphosphate) molecules as an energy source, which are produced by mitochondria. Mitochondria are primarily concentrated in regions of the body with higher metabolic demands, such as the brain, heart, and skeletal muscles. Skeletal muscle accounts for approximately 40% of total body mass and plays a crucial role in maintaining metabolic health. Moreover, similar to the brain, skeletal muscle exhibits plasticity, meaning it responds rapidly and positively to training and exercise, thereby promoting a healthy phenotype. Sarcopenia (the loss of skeletal muscle mass), attributed to age-related mitochondrial oxidative dysfunction, typically begins around the age of 40 and progressively worsens, leading to a corresponding decline in mitochondrial content. Today, we move less and breathe less effectively. This, combined with an inadequate diet, leads to cellular hypoxia and mitochondrial DNA damage, resulting in muscle dysfunction.

One effective strategy to slow mitochondrial aging, and by extension the aging of the entire organism, is regular and moderate physical activity. Exercise stimulates the production of the enzyme AMPK (AMP-activated protein kinase), which signals muscle fibers to increase mitochondrial availability. Additionally, exercise promotes the release of BDNF (brain-derived neurotrophic factor), various neurotransmitters, and endorphins. Physical exercise activates mitochondrial biogenesis in skeletal muscles, doubling both mitochondrial density and oxidative phosphorylation capacity (i.e., energy production) (Hood, 2011). It influences both the quantity and quality of mitochondria (Jacobs & Lundby, 2013), and mitochondrial density has been recognized as a key regulator of cellular function (Picard, 2014). Consequently, it contributes to cardiorespiratory fitness, typically measured as maximal oxygen consumption, which is one of the strongest predictors of morbidity and mortality (Kaminsky, 2013).

The maintenance or restoration of mitochondrial renewal capacity (fission and autophagy) through regular physical activity (in addition to caloric restriction and antioxidants) delays the senescence of organs, prevents cardiovascular diseases, improves sleep, lowers blood pressure, strengthens the immune system, enhances mood, boosts respiratory function, increases libido, and helps control anxiety, depression, and stress. Thus, physical activity enhances the cognitive and neuromotor systems in the elderly and predisposes the brain, at any age, to greater overall plasticity.

MENTAL HEALTH IN PEOPLE WITH VISION LOSS: CHALLENGES AND SOLUTIONS

STEPPED-CARE TO DECREASE DEPRESSION AND ANXIETY IN YOUNG ADULTS WITH VISION LOSS

Robert Van Der Linden
The Netherlands

People with visual impairment (VI) are particularly vulnerable to symptoms of depression and anxiety. This heightened sensitivity is often linked to the numerous obstacles they face in daily life, which can significantly impact their quality of life.

Our research focused on identifying the specific challenges that younger individuals with VI encounter and how these contribute to their mental health. By understanding these obstacles, we aimed to develop targeted solutions to support this population.

Based on our findings, we created an e-health self-help intervention designed to reduce symptoms of depression and anxiety while enhancing overall well-being in individuals with VI. This intervention was based on Cognitive Behavioral Therapy (CBT) and aimed to enhance the self-management skills of individuals.The intervention was initially tested in a usability study, during which we made improvements to ensure its accessibility for users with visual impairments. This iterative process helped refine the intervention to better meet the needs of its target audience.

Currently, this e-health program has been integrated into a stepped-care approach for treating depression and anxiety in people with VI aged 18–50 years. We are now conducting an efficacy study at three institutions in the Netherlands to evaluate the effectiveness of this stepped-care framework. Our ultimate goal is to empower individuals with VI to overcome mental health challenges and improve their quality of life.

MENTAL HEALTH IN PEOPLE WITH VISION LOSS: CHALLENGES AND SOLUTIONS

MENTAL HEALTH AFTER SIGHT RECOVERY

Michael Crossland
United Kingdom

More treatment options than ever before are available for young people with vision impairment, but very little is known about the impact of these sight restoration therapies on wellbeing and mental health. In adults, sight restoration has been associated with depression and a reduction in mental wellbeing. In this presentation I will review the evidence for reduced wellbeing in adults who have received sensory restoration and I will discuss potential strategies for maximising people in this population. I will also introduce the EIRS (Emotional Impact of Restoring Sight) study, which aims to assess changes in wellbeing in young people receiving this very exciting treatment.

MENTAL HEALTH IN PEOPLE WITH VISION LOSS: CHALLENGES AND SOLUTIONS

POST-TRAUMATIC STRESS IN OLDER ADULTS WITH VISION LOSS

Edine van Munster
The Netherlands

Experiencing a stressful or traumatic event can lead to symptoms such as anxiety, tension, sleep problems, or hypervigilance. For most individuals, these symptoms are temporary, but for some, they persist and may develop into post-traumatic stress disorder (PTSD). People with vision impairment (VI) seem to be at an increased risk of encountering traumatic events. Due to challenges in recognizing danger and responding appropriately, these events may be perceived as more stressful. It is suggested that individuals with VI may experience post-traumatic stress (PTS) more frequently than their sighted peers, although conclusive evidence remains limited.

In a recent study using cross-sectional data from the Longitudinal Aging Study Amsterdam (LASA) we aimed to estimate the prevalence of PTS(D) in older adults. Older adults (> 55 years) with VI (n=127) and normal vision (n=1072) were assessed on PTS(D) by using the SRIP with cut-off scores of 39 and 52, respectively. In addition, we explored the association between PTS and vision loss, and developed and validated a prediction model for PTS in older adults with VI. These identified predictors can help to pinpoint individuals most vulnerable to experiencing PTS.

Our findings show that 23% of older adults with VI report PTS, compared to 15.8% in those with normal vision. Furthermore, 6.3% of participants with VI met the criteria for PTSD, versus 2.3% of those with normal vision. Vision loss seemed to increase the risk of experiencing PTS (OR = 1.86). The most important predictors were somatic comorbidities, neuroticism, and emotional loneliness. This derived prediction model demonstrated good discriminative value in older adults with VI (AUC 0.824) and in older adults with normal vision (AUC 0.779).

This study underscores the increased vulnerability of older adults with VI to PTS, and highlights the need for targeted interventions and support for this group. Future research should further investigate the causal relationship between vision loss and PTS(D).

MENTAL HEALTH IN PEOPLE WITH VISION LOSS: CHALLENGES AND SOLUTIONS

HUMANISING HEALTH CARE: SHARING PATIENTS' LIVED EXPERIENCE OF VISION IMPAIRMENT AND DEPRESSION WITH EYE CARE STUDENTS

Claire Nollett[1], Keziah Latham[2]

[1]Centre for Trials Research, Cardiff University, United Kingdom; [2]Vision and Hearing Sciences Research Centre, Anglia Ruskin University, Cambridge, United Kingdom

Background: People with vision impairment (VI) commonly experience depression, which is frequently undiagnosed and untreated. Eyecare practitioners such as optometrists and dispensing opticians are well placed to identify depression and to refer people to services but need support from an early stage to embed this within their role. A creative educational resource package was produced to help eyecare students understand and address depression. People with VI shared their personal stories in short films, thus 'humanising healthcare' and providing a patient perspective. The first deliveries of the resource are evaluated for impact.

Methods: Short films were produced of the lived experience of four people with VI, a composite video of patient views on practitioners discussing mental health, and a role play of a practitioner screening a patient for depression. These were accompanied by written information and reflection points. Students and educators completed an evaluation survey after delivery, and the filmed service users provided verbal or written feedback. Students' free-text comments were evaluated using content analysis and Likert responses from the educator survey are reported as counts.

Results: Surveys were completed by 8 educators and 234 students. The impacts most frequently reported by students were an increased awareness of patients' perspectives and experiences (n=110), and increased confidence in supporting people (n=45). The most common responses regarding what they might do differently in future were intentions to communicate about mental health (n=85) and to refer, signpost or offer support (n=57). All educators found the resources useful/very useful (n=8) and their confidence in teaching the impact of low vision on mental health increased a little (n=1) or a lot (n=7). Service users (n=3) reported having enjoyed sharing their story, and that participating had opened up conversations with friends and family.

Conclusions: Videos featuring the patient perspective can be valuable to eyecare students in terms of increasing their awareness of the impact of VI on mental wellbeing and influencing their intention to communicate about mental health and offer support. However, there was less impact on intention to use formal screening questions for depression.

MENTAL HEALTH IN PEOPLE WITH VISION LOSS: CHALLENGES AND SOLUTIONS

ADDRESSING SEVERE MENTAL HEALTH PROBLEMS IN THE CARE FOR PERSONS WITH VISION LOSS: STATE OF THE ART

Marit Van Buijsen
The Netherlands

In the Netherlands, an estimated 8000-9000 adults are expected to have vision loss and severe mental health problems. A severe mental health problem refers to a specific mental disorder, e.g. mood or anxiety disorders, traumatic or stress-related disorders, psychotic disorder, addictive disorder or personality disorders, that leads to serious impairments in social functioning and participation in daily life over a longer period of time. Because of the combination of vision loss and severe mental health problems, these persons experience a cumulative impact on their social functioning and participation in daily life, and their care needs are complex and diverse. Therefore, it is a challenge for general care providers to provide suitable care for people with vision impairment and severe mental health problems.

There is a lack of scientific literature and explicit knowledge about the general characteristics of people with vision loss and severe mental health problems, the impact of the combination of these problems on their daily lives, and their care needs. In the last ten years, the Robert Coppes Foundation has conducted several research studies and related projects on this subject. After this decade, it is time to review the current state of art within this research field. What have we learned from the different projects that were conducted? What insights or conclusions can be drawn? And which research gaps are still present? In this presentation, these questions will be answered based on an overview of the main learning points from various projects conducted within the Netherlands and at the European level, including literature studies, qualitative and quantitative research studies, and knowledge exchange projects.

BEYOND THE CURRENT TECHNOLOGICAL FRONTIERS AND VISUAL REHABILITATION

KEYNOTE LECTURE: THE A.I. FOR PREVENTION OF THE BLINDNESS AND LOW VISION

Keane Pearse
United Kingdom

Ophthalmology is among the most technology-driven of all the medical specialties, with treatments utilizing high-spec medical lasers and advanced microsurgical techniques, and diagnostics involving ultra-high resolution imaging. Ophthalmology is also at the forefront of many trailblazing research areas in healthcare, such as stem cell therapy, gene therapy, and - most recently - artificial intelligence. In my presentation, I will describe the motivation - and urgent need - to apply deep learning to ophthalmology, the initial results of my research, both with industry and academic collaborators, and finally, why I believe that ophthalmology could be first branch of medicine to be fundamentally reinvented through the application of artificial intelligence.

BEYOND THE CURRENT TECHNOLOGICAL FRONTIERS AND VISUAL REHABILITATION

OVERCOMING TECHNOLOGY BARRIERS

Ava Bittner
USA

Technology to access the internet, including mobile devices and computers, have become an indispensable part of modern life. For the visually-impaired, this type of technology involving mobile applications (apps) can be used advantageously for many purposes, such as to provide visual assistance, connect to videoconferencing for remote healthcare or social purposes, or provide access to healthcare information through health system patient portals. Accessibility features that are available on computing and mobile devices can help facilitate low vision patients use of various mobile apps; however, training and/or support are required for many patients to be able to implement accessibility strategies, as well as to gain proficiency with app usage. This session will provide an overview of how vision rehabilitation providers can play an important role in this type of guidance to improve patient outcomes. Additionally, it will introduce a new solution we have been developing to help providers to connect to low vision patients remotely for Zoom videoconferencing sessions that could be valuable to help support the provision of telerehabilitation services or low vision support groups. As vision rehabilitation providers, it is incumbent upon us to provide options to patients to help over technology barriers by enhancing accessibility and improving patients' digital literacy.

BEYOND THE CURRENT TECHNOLOGICAL FRONTIERS AND VISUAL REHABILITATION

AI-BASED MEDICAL IMAGING FOR VISUAL IMPAIRMENT

Oliver Leingang
Austria

This talk centers on understanding the relationship between retinal functional changes and anatomical features, focusing on geographic atrophy (GA) as an example. We will explore advanced imaging and AI measurement techniques using optical coherence tomography (OCT), which provides valuable insights into GA. As a form of age-related macular degeneration, GA causes progressive vision loss due to loss of the retinal pigment epithelium (RPE), i.e. Atrophy. Examining the correlation between structural and functional changes in GA is essential for developing targeted therapies and enhancing patient care.

We will discuss OCT based measurements to examine anatomical features such as ellipsoid zone (EZ) thickness, EZ loss, and RPE loss. These biomarkers are quantified using artificial intelligence (AI), providing precise and objective measurements that enhance accuracy. Functional assessment is conducted with microperimetry (MP), a technique that evaluates retinal sensitivity and maps functional deficits in patients with GA.

By correlating AI-quantified biomarkers on OCT with MP retinal sensitivity, we uncover significant patterns and insights into retinal function preservation and decline. These correlations offer a deeper understanding of GA progression and illustrate how anatomical changes impact functional capabilities.

Based on our findings, we propose a targeted approach to microperimetry, focusing on areas with identified EZ and RPE alterations. This tailored method enhances monitoring and intervention strategies, allowing for precise tracking of disease progression and facilitating more effective intervention opportunities.

We will address the advantages and drawbacks of targeted microperimetry. While it offers enhanced localization and personalization in disease monitoring, limitations such as potential variability in measurement accuracy and statistical challenges exist. Furthermore, we discuss the implications of AI-driven quantification in clinical practice and its potential to revolutionize diagnostic methodologies for monitoring and intervention.

This talk aims to provide an overview of AI-based developments and their potential applications, contributing to the advancement of personalized treatment plans and improved management strategies for individuals affected by geographic atrophy and other retinal diseases associated with atrophic developments.

BEYOND THE CURRENT TECHNOLOGICAL FRONTIERS AND VISUAL REHABILITATION

NEW TECHNOLOGY FOR VISUALLY IMPAIRED PEOPLE

Monica Gori

Vision plays a critical role in the development of skills necessary for interacting with objects and others. In infants with congenital blindness, impaired visual perception significantly affects their ability to develop essential skills such as reaching, locomotion, spatial awareness, and social interaction. These deficits impact their physical functioning, psychological well-being, and increase their need for health services. The visual system is fundamental to the creation of a multisensory spatial representation of the world, which integrates sensory inputs, motion, and body perception. This process is supported by recent research on the role of visual input in the development of multisensory space, utilizing advanced methods like high-density electroencephalography (EEG).

During the early years of life, when cortical plasticity is at its peak, sensory-motor interactions are crucial for development. A multisensory spatial representation starts to form from the association of sensory-motor and body representations mediated by vision. Therefore, early intervention aimed at promoting the development of sensory-motor skills is essential for improving the quality of life for visually impaired infants. There is a pressing need for more research to identify key developmental windows where targeted interventions would be most beneficial and to design tailored approaches to enhance sensory-motor skills in blind individuals from a young age.

Although early rehabilitative interventions are recognized as important, studies evaluating their effectiveness are scarce, largely due to the lack of intuitive, simple, and usable rehabilitative devices for young children. Developing technology to address this gap is crucial for advancing both basic and clinical research. However, the development of multisensory devices for spatial rehabilitation in visually impaired infants has faced significant challenges. These include the need for devices that are understandable to infants, require minimal attention, account for physiological mechanisms, and allow for the assessment of improvements after short training sessions. This talk will present technological solutions aimed at overcoming these challenges and advancing the rehabilitation of sensory-motor and spatial skills in visually impaired children and infants.

BEYOND THE CURRENT TECHNOLOGICAL FRONTIERS AND VISUAL REHABILITATION

NEWS IN NYSTAGMUS TREATMENT

Davide Cacciatore
Italy

Nystagmus is a condition characterized by involuntary, rhythmic eye movements that can significantly impair visual stability and acuity. Traditional assessments of nystagmus often lack the temporal precision needed to capture subtle variations in eye movement behavior. Recent developments in high-frequency eye-tracking technology (above 200 Hz), combined with nystagmometry, offer a more detailed and accurate analysis of visual function in patients affected by this condition.

I'm investigating how high-frequency eye-tracking can help evaluate visual performance and fixation stability in individuals with nystagmus, particularly those with relatively preserved visual acuity (better than 0.2 logMAR). Preliminary results demonstrate that patients with higher visual acuity tend to show more stable fixation patterns, while those with lower acuity present greater variability in nystagmus frequency and less reliable fixation.

These findings support the hypothesis that visual acuity is closely linked with the capacity to achieve and maintain stable fixation, a key aspect in both diagnosis and rehabilitation. Importantly, the precision offered by modern eye-tracking systems allows clinicians to go beyond subjective descriptions and low-resolution recordings, enabling a quantified, repeatable assessment of oculomotor function.

In the context of visual rehabilitation, these technologies provide essential metrics for tailoring treatment strategies. Eye-tracking allows for objective monitoring of how fixation training or pharmacological interventions influence the amplitude, frequency, and direction of nystagmus. This paves the way for individualized, data-driven rehabilitation plans that can enhance visual function and quality of life in patients with both congenital and acquired nystagmus.

Moreover, by leveraging eye-tracking technology, clinicians may identify "null zones" or gaze positions where nystagmus dampens, and use this data to guide visual training, optical corrections (e.g., prisms), or even surgical planning.

In conclusion, high-frequency eye-tracking combined with nystagmometry represents a valuable frontier in the assessment and management of nystagmus, offering new possibilities for precision-based visual rehabilitation.

THE PATH TO DEEPER VISUAL RE-MODULATION

OUTCOME MEASURES IN GENE THERAPY CLINICAL TRIALS

Lauren Ayton
Australia

Since the regulatory approval of voretigene neparvovec-rzyl (Luxturna) in 2017, the field of ocular gene therapy has experienced both highs and lows. Luxturna has been a success for many patients, halting disease and even restoring vision for people with Leber Congenital Amaurosis from biallelic RPE65 gene mutations. However, many other trials have failed, usually as they have not met their primary endpoints. Many in the field believe that current regulatory-approved outcome measures are not appropriate for these trials, and hence we are hitting roadblocks. In this talk, Prof Lauren Ayton (Melbourne, Australia) will update delegates on the current and emerging options for gene therapy clinical trial outcome measures, and explain how the global leaders in this field are working together to enact change.

THE PATH TO DEEPER VISUAL RE-MODULATION

REHABILITATION OF LV PATIENTS UNDERGOING NOVEL THERAPIES

Ronald Schuchard
USA

Many new innovative therapies for ocular conditions have been introduced, either in clinical trials or already approved for marketing. Biologic therapies like gene and optogenetics therapy for inherited retinal diseases are in development. Drug therapies like Syfovre and Izervay have been approved for AMD. And device therapies like photobiomodulation and retinal prosthetics have been approved. These therapies do not result in 'normal' vision and the companies don't always appreciate that people would benefit from vision rehabilitation in addition to their innovative therapies to improve retinal function. This presentation will provide the background and challenging information related to helping people have optimal visual ability with these innovative therapies.

Unfortunately, these therapies often provide limited visual function efficacy evidence. For example, the drug therapies have been recently approved by evidence of OCT imaging (structure evidence) with limited visual function evidence. This structure versus function discussion is not always appreciated and information to patients often does not provide accurate information about the potential improved visual function. In people with moderate visual impairments to near blindness, the measures of visual and ocular-motor function that are commonly associated with activities of everyday function are visual acuity, contrast sensitivity, visual field, and eye movement ability. Other validated measures are needed for an evaluation of functional vision (reading, wayfinding, falls, eye-hand ability, and visual search for example), depending on the vision rehabilitation goals and the visual abilities of the person. With the advent of these innovative therapies there is now the need to investigate how potential improvements in functional vision (beyond the visual impairment measurements) can be obtained for the benefit of the patients. Also there is now the need to develop rehabilitative interventions for people who improve in visual ability instead of the normal further decline of visual ability in diseases that previously had no effective treatment. With the advent of current and potential new treatments for retinal diseases, there is an opportunity for visual rehabilitation professionals to help people with moderate to profound visual impairment increase their independence and improve their quality of life.

THE PATH TO DEEPER VISUAL RE-MODULATION

RETINAL MOLECULAR BIOLOGY: THE KEY TO CONTAINING THE PROGRESSION OF NEURORETINAL DISEASES

Luigi Donato[1,2], Simona Alibrandi[1,2], Concetta Scimone[1], Domenico Mordà[1,2,3], Giorgia Abbate[1], Carmela Rinaldi[1], Rosalia D'Angelo[1] and Antonina Sidoti[1]

[1]Department of Biomedical and Dental Sciences and Morphofunctional Imaging, Division of Medical Biotechnologies and Preventive Medicine, University of Messina, Messina, Italy; [2]Department of Biomolecular strategies, genetics and cutting-edge therapies, I.E.ME.S.T., Palermo, Italy; [3]Department of Veterinary Sciences, University of Messina, Messina, Italy

The retina is not only a highly specialized sensory tissue, but also a molecularly dynamic environment where homeostasis is maintained through tightly regulated genetic, epigenetic, and metabolic networks. Neuroretinal diseases - such as retinitis pigmentosa, age-related macular degeneration, and glaucoma - are characterized by progressive neuronal degeneration that was long considered irreversible. However, recent advances in retinal molecular biology have shifted this paradigm, revealing that disease progression can be modulated through strategic intervention in key molecular pathways.

Current research underscores the retina's inherent capacity for molecular plasticity. Dysregulation of stress-response systems, mitochondrial bioenergetics, and intercellular signaling cascades has been linked to early neurodegenerative processes. Importantly, emerging findings suggest that the early molecular microenvironment - particularly within Müller glia, retinal pigment epithelial cells, and microglia - plays a decisive role in shaping either neuroprotection or degeneration. Understanding these dynamics enables the development of therapies aimed not merely at replacing damaged tissue, but at halting disease at the molecular source.

Recent studies have highlighted the role of the integrated stress response (ISR) and its intersection with the unfolded protein response (UPR) in shaping cellular fate decisions under chronic stress. Moreover, pathological activation of inflammasomes such as NLRP3 has been identified as a key driver of sterile inflammation in AMD and diabetic retinopathy. Dysregulation of mTOR signaling has been shown to modulate autophagic flux and photoreceptor survival, while altered lipid metabolism - especially ceramide accumulation - contributes to neuroinflammatory amplification. Emerging single-cell multi-omics approaches have further revealed transcriptional reprogramming in reactive Müller cells that can be either regenerative or degenerative, depending on epigenetic context.

From chromatin remodeling and non-coding RNA regulation to mitochondrial signaling and microglia-driven neurotoxicity, multiple intersecting molecular layers are now being explored as therapeutic leverage points. This evolving molecular atlas of the retina offers unprecedented opportunities to intervene in pre-degenerative or early degenerative stages.

In this context, retinal molecular biology is no longer a descriptive science, but a functional key to containing neuroretinal disease progression. As we deepen our understanding of these pathways, we move closer to a model of intervention that is not only reactive but genuinely preventative and stabilizing.

THE PATH TO DEEPER VISUAL RE-MODULATION

NOVEL APPROACHES TO RETINAL REPAIR: LEARNING FROM ZEBRAFISH AND THE POTENTIAL OF MESENCHYMAL EXOSOMES

Lucia Poggi
Department of Cellular, Computational and Integrative Biology – CIBIO, University of Trento, Italy

This presentation will explain how zebrafish (Danio rerio) are used as powerful models for deciphering and addressing human retinal diseases. Because molecular processes, retinal structure, and physiology are evolutionarily conserved with humans, zebrafish can model many human retinal diseases, including age-related macular degeneration, retinitis pigmentosa, and other neurodegenerative conditions.

Zebrafish's easy genetics and rapid development also substantially aid biomarker identification, new drug discovery, and testing for early disease detection and therapeutic development. Furthermore, a central focus of many studies is the remarkable regenerative capacity of the zebrafish retina. Exploring how damage triggers repair mechanisms of the eye provides a unique window into processes potentially leading to human regeneration.

Recent evidence suggests that extracellular vesicles (EVs) play a critical role in tissue repair and regeneration with their yet-to-be-characterized cargo of growth factors, signaling molecules, chaperones, and genetic material. Understanding how EVs can mediate the regenerative response might shed light on their potential as therapeutic agents in human ophthalmology, revolutionizing the treatment of retinal diseases. We will discuss how EVs' specific molecular signatures and functional properties can be studied in zebrafish to inform the development of novel EV-based therapies for retinal diseases. This includes exploring strategies for enhancing EV delivery, optimizing their therapeutic cargo, and targeting them to specific retinal cell types.

In summary, this presentation aims to bridge the gap between basic research and clinical application, exemplifying how the zebrafish model and therapeutic potentials, such as EVs and their cargo, are used in cutting-edge retinal regeneration research and how these insights can translate into tangible patient benefits.

THE PATH TO DEEPER VISUAL RE-MODULATION

CELL THERAPY AND NEURORETINAL DISEASES

Ayse Öner
Istanbul, Turkey

Stem cells are undifferentiated cells which have the ability to self-renew and differentiate into mature cells. They are highly proliferative, implying that an unlimited number of mature cells can be generated from a given stem cell source. In recent years the landscape of regenerative medicine, particularly stem cell therapies, has emerged as a great hope for retinal restoration. Among the various stem cell types under investigation, mesenchymal stem cells (MSCs) have attracted significant attention for their therapeuetic potentials. MSCs, derived from various sources, including umbilical cord tissue, bone marrow, and adipose tissue, exhibit trophic and immunomodulatory effects that may mitigate the degenerative processes in the retina.

Degenerative neuroretinal diseases cause progressive visual decline which originates from continuing loss of photoreceptor cells and outer nuclear layers. It is known that, stem cells are able to perform multiple functions, such as immunoregulation, anti-apoptosis of neurons, and neurotrophin secretion. With recent progress in experimental stem cell applications, phase I/II clinical trials have been approved. These latest stem cell transplantation studies showed that this therapy is a promising approach to restore visual function in eyes with degenerative neuroretinal diseases such as retinitis pigmentosa, Stargardts' macular dystrophy, age-related macular degeneration and various optic nerve pathologies. This presentation focuses on new developments in stem cell therapy for degenerative neuroretinal diseases.

THE PATH TO DEEPER VISUAL RE-MODULATION

CELL THERAPY WITHOUT CELLS?

Neslihan Sinim Kahraman
Turkey

Exosome treatment is an emerging field in regenerative medicine that enables cell-free therapy by utilizing exosomes, which are extracellular vesicles secreted by cells. Exosomes contain bioactive molecules such as proteins, lipids, mRNAs, and microRNAs that can influence cellular processes, making them promising for therapeutic applications.

Unlike stem cell therapies, exosomes do not require live cells, reducing the risk of immune rejection or tumor formation. They mimic the regenerative effects of stem cells by transferring bioactive molecules to target cells. Exosomes derived from autologous or well-characterized donor cells pose minimal risk of immune response. Easier to manufacture, store, and transport compared to live cell therapies. Exosome-based therapies are gaining attention in ophthalmology for their potential to treat various eye diseases through cell-free mechanisms. Recent clinical trials and animal model studies exploring the efficacy of exosome treatments in this field. In this presentation current studies and details about exosomes will be discussed.

DRIVING WITH LOW VISION: INSIGHTS FROM DIVERSE RESEARCH METHODS

VOICES BEHIND THE WHEEL: CENTRAL VISION LOSS AND ADVANCED VEHICLE TECH

Jing Xu

Schepens Eye Research Institute of Massachusetts Eye and Ear Department of Ophthalmology, Harvard Medical School, Boston, Massachusetts, USA

Advanced driver assistance systems (ADAS) and semi-autonomous driving features have the potential to support drivers with central vision loss (CVL), yet little is known about their adoption and use experience in real-world driving. This talk synthesizes findings from a telephone questionnaire and a 2-year follow up case study to understand the experiences of drivers with CVL in the USA. Participants reported their driving difficulties, ADAS adoption, preferences, and challenges with advanced vehicle technologies.

Drivers with CVL experienced significantly greater driving difficulties than drivers without CVL, particularly when dealing with road users in the vehicle blind spot, managing glare, responding to unexpected pedestrians, and driving in unfamiliar areas. In these situations, they expressed a strong need for technology support. They reported frequent use of ADAS features, strongly favored collision mitigation technologies such as blind spot warnings, pedestrian alerts, and forward collision avoidance. However, they also faced significant usability challenges, particularly in recognizing visual displays and interacting with vehicle interfaces due to issues such as small fonts, poor contrast, and screen glare. Drivers with CVL tended to prefer healthcare professionals over dealerships for ADAS use guidance and training, suggesting potential gaps in accessible technology education. Additionally, the case study of a driver with Stargardt's disease further demonstrated how Level 2 semi-autonomous driving systems in a Tesla car enhanced driving confidence and increased driving exposure by shifting the driver's primary role from active driving to supervising automation.

These findings provide novel insights into how drivers with CVL engage with emerging vehicle technologies. They also show the value of questionnaires in capturing user-centered perspectives, uncovering key priorities (collision prevention), barriers (interface design), and training gaps, all of which are critical for equitable ADAS development and use. Integrating user voices with other experimental methods, such as simulator and naturalistic driving studies, will be crucial for advancing technology solutions to support drivers with low vision.

DRIVING WITH LOW VISION: INSIGHTS FROM DIVERSE RESEARCH METHODS

DRIVING SIMULATOR TESTING FOR PATIENTS WITH VISUAL FIELD DEFECTS

Satoshi Yokota
Japan

Background: The relationship between visual function and driving accidents is well-studied in glaucoma patients. However, few reports were found in patients with inherited retinal dystrophy (IRD). This study examined the relationship between the number of accident scenes in the driving simulator and visual function in patients with IRD.

Subjects: Patients with IRD who had undergone a driving simulator at our hospital between April 2021 and October 2022 and who had undergone the Humphrey 10-2 program, the Esterman grid test, and the visual acuity test were included in this study. The association between the number of accident scenes in the driving simulator and visual function was examined retrospectively.

Results: No correlation was found between the number of accident scenes and the number of >10dB points in the 10-2 program or best corrected visual acuity of the better eye. However, a negative correlation was found between the number of accident scenes and the Esterman grid test score. Multivariate analysis with the number of accident scenes as the dependent variable and the Esterman grid test score, the number of >10dB points in the 10-2 program, and the best corrected visual acuity of the better eye as explanatory variables showed that only the Esterman grid test score was associated with the number of accident scenes.

Discussion: As previously reported in glaucoma patients, the Esterman grid test is more correlated with accident cases of driving simulator than central visual field or visual acuity testing in patients with IRD.

DRIVING WITH LOW VISION: INSIGHTS FROM DIVERSE RESEARCH METHODS

VOICES BEHIND THE WHEEL: CENTRAL VISION LOSS AND ADVANCED VEHICLE TECH

Alex Bowers
USA

Studying the effects of vision impairment on driving is challenging. For many years my lab has used the safe, controlled, repeatable environment of a driving simulator to (1) study how homonymous visual field loss (HVFL) affects scanning behaviors and hazard responses, and (2) evaluate the effects of interventions and assistive technology to address scanning and detection deficits. However, driving simulators do not fully replicate the complexities of the road environment and traffic situations of everyday driving. To complement our driving simulator studies, we recently started to use naturalistic driving as a method to study real-world driving of people with HVFL. In this approach, a small dashcam is placed in the participant's own vehicle to unobtrusively record daily driving for several months, providing an unprecedented opportunity to study scanning behaviors without a researcher or examiner present in the vehicle. In naturalistic driving there is no experimental control over the environment and high-risk situations may be relatively rare, but it offers unique insights into how individuals with vision impairment adapt (or fail to adapt) their driving in everyday settings. A major challenge lies in analysis of the vast quantities of data which are recorded. We have developed efficient data reduction methods to identify segments of interest for analysis and to quantify scanning from the video recordings. This talk will demonstrate how we have leveraged the advantages of both driving simulators and naturalistic driving methods to study scanning behaviors of drivers with HVFL on approach to intersections and the differences and similarities of the findings from the two methods.

DRIVING WITH LOW VISION: INSIGHTS FROM DIVERSE RESEARCH METHODS

INSIGHTS ON VISION AND DRIVING PERFORMANCE: CLOSED VS OPEN ROAD APPROACHES

Joanne M. Wood
Centre for Vision and Eye Research, Optometry and Vision Science, Queensland University of Technology, Brisbane, QLD, Australia

In the vision and driving literature, driving performance has been evaluated in a range of settings. This presentation focuses on studies undertaken for participants driving vehicles on real roads, either on closed-road circuits or under in-traffic conditions.

Closed-road studies are undertaken on roads free of other vehicles. Their main advantage is that assessments can be standardized across participants, enabling comparisons between drivers with vision impairment and normal vision, as well as in those with and without simulated vision impairment. Driving measures largely depend on the specific driving circuit and research questions of interest. Typical measures include road sign recognition, detection and avoidance of hazards, driving speeds and lane-keeping. For night-time studies, detection and recognition of pedestrians and cyclists is also relevant. However, while closed road designs allow investigation of the role of vision in driving, the road environment lacks the complexity and interaction with other vehicles of everyday driving. Closed- road designs can thus be considered "proof-of-concept" studies, demonstrating how vision can impact on performance while participants drive under controlled conditions.

Open-road studies are conducted with participants driving a vehicle under in-traffic conditions. Given the safety implications of driving in traffic, assessments are typically undertaken with a driving instructor, Certified Driving Rehabilitation Specialist (CDRS) or driver-trained occupational therapist in the passenger seat and responsible for vehicle safety (dual brake and steering wheel). Standardized routes are typically used, where all participants drive the same route at similar times of day. Backseat evaluators, either research personnel, or occupational therapists, use rating scales, where driving is scored at selected locations against set criteria (e.g. lane-keeping, observation) and these locations categorized into typed of road situation (e.g. traffic-light controlled intersections), with overall driving safety rated on a 5- or 10-point scale. While judgments are subjective, scales are standardized and raters trained, with instrumented vehicles used in some studies to objectively measure aspects of driving performance.

This presentation will discuss the different insights provided by closed and open-road designs and the advantages and disadvantages of each approach.

DRIVING WITH LOW VISION: INSIGHTS FROM DIVERSE RESEARCH METHODS

ON-ROAD ASSESSMENT OF LOW VISION DRIVERS IN EUROPE

Bart Melis-Dankers
The Netherlands

It is widely accepted that the life of people with a (visual) impairments depends directly on their mobility. Driving a car is essential to practice a profession, to maintain social contacts and to provide for daily living. In most countries there are minimal visual requirements for driving (e.g. visual acuity and visual field). However, many scientific studies have shown that these visual measures are not good predictors of the practical fitness to drive at an individual level. Therefore, some countries allow exceptions in case the driver can prove compensation of the visual impairment and shows safe on-road driving.

The PORTARE Working group represents European organisations involved in driving assessment of disabled people. Their aim is to provide information about the best practise of driver assessment, based on the European driving Licence Directive. They published the PORTARE Handbook of Disabled Driver Assessment and a website (https://portare.info). This includes: medical standards of physical and mental fitness for driving; vehicle adaptation, incorporating elements of mechanical, electric, software and safety engineering; outcome of publications and projects; and an overview of driver assessment in different Member States.

In the Netherlands exceptions are available if visual acuity (VODS) is between 0.4 and 0.5; for bioptic drivers with VODS ≥ 0.16; and for people with impaired horizontal visual fields between 90 and 120 degrees. A low vision candidate has to follow a formal procedure including a medical assessment and a practical fitness to drive test. This is an on-road test of 30-45 min through busy traffic, taken by the official national driving licence authority (CBR). The driving test follows the TRIP-protocol (Test Ride for Investigation of Practical fitness to drive) which includes 57 factors (25 visual, 8 operational, 15 tactical, 3 global). If the candidate passes the procedure the license can be issued for a period of 5 years.

Royal Dutch Visio offers the rehabilitation programme AutO&Mobility to assist patients to achieve safe and independent (motorised) mobility. In the presentation I'll focus on the compensation of visual impairments in traffic, on the PORTARE Handbook and on the Practical Fitness to drive test.

DRIVING WITH LOW VISION: INSIGHTS FROM DIVERSE RESEARCH METHODS

ON-ROAD TESTING OR SIMULATOR-BASED TESTING FOR INDIVIDUALS WITH VISUAL FIELD LOSS?

Janne Andersson
Sweden

Background: In Sweden, individuals with detected visual field loss (VFL) will have their driver's license withdrawn based on perimetry results. In a previous study, a simulator-based method was used to test VFL individuals driving performance. Over 200 VFL individuals passed the simulator test (69% of the tested VFL participants) and regained their driver's licenses.

Method: Seventy of the VFL individuals who had their driver's license withdrawn due to VFL but then regained it after passing the simulator test and still had a valid driver's license in February 2022 took part in a regular on-road driving test study. In addition, one age matched, and one younger control group (both groups matched on driving experience as well as area of living) also participated in this on-road study (approximately 70 participants in each group). Traffic inspectors, blind to group affiliation assessed the participants in cars provided by the exam office. A unique inspector always tested one VFL and one from each control group.

Results: Just over 67% of the VFL participants passed the on-road test while almost 66% of the age- matched and just over 81% of the young controls passed the test. No statistical differences exist between the three groups. The analysis of the failures did not reveal an understanding, i.e., no differences between etiology or groups.

Discussion: The process used in Sweden for withdrawing driver's licenses due to VFL seems to be unfair as all results indicate that participants with a detected VFL passed the on-road driving test to the same extent as did their matched controls. Second, comparative study is needed to clarify if a simulator-based method or on-road testing is to be preferred. Conclusion: Perimetry alone cannot predict driving performance on a driving test in a simulator nor on an on-road driving test assessed by traffic inspectors. This study highlights the need for a more nuanced approach to assessing driving capabilities in individuals with VFL. Based on these findings (and others) the Swedish government have taken the decision to re-write the law (to be presented in June 2025).

TECHNOLOGICAL APPROACHES TO VISION RESTORATION: BIONIC VISION, GENE THERAPY AND BEYOND

INTRODUCTION: IRD TECHNOLOGIES 101

Lauren Ayton
Melbourne, Australia

In this introductory talk, Professor Lauren Ayton (Melbourne, Australia) will provide an overview of the current state of clinical trials of vision restoration therapies. She will provide some historical context on the global efforts to develop these treatments, before opening the floor to experts in each field to discuss vision prostheses, gene therapy, optogenetics, small molecules and sensory substitution devices.

TECHNOLOGICAL APPROACHES TO VISION RESTORATION: BIONIC VISION, GENE THERAPY AND BEYOND

VISION RESTORATION WITH OPTOGENETICS

Samuel Barone
USA

In retinal degenerative conditions, progressive photoreceptor damage and death leads to permanent vision loss. Optogenetics introduces light-sensitive opsin proteins into higher-order neurons that remain viable, offering an opportunity to restore vision in a mutation- or disease-agnostic manner. Light sensitivity, wavelength of stimulation, response kinetics, and target retinal cell type for expression can impact opsin performance.

MCO 010 is an AAV2 gene therapy targeting bipolar cells to express an engineered broadband-sensitive opsin protein with a low light threshold requirement for stimulation with high temporal precision. In the randomized, controlled phase 2b/3 RESTORE trial in patients with severe vision loss from Retinitis Pigmentosa (RP), MCO-010 dosing showed statistically significant best-corrected visual acuity (BCVA) improvement from baseline by ≥ 0.3 LogMAR at the Week 52 (primary) and Week 76 (key secondary) endpoints compared to sham control. Durable visual acuity improvement continues in long-term follow-up.

In patients with severe vision loss due to RP, BCVA gain > 0.3 LogMAR by Freiburg Visual Acuity Testing (FrACT) is clinically meaningful as this level of change:

- Exceeds the stated treatment goals by patients with RP of preventing or slowing further deterioration;
- Surpasses what is considered clinically meaningful by clinicians, low-vision experts, and some regulators;
- Possesses greater BCVA improvement than the levels that have been rarely observed due to the natural progression of the disease, since spontaneous recovery is not physiologically plausible in patients lacking photoreceptors;
- Demonstrates a larger magnitude than the normal variability of visual acuity assessment in patients with severe vision loss due to RP; and
- Corresponds to improvements in mobility, visual field testing, as well as patient-reported outcome responses among patients with better vision (“on-chart”) who exhibit the same level of change in BCVA.

TECHNOLOGICAL APPROACHES TO VISION RESTORATION: BIONIC VISION, GENE THERAPY AND BEYOND

SMALL MOLECULES

Brian Strem
USA

Kiora Pharmaceuticals, Inc (NASDAQ:KPRX) is a clinical-stage biotechnology company developing advanced therapies for retinal disease. We target critical pathways underlying retinal diseases using innovative small molecules to slow, stop, or restore vision loss. KIO-301 is entering a Phase 2b clinical trial for the treatment of retinitis pigmentosa and other inherited retinal diseases. It is a molecular photoswitch that has the potential to restore vision in patients with inherited and/or age-related retinal degeneration. In a Phase 1b clinical trial, KIO-301 demonstrated consistent improvement in multiple assessments of sight, quality of life and visual cortex activity in patients with ultra-low vision due to retinitis pigmentosa. KIO-104 is entering a Phase 2 clinical trial for the treatment of retinal inflammation due to diabetic macular edema, posterior non-infectious uveitis and more. It is a next-generation, non-steroidal, immuno-modulatory, and small-molecule inhibitor of dihydroorotate dehydrogenase (DHODH). KIO-104 improved visual acuity and reduced cystoid macular edema in a previous Phase 1b clinical trial in patients with posterior non-infectious uveitis.

In addition to news releases and SEC filings, we expect to post information on our website, www.kiorapharma.com, and social media accounts that could be relevant to investors. We encourage individuals to follow us on X and LinkedIn as well as to visit our website and/or subscribe to email alerts.

TECHNOLOGICAL APPROACHES TO VISION RESTORATION: BIONIC VISION, GENE THERAPY AND BEYOND

VISION REIMAGINED: INNOVATIONS IN SENSORY SUBSTITUTION AND VISION RESTORATION

Patricia Grant
USA

Sensory substitution is an innovative approach that involves using one sensory modality to convey information typically received through another sensory modality. This concept is particularly significant for individuals who have vision loss and may face challenges in accessing visual information and navigating their environment. Sensory substitution devices are designed to leverage alternative sensory pathways, such as touch or hearing, to convey spatial and environmental information to the user. These devices transform visual data into auditory signals or tactile feedback, enabling users to perceive and engage with their surroundings in new and meaningful ways.

As we explore sensory substitution, we also consider recent developments in visual prostheses, which intend to restore functional vision through direct stimulation of the retina or visual cortex. These technologies complement sensory substitution efforts, as they also aim to bypass damaged areas of the visual system to improve functional performance. Together, these technologies offer transformative opportunities for people who are blind to enhance independence and quality of life. This presentation provides an overview of key innovations in these areas and successful applications of use and examines the limitations, challenges, and future implications of these technologies.

VISION REHABILITATION FOR THE VISUALLY IMPAIRED: OVERCOMING CHALLENGES

THE BEST TOOLS TO OVERCOME CHALLENGING CASES IN CHILDHOOD VISUAL IMPAIRMENT, EXPERIENCE IN 30 YEARS

Ayse Turan
Turkey

Purpose: Due to consanguinity in marriages(20.1%) in Turkey, incidence of recessively inherited visual impairment and blindness (VI/B) is high. All VI/B children were educated in the same residential schools till year 2000. In order to apply low vision rehabilitation (LVR) intervention, a campaign of ophthalmology examination, treatment, rehabilitation and special education with low vision aids (LVA) had to be started. Lack of knowledge, experience, organization, poverty and statistics were challenges.

Methods: The change in VI/B education system started with the establishment of the first LVR Services in the Numune State Hospital in Ankara in 1999.The first challenge was screening of all the 10 blind schools. The VI/B students were examined and functionally evaluated and categorized. Following the Health Transformation Program and universal Health Coverage, transition of schools integrated with LVA assistance has been managed. A multidisciplinary team was established by the government, university hospitals as well as the European Union Grant, USA of America International Program. NonGovernmental Organisations (NGOs) formed to support the families. Cases such as maculo-retinopathies, optic nerve diseases, congenital cataract, and glaucoma were the main challenges. A nationally planned vision rehabilitation intervention took place. Neuroplasticity helped especially with vision rehabilitation which started at earlier ages. Some family innovations as home made CCTV, magnifiers, computer plays and LVA helped to pass expensive equipment challenges.

Results: Of the 962 VI/B students of the residential blind schools examined, 25% had a useful vision of 6/18-3/60. 54.7% had a vision of 3/60 to light perception (LP). 19.4% had no LP. Following the transition to an integrated school system, with the help of special education teachers, with personalized vision rehabilitation, visual efficiency of the students increased. Investigation with fMRI has been continuing to observe foci within the primary visual cortices. Challenge is to collect enough data to establish Artificial Intelligence to make personalized rehabilitation interventions accessible for all.

Conclusions: Intervention to improve a system needed collaboration. Multidisciplinary team managed to write personalized vision rehabilitation plans for each child. With the contribution of families, those students who could successfully complete their integrated education, could compete and become professionals as pharmacists, medical doctors, engineers, social workers, teachers, artists, diplomats and others.

VISION REHABILITATION FOR THE VISUALLY IMPAIRED: OVERCOMING CHALLENGES

ISSUES IN THE REHABILITATION OF LOW VISION PERSONS TO READ

Giovanni Giacomelli
Italy

The presentation deals with the methods of visual rehabilitation for reading that are used from time to time in relation to the visual problems that must be solved in each patient. How to compensate for low visual acuity, low contrast sensitivity, a damage in the central or peripheral visual field, an eccentric fixation in case of absolute central scotoma, glare phenomena and so on. In particular, the report focuses on the aids that are reasonable to use, the training to apply and the most useful reading strategies in each case.

VISION REHABILITATION FOR THE VISUALLY IMPAIRED: OVERCOMING CHALLENGES

LOW VISION REHAB FOR A PATIENT WITH OCULAR SYPHILIS AND A DIABETIC PATIENT UNDER SEMAGLUTIDE TREATMENT

Olga Goulia
Greece

Syphilis is one of the oldest known sexually transmitted infections. Once thought to be in decline, it is now resurging at an alarming rate. Syphilis can involve almost any ocular structure, but posterior uveitis and panuveitis are the most common presentations. Other common manifestations include interstitial keratitis, recurrent anterior uveitis, retinal vasculitis, and optic neuropathy.

On the other hand, semaglutide has received much media attention in recent years. Although the medication was developed for use in patients with type 2 diabetes, it quickly became widely recognized for its medical benefits and its notable side effect of weight loss. This led to a surge in its off-label use as a weight-loss aid, propelling the drug into the spotlight far beyond its original intent. Studies have shown that GLP-1 agonists can significantly help people with type 2 diabetes control their blood sugar. However, studies also showed GLP 1 agonists can cause vision changes, including blurred vision, worsening of diabetic retinopathy and macular complications.

Both ocular inflammatory disease caused by syphilis and macular complications due to semaglutide can affect the daily lives of patients, from flare ups to doctors' appointments to managing medications and complications. In addition, the development of vision loss in young or middle adulthood presents a greater risk for loss of independence, withdrawal from the labour force, restrictions in social participation, diminished self-worth and poor mental health.

This lecture will focus on low vision rehabilitation interventions and tools to help patients accommodate for visual loss changes and on maintaining a life/work balance and quality of life overall.

VISION REHABILITATION FOR THE VISUALLY IMPAIRED: OVERCOMING CHALLENGES

EYES WIDE OPEN: CONFRONTING LOW VISION REHABILITATION BLINDSPOTS

Werner Eisenbarth
Germany

Various causes can lead to an low vision situation. Globally, uncorrected refractive error, retinal diseases, cataract and glaucoma are the predominant causes. What can often be treated or corrected in developed countries leads to visual impairment in many countries around the world, resulting in reduced quality of life, psychological impairment, economic disadvantage and limited participation. Access to eyecare and LV rehab varies greatly depending on the country and region and it is usually an 'invisible disability'. The presentation will focus on regions and groups of people who are particularly affected by neglect, regardless of whether they live in a rich and highly developed country or not. The situation of people in care homes, people with intellectual disabilities, people in developing countries and people who are refugees will be highlighted.

VISION REHABILITATION FOR THE VISUALLY IMPAIRED: OVERCOMING CHALLENGES

IS IT POSSIBLE FOR VISION RESTORATION TECHNIQUES TO REPLACE LVD?

Boshra Elbayoumi
Egypt

Vision restoration: Refers to the process of recovering lost visual function through various therapeutic approaches.

Types of vision restoration A-Vision restoration at the level of the retina

1-Retinal Prosthesis: Retinal prostheses are implantable electronic devices, designed to stimulate sensation of vision by processing incoming light and transmitting the information in the form of electrical impulses to the remaining inner retinal layers for visual function (replacing the function of the photoreceptors).

2-Gene therapy: Targets for Genetic Therapy : can either be Defects at the RPE, RP, photoreceptor,or inner retinal

3-Cell-based (Stem Cell)Therapy: Stem cells have a strong ability to proliferate and differentiate into many kinds of cells, including RPE cells, PRs, and RGCs.

The transplanted stem cells function mainly by secreting neurotrophic factors, replacing the degenerative cells in the host, upregulating anti- apoptotic genes, and forming new functional synapses. Three common methods are applied to deliver stem cells into the eye

a-Intravitreal injection

b-Sub retinal injection

c-The suprachoroidal space

4-Neuroprotection Approaches: Aim to target photoreceptors or ganglion cells and enhance the photoreceptor survival, Neurotrophic factors promote cell growth, proliferation, differentiation, and survival but as a result of their shorter half-lives, they require frequent administration to attain desired therapeutic levels.

5- Optogenetics: The principle behind using optogenetics as a therapeutic approach to blindness involves restoring light-sensitivity to retinas that lack photoreceptors. This is accomplished by converting light-insensitive inner retinal neurons (i.e., the second and third-order retinal neurons) into photosensitive cells by introducing genetically encoded light sensors.

B-Vision restoration at the level of the Brain

There are two primary NIBS techniques:

1-Transcranial magnetic stimulation

Utilizes electromagnetic induction to generate brief electric currents within the stimulated brain area and can be delivered as either single pulses or a string of repetitive pulses.

2-Transcranial electrical stimulation

Transcranial electrical stimulation involves the delivery of an electrical current to the brain using head-mounted electrodes.

Conclusion: Vision restoration techniques are making significant strides, but they are not yet at a stage where they can fully replace Low Vision Devices (LVDs). While these advancements are hopeful, LVDs remain essential for many people with vision impairment.

TELEREHABILITATION FOR LOW VISION: READING OUTCOMES WITH MAGNIFICATION AIDS

INDICATIONS FOR ADDITIONAL TRAINING WITH NEWLY PRESCRIBED MAGNIFICATION DEVICES

Ava K. Bittner
USA

After newly prescribed magnification devices (i.e., CCTV, optical magnifiers or visual assistive mobile apps) are dispensed following an initial, single training session, it is challenging for vision rehabilitation providers to accurately predict which patients will have positive outcomes or require additional training to become proficient with the device to optimize reading. We examined participants' characteristics in relation to changes in reading measured with the sustained silent reading test (SSRT), International reading Speed Tests (IReST), or Radner test at baseline (without new magnification device) and 1-month later with the new magnification device, but prior to additional training.

At both baseline and 1-month, reading speed was significantly slower on the IReST than SSRT by about 40 wpm. On average, there was a statistically significant improvement in SSRT reading speed with the new magnification device. However, about half of participants did not improve in SSRT or IReST reading speed with the new magnification device. For the SSRT, lack of improvement was associated with participants' rating of poor vision, while increased perceived stress or reduced best-corrected visual acuity worse than 0.5 logMAR were related to lack of improved IReST reading speed. Radner reading acuity improved significantly by ~0.2 logMAR on average with the new magnification device. But, similar to the SSRT and IReST, about half of participants did not improve in Radner reading acuity, which was significantly related to greater anxiety on the Hospital Anxiety Depression Scale and better Radner reading acuity at baseline. Improved SSRT, IReST or Radner reading function was unrelated to whether an OTC magnifier versus no magnifier was used at baseline, and did not vary according to type of prescribed device (i.e., CCTV, optical magnifier or smartphone magnifier app).

Additional training may yield further benefits for patients who had improved reading speed or acuity. A sizable group of low vision patients will require additional training to learn to use various types of new magnification devices after they are dispensed, which may be related to reduced vision and/or negative psychosocial status. Vision rehabilitation practitioners should consider different modalities of service provision to best facilitate additional training sessions to enhance reading ability.

TELEREHABILITATION FOR LOW VISION: READING OUTCOMES WITH MAGNIFICATION AIDS

PROVIDER OBSERVATIONS DURING TELEREHABILITATION SESSIONS FOR MAGNIFIER TRAINING

Kayla Gan
USA

Telerehabilitation provides a new avenue for providing low vision rehabilitation services that sidesteps many common barriers to in-office care, like transportation and inclement weather. Remote services give providers greater insight into patients' natural environments to support optimal use of magnifying aids and reduce risk of device abandonment. By working with patients in their natural environment, providers have greater opportunities to address the patient's ergonomics (i.e., positioning and lighting) and a wide variety of commonly encountered activities within a natural context. Nevertheless, telerehabilitation brings its own unique challenges to providers, including setting up and positioning the video call, confirming the reading content on training materials, needing caregiver assistance, and patients' emotional dysregulation secondary to technical difficulties.

Incorporating telerehabilitation into a clinical practice without prior experience providing remote treatment can be a daunting task. The advantages and challenges to utilizing telerehabilitation to provide care for patients with low vision will be illuminated from the perspective of an occupational therapist who has conducted telerehabilitation sessions for over 4 years. Strategies to mitigate common challenges with telerehabilitation will also be discussed to support providers in incorporating telerehabilitation into their clinical practice. A case example will be shared to highlight the benefits and treatment outcomes of telerehabilitation for magnification device training.

Telerehabilitation has the potential to progress to the field of vision rehabilitation with a new mode of services. By providing the option for telerehabilitation services, providers can become more accessible to the low vision population and meet the growing demand for vision rehabilitation services.

TELEREHABILITATION FOR LOW VISION: READING OUTCOMES WITH MAGNIFICATION AIDS

PATIENTS' CLOSE ACQUAINTANCES' OBSERVATIONS OF READING CHANGES FOLLOWING MAGNIFIER TRAINING

Nicole Ross
USA

At the time of study enrollment, a similar proportion of participants (39%) preferred telerehabilitation or did not have a preference for either telerehabilitation or in-office training, while a smaller proportion (23%) preferred in-office training. Participants who preferred in- office training tended to be older than those who had no preference for the training modality. Participants who preferred in-office training tended to live alone, had hearing loss or greater perceived stress than those who preferred telerehabilitation. Preferences for the training modality were unrelated to whether they relied on others for transportation, self-reported difficulty with seeing their smartphone, age, educational attainment, cognitive status, visual acuity, or general health. Data will be presented on whether there were changes in participants' preferences for telerehabilitation or in-office training after they received magnification device training via their randomized modality. We also inquired about whether participants' preference for telerehabilitation would change if we did not provide a loaner smartphone with remote control access enabled to allow the study investigator to connect them to the Zoom videoconference session for telerehabilitation. About a quarter of them no longer preferred telerehabilitation without the remote-control access option, indicating the need to provide options to support accessibility to videoconferencing for remote magnification device training for low vision patients.

TELEREHABILITATION FOR LOW VISION: READING OUTCOMES WITH MAGNIFICATION AIDS

COMPARISON OF READING PERFORMANCE TESTS TO PATIENT REPORTED OUTCOMES OF READING

Micaela Gobeille
USA

Reading is the most common chief complaint of patients presenting for a low vision rehabilitation examination. Reading performance is commonly evaluated in low vision clinical practice using a range of clinical reading tests, which may ask patients to read aloud or silently, and may show isolated sentences (e.g., MNREAD and Radner tests), paragraphs (e.g., IReST), or entire pages of continuous text (e.g., Sustained Silent Reading Test (SSRT)). However, little is known about the extent to which reading performance measures align with individuals' self-reported reading ability. Self-reported reading may be influenced by myriad patient characteristics, while variations in testing conditions may bias measured reading performance.

In this analysis, we evaluated self-reported and performance measures of reading in low vision patients enrolled in a randomized clinical trial evaluating telerehabilitation versus in office magnifier training. Participants completed a subset of reading items from the Activity Inventory (AI) to evaluate self-reported reading ability. Person measures were estimated using Rasch analysis for the reading AI including all reading tasks, and for only prolonged reading tasks.

Reading performance measures across participants included maximum reading speed and reading acuity that were evaluated using two tests of out-loud sentence reading (i.e., Radner and MNREAD reading tests), and reading speed for continuous text assessed with two tests (i.e., IReST and SSRT). Simple and multiple linear regressions were used to explore associations between self-reported reading ability and reading speed or acuity as assessed with SSRT, IReST, Radner, and MNREAD.

Self-reported reading ability for all types of near reading tasks and prolonged reading were significantly associated with reading speed. However, other patient characteristics explained additional variance in this relationship. This presentation will discuss nuances in the association between self-reported and measured reading performance, including the influence of patient characteristics and type of reading activity.

NEUROVISUAL REHABILITATION A - PREVALENCE, SCREENING AND ASSESSMENT OF NEUROVISUAL DISORDERS

CVI CLINICAL PRACTICE GUIDELINES AND BARRIERS AND FACILITATION FOR IMPLEMENTATION

Els Ortibus
Belgium

Cerebral visual impairment (CVI) is a brain based disorder with a heterogeneous presentation, going from lower order visual problems, such as acuity and contrast sensitivity over oculomotor problems to higher order visual perceptual deficits, and therefore diagnostic challenges. It is particularly frequent in children born prematurely or having cerebral palsy. CVI is being recognized worldwide as a condition with a tremendous impact on participation and quality of life. However, currently, there is no consensus on how to approach its assessment and diagnosis, based on available evidence. The European Academy for Childhood Onset Disability therefore funded the development of Clinical Practice Guidelines (CPG-CVI). In this talk, I will touch on the main components of these guidelines. It is important to – from infant age onwards – recognize characteristics of CVI and follow-up closely on populations at risk. A multidisciplinary assessment is needed, bringing together information from caregivers, teachers and therapists in addition to a formal assessment by persons, experienced in the assessment of neurodevelopmental disabilities. Also, diagnosis needs to be made based on a comprehensive assessment, taking into account every day life difficulties of the child or adolescent. As CVI is a very diverse condition, recognition of subtle types or in children with a multiple disability might be challenging. Implementation of the guidelines will potentially need facilitators and might encounter barriers in different contexts. The CPG-CVI will not only be able to guide diagnosis but should lead to a better support and habilitation of children and adolescence with the condition.

NEUROVISUAL REHABILITATION A - PREVALENCE, SCREENING AND ASSESSMENT OF NEUROVISUAL DISORDERS

EXTENSIVE ASSESSMENT BEFORE REHABILITATION IN PEOPLE WITH MS – WHAT MAKES SENSE AND WHAT NOT?

Fleur Van Der Feen, Joost Heutink
The Netherlands

People with multiple sclerosis (MS) experience a variety of visual complaints. Examples of such complaints are blurry vision, needing more light or time to see something properly, being blinded by (bright) light, difficulties with depth perception or changes in visual field. These visual complaints have a large impact on daily life and quality of life, further limiting people's independence. It is therefore of utmost importance to provide high quality neurovisual rehabilitation care that is tailored to the needs of people with MS and their visual complaints.

In (neuropsychological) rehabilitation it is often standard to start a programme with extensive assessment of a wide array of functions, to identify out what people's weaknesses are that may be the cause of the complaints or can be focused on to improve, and to see what the strengths are that can be leveraged for compensation strategies. In neurovisual rehabilitation in the Netherlands, visual function tests, visual perception tests and cognitive tests are often performed.

However, the visual complaints that people with MS experience are not well explained by the visual, visual perceptual or cognitive tests. Moreover, these assessments can place a significant burden on people with MS, and it is not always clear how we use the results in the rehabilitation programme. In this talk, we discuss what is meaningful and what is not in functional assessments prior to the rehabilitation of visual complaints in people with MS.

NEUROVISUAL REHABILITATION A - PREVALENCE, SCREENING AND ASSESSMENT OF NEUROVISUAL DISORDERS

ESSENTIAL MINDSET: USING REFLECTIVE PRACTICE TO SUPPORT YOUNG CHILDREN WITH CVI

Kitty Edstrand[1], Andrea Montano[1]
[1]New Mexico School for the Blind & Visually Impaired, Albuquerque, USA

Purpose: This workshop showcases how practitioners from the New Mexico School for the Blind and Visually Impaired (NMSBVI) implemented The CVI Companion Guide and other resources to understand, assess, and address cerebral/cortical visual impairment (CVI) in young children. This session builds on a session from the Vision2023 program to focus on the use of reflective practice in the support of young infants and toddlers with CVI.

Methods: This project sought to document reflective practice within practitioners' approach and work with families and children at risk or diagnosed with CVI in early intervention (birth to 3 in the USA). Reflective practice (self-reflection and reflective supervision) is a recommended practice in early intervention that provides helpful guidance for practitioners in particularly complicated situations, such as working with families of young children with CVI. To better document and understand the role of reflective practice in working with these families, experiential/descriptive data was collected to inform the following:

1. Mindset of reflective practice,
2. Tools/resources consulted specific to the family or child's CVI/developmental needs, and
3. Interventions/supports that are implemented. Additionally, self-reflection questions and experiences that support reflection for, in, and on interactions (Chen et al., 2024) were documented throughout the process.

Results: Individual case studies will be described from beginning intake and assessment, identifying CVI manifestations (as defined in the CVI Companion Guide), and implementing interventions. The case studies will highlight when/how reflective practice contributed to the understanding of CVI and decision-making during this journey. Definitions of reflective practice, examples, questions, and resources will be shared.

Conclusions: The needs of each family are unique and complex, especially when beginning to understand CVI, and practice and interventions look different for each child. For practitioners and families, self-reflection and curiosity about CVI and its manifestations improves outcomes for children and supports positive collaboration between providers and caregivers. Workshop participants will leave this session with strategies for self-reflection, how to use reflective practice in understanding CVI, and interventions that support young children with CVI.

INTRAOCULAR AND EXTRAOCULAR SOLUTIONS FOR LOW VISION

PATIENT SELECTION FOR THE SCHARIOTH MACULAR LENS, DOES A CONTACT SIMULATOR HELP?

Julie Silvestri
United Kingdom

The presentation will focus on the Scharioth Macular Lens (SML) for macular degeneration. A review of the literature will be presented and the results of the MAG-VUE UK Study will be presented. The aims of the MAG-VUE study include:

- Improving patient selection for SML implantation
- Developing a contact lens simulator for the SML so that patients can test the device fully undergoing surgery
- Assessing benefit of the SML in patients with central visual loss in patients with macular atrophy due to inherited retinal dystrophies.

INTRAOCULAR AND EXTRAOCULAR SOLUTIONS FOR LOW VISION

PATIENT SELECTION AND PREDICTING GOOD OUTCOMES FOR INTRAOCULAR MAGNIFYING DEVICES

Paola Sasso
Italy

To report the functional outcomes, patient selection, of cataract surgery with smaller-incision new-generation miniature telescope (SING IMT) implantation followed by a rehabilitation program based on 6 biweekly sessions focused on visual abilities, reading, writing, visual motor integration and mobility in patients with central visual loss due to late-stage age related macular degeneration (AMD).

Reading acuity (RA), reading speed (RS), and fixation stability (FS) were assessed biweekly at 6-, 8-,10-, 12-, 14-, and 16-week follow-up visits after SING IMT implantation and at a final assessment at 24 weeks and Best-corrected distance visual acuity (BCDVA) was also measured. Mean baseline BCDVA was 12.5 ± 8.6 letter score. Both RA and RS were found to be significantly improved from the first rehabilitation session (6 weeks after surgery) to the last session (24 weeks after surgery). At the end of the rehabilitation program, mean RA was 0.45 ± 0.19 LogMAR and mean RS was 30.9 ± 17.6 words per minute. Moreover, all patients achieved a FS of 15 s or more after the last rehabilitation session. Most patients (55%) showed an improvement of 15 letters in BCDVA.

The rehabilitation training can improve visual functions of patients with late-stage AMD implanted with SING IMT in real-world tasks such as reading skills. The collaborative effort of a multidisciplinary team and strict patient selection played crucial roles in achieving successful outcomes.

INTRAOCULAR AND EXTRAOCULAR SOLUTIONS FOR LOW VISION

NAVIGATING THE BUILT ENVIRONMENT – HOW CAN WE HELP?

Laura Cushley
United Kingdom

Dr. Laura Cushley will present findings from the NaviSight Study, which explored how individuals with diabetes, diabetic eye disease, and retinitis pigmentosa navigate built environments. The talk will highlight key challenges faced by participants and discuss practical solutions to enhance accessibility for people with visual impairments in towns and cities. The talk will also include insights from key stakeholders such as town planners and architects, to provide a broader understanding on creating inclusive towns and cities.

UNDERSTANDING BINOCULAR VISION OF PATIENTS WITH MACULAR DISEASE

MECHANISMS AND ALTERATIONS OF BINOCULAR VISION IN AGING AND OCULAR DISEASES

MiYoung Kwon
Northeastern University, Boston, Massachusetts USA

Binocular vision provides significant perceptual advantages, including enhanced contrast sensitivity, visual acuity, depth perception, and overall visual function. These benefits arise from neural mechanisms that integrate inputs from both eyes, improving performance beyond monocular vision. However, aging and ocular diseases such as amblyopia, Age-related Macular Degeneration (AMD), and glaucoma often lead to binocularly asymmetric vision loss, disrupting binocular function. This talk will present our recent work on how binocular function and summation mechanisms are altered in normal aging and ocular diseases, focusing on binocular summation, interocular suppression, and disparity integration. In normal aging, our study of individuals aged 18 to 87 years demonstrated that while both monocular and binocular contrast sensitivity declines significantly with age, binocular contrast summation remains stable and is best explained by a quadratic summation model. These findings suggest that contrast integration is preserved across adulthood despite age-related declines in contrast sensitivity. In amblyopia, we observed spatial-frequency and visual field-dependent binocular imbalance, with suppression strongest at mid-to-high spatial frequencies. Binocular imbalance was also more pronounced in the central 5° visual field compared to the periphery. Understanding these dependencies is essential for designing rehabilitation strategies to enhance binocular integration in amblyopic vision. In AMD, despite binocularly asymmetric vision loss, binocular contrast summation remains intact and follows a quadratic summation model, similar to normal vision. In glaucoma, contrary to the conventional view that early glaucoma spares central vision, we found a widespread loss of binocular disparity sensitivity across both foveal and peripheral regions. However, similar to normal vision, individuals with glaucoma exhibited near- optimal disparity integration, especially at low spatial frequencies, as well as quadratic binocular summation of contrast. These findings suggest that despite significant binocular deficits, cortical binocular integration mechanisms remain well preserved in glaucoma. Taken together, these findings provide critical insights into how aging and ocular diseases alter binocular function, highlighting the importance of assessing both monocular and binocular vision rather than relying solely on the better-seeing eye. Characterizing these changes is crucial for advancing clinical assessments and developing targeted interventions to improve functional vision outcomes.

UNDERSTANDING BINOCULAR VISION OF PATIENTS WITH MACULAR DISEASE

VISION TRAINING FOR PATIENTS WITH BINOCULAR INHIBITION

Valeria Silvestri
Italy

The presentation will aim at reporting the results of a new biofeedback rehabilitation method for patients with binocular reading inhibition due to central vision loss. In particular, the biofeedback was aimed at improving fixation stability and at establishing a correspondence between the monocular preferred retinal loci (PRLs) on functioning retina in both eyes of visually impaired. Methodology and results will be elucidated.

UNDERSTANDING BINOCULAR VISION OF PATIENTS WITH MACULAR DISEASE

IMPLICATIONS OF SCOTOMA OVERLAP IN THE TWO EYES IN MACULAR DEGENERATION

Preeti Verghese
The Smith Kettlewell Eye Research Institute, San Francisco, CA, USA

Individuals with macular degeneration typically lose vision in the central region of one or both eyes. A binocular scotoma occurs when vision loss occurs in overlapping locations in both eyes, but stereopsis is impacted even in the non-overlapping region wherever the visual field in either eye is affected. This talk will describe how measurement of stereopsis at locations across the visual field (stereoperimetry) can map out the stereo scotoma, as well as residual stereopsis in peripheral regions outside the scotoma in either eye. Our results show that the stereoblind region was typically more extensive than the binocular scotoma defined by the intersection (overlap) of the scotomata. In the case of individuals with a scotoma in only one eye, the binocular visual field may be intact but functional vision for tasks that benefit from stereopsis, such as eye–hand coordination and navigation may be severely compromised.

The talk will also briefly describe the translation of this laboratory test for stereoperimetry to a virtual-reality (VR) headset that can be used in the clinic. I will also briefly describe VR tasks that can assess hand-eye coordination and navigation around obstacles in immersive indoor settings. These assessment tools have the potential to map out regions with intact stereopsis in the periphery and provide training to use peripheral stereopsis for tasks of daily living.

FUNCTIONALITY AND USABILITY OF ASSISTIVE TECHNOLOGY FOR PEOPLE WITH VISION IMPAIRMENT

THE FUNCTIONALITY AND USABILITY OF HEAD-MOUNTED DISPLAYS (HMDS)

Michael Crossland
United Kingdom

Head mounted displays to augment vision for people with vision impairment have been developed for nearly 30 years, but they are still not widely used. In this presentation I will review qualitative and quantitative research describing the benefits of these systems, as well as the considerable barriers to their use. I will discuss emerging technology, especially the use of 'mainstream' wearable devices by people with vision impairment. Finally I will outline the outstanding questions in this important and fast-moving area of low vision research.

FUNCTIONALITY AND USABILITY OF ASSISTIVE TECHNOLOGY FOR PEOPLE WITH VISION IMPAIRMENT

FUNCTIONALITY AND USABILITY OF ARTIFICIAL INTELLIGENCE (A.I.) APPS AND DEVICES

William Seiple
USA

In my presentation, I will discuss recent findings on the functionality, usability, and acceptance of AI applications among people with vision loss (PVL). In an initial study, we compared reading outcomes and performance of ADL when using OrCam, Envision glasses, Seeing AI, and Google Lookout. The odds ratios (OR) of completing text tasks were significantly higher than baseline when using all AI implementations. When performing ADL tasks, performance improved only on a few tasks. Participants, however, expressed high satisfaction with all implementations. A second study compared handheld and head-worn AI applications (smartphone-based and ARx) that both utilize Seeing AI, as well as between two head-worn AI devices (ARx and Ray-Ban Meta glasses), which employ different AI algorithms. The OR of completing tasks were significantly higher for 80% of the Text tasks when using Seeing AI on the ARx AI headset and for all tasks when using Seeing AI on a smartphone and Ray-Ban Meta glasses. For ADL tasks, all implementations resulted in significantly higher OR of completing the tasks relative to the baseline, with Meta glasses completing many tasks faster than the other two. Participants expressed high usability for all implementations but preferred Seeing AI on a handheld app. There were no differences in perceived usability.

All AI processed the text efficiently, but initially, their impact on ADL tasks was minimal. Within a brief period, rapid advancements in AI technology enabled significant improvements in ADL performance. The fast pace of technological advancements raises questions about how visual rehabilitation should respond. Should we continue to strive to instruct PVL to utilize their remaining sensory capabilities to access environmental information, albeit with great difficulty and low efficiency (Seiple, 2011; Rubin, 2024), or should we focus on training PVL to become expert users and knowledgeable about the limitations of AI?

FUNCTIONALITY AND USABILITY OF ASSISTIVE TECHNOLOGY FOR PEOPLE WITH VISION IMPAIRMENT

THE USABILITY AND COST-EFFECTIVENESS OF A BLENDED EHEALTH INTERVENTION TO REDUCE FATIGUE IN ADULTS WITH VISION IMPAIRMENT

Manon Veldman
The Netherlands

The E-nergEYEze intervention in an E-health intervention to reduce severe fatigue in individuals with visual impairment. This internet-based intervention is based on cognitive behavioral therapy (iCBT) and self-management (iSM), employing a focused strategy to encourage patients to change beliefs and behaviors, which are thought to perpetuate fatigue. It was developed with patients and professionals to ensure an E-health intervention tailored to the needs of adults with visual impairment. The remote aspect of the E-nergEYEze intervention enables participants to commence their participation using any preferred technical device (i.e., computer, tablet, smartphone), accommodating their own time schedule, and from any desired location. Usability and feasibility of the E-nergEYEze intervention was carefully considered, as it needed to be ensured that the intervention was inclusive for individuals with visual impairment and appropriate for all ages. The developmental and pilot testing phase was carried out using a user-centered and iterative approach, which contributed to optimizing the accessibility and potential effectiveness of the prototype. Our user-experiences underlined the potential of E-nergEYEze to reduce fatigue severity in adults with visual impairment.

Subsequently, a randomized controlled trial was performed with a reduction of fatigue severity in adults with visual impairment who followed the E-nergEYEze intervention compared to care as usual. It also showed a reduced impact of fatigue on daily life and reduced symptoms of depression, anxiety and sleeping problems. From a societal and healthcare perspective, the intervention was not likely to be cost-effective with regard to QALYs gained. Whether results on cost-effectiveness can be considered beneficial regarding one unit of fatigue reduction depends on societal's willingness to pay. Additionally, this longitudinal study examined the working mechanisms of the fatigue-reducing effect of the E-nergEYEze intervention up to 12 months follow-up. Changes in fatigue-related beliefs and perceived activity level mediated the treatment effect of an iCBT and iSM intervention in adults with visual impairment. A specific focus on changing cognitions about fatigue regarding self-efficacy and fatigue catastrophizing, as CBT specific mediators, is warranted in future interventions to treat fatigue.

SELECTED TOPICS IN CONGENITAL AND EARLY-ONSET DEAFBLINDNESS

AN ENVIRONMENTAL SCAN: CHALLENGES AND GAPS IN CANADA'S HEALTHCARE SYSTEM REGARDING VISION AND HEARING HEALTH

Karen Keyes
Canada

Introduction: The World Federation of the Deafblind Global Report 2023 reports that many countries do not have a comprehensive identification, assessment, and referral system for persons with deafblindness, a combination of hearing and vision loss, across all age groups and geographic regions. The scan seeks to inform researchers, policymakers, and community- based organizations about the status of and gaps in sensory healthcare initiatives in Canada, with the intent to raise awareness to enhance the integration and coordination of eye and ear care services.

Methods: We conducted an environmental scan of Canada's healthcare system and current public health policies addressing vision and hearing care in Canada at the federal and provincial levels. The scan was conducted using published literature searches from five scientific databases—Embase, Medline, PsycINFO, PubMed, and CINAHL—in combination with the gray literature review of federal, provincial, and territorial governments and non-profit organizations' websites from April 2011–October 2022. Out of 1257 articles screened, 86 studies were included that met the inclusion/exclusion criteria. In total, 13 reports were included in the gray literature search, with 99 total articles used in the analysis.

Results: The thematic findings indicate stigma and discrimination toward individuals with disabilities and marginalized communities (Indigenous people, rural communities, recent immigrants, people of older age, and people with disabilities), including hearing, vision, or dual sensory loss, persist. Barriers to vision and hearing healthcare access include inadequate policies, underinvestment in vision and/or hearing services, limited collaboration and coordinated services between hearing and vision services, discrepancies in insurance coverages, and lack of health system support.

Conclusion: This scan demonstrates the persisting barriers to vision and/or hearing services present in Canada, stemming from inadequate policy and limited service coordination. Future work to address gaps, evaluate public education, and develop integrated sensory healthcare initiatives to enhance coordinated eye and ear care services, as recommended in the WHO Report on Hearing and Vision, is imperative.

SELECTED TOPICS IN CONGENITAL AND EARLY-ONSET DEAFBLINDNESS

VALIDATION OF THE LIFE ADJUSTMENT MODEL AS A PSYCHO-EDUCATIVE GROUP INTERVENTION

Moa Wahlqvist
Sweden

Deafblindness is as a combined vision- and hearing impairment of such severity that it is difficult for the impaired senses to compensate for each other. Deafblindness can be present from birth or acquired later in life. For some the deafblindness has a progressive course which means that there will be reoccurring need for adjustment to new situations during life. There is a great variety of deafblindness, but common challenges involve access to information, restrictions in communication and the ability to move around independently. Poor health outcomes and risk of isolation has been reported. Hence, deafblindness affects many aspects of everyday life and the need for support if often individual and lifelong.

In this small-scale project the aim was to develop a procedure to evaluate the psycho-educative intervention "Life adjustment model" as a group intervention for adults with deafblindness. Health care specialized rehabilitation teams provide the life adjustment model to persons with deafblindness in Sweden, in group settings and individually. However, the effectiveness of the intervention remains unknown in research.

A structured manual based on previous literature on the life adjustment model was developed. Two health care specialized rehabilitation teams that were to give the life adjustment model as a group intervention were introduced to the manual. The moderators of the group intervention invited participants with deafblindness and shared information about the research project.

The participants who wanted to take part of the project were provided with information about the project and what participation would include. Data collection by interviews and questionnaires were conducted before, after and at three months follow up of the intervention.

Preliminary results indicate that the participants were curious and positive before the intervention and eager to take part of the other participants experiences. After the intervention the experience was positive in what they had gained in terms of understanding of their situation and about themselves.

Conclusions so far is that the life adjustment model as a psycho-educative intervention is useful for persons with deafblindness and that taking part of experiences of others adds to the own understanding of what it means to live with deafblindness.

SELECTED TOPICS IN CONGENITAL AND EARLY-ONSET DEAFBLINDNESS

COMPARING EDUCATION PATHWAYS FOR DEAFBLIND CHILDREN IN THE GLOBAL SOUTH AND GLOBAL NORTH

Walter Wittich
Canada

Deafblindness is a unique disability that is under-researched and therefore poorly understood by professionals, policy makers, and the wider public. There are urgent calls for more robust research evidence to inform policy and practice, and for greater international and interdisciplinary collaborations to advance the rights and inclusion of people living with deafblindness. Most research about deafblindness to date comes from high-income countries and we urgently need more research to represent the situation of persons with deafblindness in regions with low resource availability, to better understand how the impairment interacts with multiple contextual factors, such as poverty and social inequality. The aim of this study was to provide a tangible contribution towards the achievement of the international community's agreed Sustainable Development Goals, including SDG3 (Good Health and Wellbeing), SDG4 (Quality Education) and SDG10 (Reduced Inequalities). In this presentation, we report on the experiences of adults with congenital or early-onset deafblindness living in countries with low resource availability in relation to education, employment, and other support systems, matched and compared to the experiences of individuals from high-resource regions. First, we conducted semi-structured online interviews with participants and their communication supports from countries including the Democratic Republic of Congo, Colombia and India, eliciting their views about barriers to and facilitators of their participation. We then recruited individuals from high-resourced regions, and matched them on age, biological sex, and diagnostic category, as well as principal receptive and expressive communication modalities. The resulting comparisons highlight low-cost solutions that are efficient and effective in low-resource environments and that are beneficial for individuals with deafblindness. Comparisons provide key initial findings on solutions from high-resource environments that could be prioritized in poorer countries, and low-cost solutions that could be adopted in high-resource nations. We reflect on lessons learned about the experience of being deafblind and growing up across different environments from the perspective of those with lived experience of the condition.

NEUROVISUAL REHABILITATION B - REHABILITATION OF VISUAL DISORDERS AFTER ACQUIRED BRAIN DISEASE

ADAPTIVE MONOCULAR FILTERING: A FORGOTTEN PARADIGM IN NEUROVISUAL REHABILITATION

Jan Koopman
The Netherlands

Background: Monocular filtering is a simple, low-cost intervention that can reduce visual complaints in selected neurovisual conditions. Despite its long history, the approach is rarely applied in current practice.

Purpose: To illustrate the pragmatic value of monocular filtering in two distinct conditions - Pulfrich phenomenon and binocular suppression/diplopia - supported by patient experiences.

Methods: Two clinical scenarios were documented using short patient video testimonials. In Pulfrich phenomenon, patients experienced distorted motion trajectories; in suppression or intractable diplopia, text instability and rivalry impaired reading. Fitting was performed with clip-on neutral density filters, titrated to comfort and function. Observational cohort data (n≈90) will briefly be referenced for context.

Results: Patients reported immediate improvements: curved trajectories normalised with filtering in Pulfrich cases, or suppression. Functional benefits included safer mobility, improved reading comfort, and reduced visual strain. Side-effects were rare, mainly reduced acuity in dim light.

Conclusions: Adaptive monocular filtering represents a forgotten but valuable paradigm in neurovisual rehabilitation. Patient testimonies demonstrate rapid, meaningful relief. The method is pragmatic, reversible, and highly relevant for daily practice, warranting renewed clinical awareness.

NEUROVISUAL REHABILITATION B - REHABILITATION OF VISUAL DISORDERS AFTER ACQUIRED BRAIN DISEASE

THE EFFECTS OF NEUROVISUAL REHABILITATION ON DAILY ACTIVITIES AND QUALITY OF LIFE - RESULTS OF ONGOING RESEARCH WITH PREMS AND PROMS AT ROYAL DUTCH VISIO

Joost Heutink
The Netherlands

Introduction: For more than two decades, Dutch individuals with visual problems caused by acquired brain diseases have benefited from neurovisual rehabilitation. Initially, these services focused on assessing and rehabilitating rare visual impairments caused by stroke, primarily in the northern regions of the Netherlands. Today, the Neurovisual Rehabilitation program at Royal Dutch Visio assists thousands of people nationwide, addressing various forms of brain injury that affect multiple aspects of daily life, including mobility, reading, and computer use. Recently, specific patient-reported experience measures (PREMs) and patient-reported outcome measures (PROMs) have been developed to monitor the effectiveness of neurovisual rehabilitation and to refine and tailor the care provided. This presentation will discuss the findings from these PREMs and PROMs questionnaires.

Method: The PREMs and PROMs questionnaires are distributed via email at predetermined intervals and are completed by patients and/or their caregivers. The PROMs questionnaire includes 32 questions categorized into five sections: (1) severity of visual impairment, (2) perceived impact on daily activities and self-care, (3) independent mobility and participation in traffic, (4) consequences of visual impairment, and (5) quality of life.

Results and Conclusions: Approximately 3,000 PREMs and PROMs questionnaires are sent out per year, with a response rate of 20-25%. The results indicate that neurovisual rehabilitation significantly enhances participation and quality of life for individuals with visual impairments after acquired brain disease across multiple aetiologies and domains.

USING YOUR VISUAL IMPAIRED EYE BETTER: STRATEGIES FOR CORRECT VISUAL REHABILITATION

KEYNOTE LECTURE: CLINICAL PEARLS FOR SUCCESSFUL LOW VISION REHABILITATION

Donald C. Fletcher
Wichita, Kansas, USA

It is impossible to care for over 35,000 low vision patients without learning a few useful pearls along the way! Both clinical experience and involvement in research has taught that assumptions constantly need to be challenged. Believing that we do not need to keep watching, learning and improving our treatment skills is the first dangerous assumption to avoid. A wise man learns from his mistakes, the wiser man learns from the mistakes of others. Low Vision Rehabilitation is still a relatively young field but it already has some well engrained assumptions that need to be challenged.

USING YOUR VISUAL IMPAIRED EYE BETTER: STRATEGIES FOR CORRECT VISUAL REHABILITATION

HARNESSING NEUROPLASTICITY FOR VISION REHABILITATION

Ben Thompson
Canada

During childhood when the brain is rapidly developing and neuroplasticity is high, changes in the visual environment can induce structural and functional alterations within visual brain areas. As the brain matures, neuroplasticity decreases and the neural systems that support visual processing consolidate. Reduced neuroplasticity within the mature brain is a barrier to the development of rehabilitation strategies that aim to optimize cortical processing of visual information in adult patients. Examples of such rehabilitation strategies include protocols for the treatment of amblyopia in adulthood and interventions that aim to reduce crowding, a difficulty in differentiating adjacent objects, in patients with central vision loss who rely on peripheral vision. This presentation will summarize recent research on interventions designed to enhance or harness human visual cortex neuroplasticity that have been applied to adult patients with amblyopia or macular degeneration. Such interventions include non-invasive stimulation of the visual cortex and physical exercise.

USING YOUR VISUAL IMPAIRED EYE BETTER: STRATEGIES FOR CORRECT VISUAL REHABILITATION

TRAINING INDIVIDUALS WITH LOW VISION TO SEE BETTER: FROM THE EYES OF A PARTICIPANT

Susana Chung
USA

Research suggests that perceptual learning or training can enhance visual performance, even for individuals with low vision. However, the repetitive nature of such training can lead to frustration and fatigue. How do participants feel as they progress through the training process? In this talk, I will share insights from a journal kept by an older adult ('B') with age-related macular degeneration who took part in a perceptual learning study in my lab. B documented his daily experiences with the training process, detailing his initial frustrations and the growing excitement as he discovered he was able to see things more clearly. His written reflections will be presented alongside objective measurements of his visual performance, offering a unique perspective on both the subjective and measurable effects of perceptual training.

USING YOUR VISUAL IMPAIRED EYE BETTER: STRATEGIES FOR CORRECT VISUAL REHABILITATION

ASSISTIVE DEVICES FOR INDIVIDUALS WITH LOW VISION

Alexis Malkin
USA

People with vision impairment utilize a variety of strategies to maximize their visual function. These strategies can include the use of traditional optical devices such as glasses and magnifiers but it increasingly involves the use of assistive technology such as smartphones or tablets. Both iOS and Android based systems have integrated accessibility tools for people over the range of vision impairment. There are also many apps available that can improve people's overall visual function. We will discuss current technologies as well as the evidence for the effectiveness of integrating these tools.

USING YOUR VISUAL IMPAIRED EYE BETTER: STRATEGIES FOR CORRECT VISUAL REHABILITATION

BIOFEEDBACK TRAINING FOR INDIVIDUALS WITH LOW VISION

Monica Nido
Canada

Biofeedback training is a modernLow Vision Rehabilitation Technique that develops brain plasticity utilizing audiovisual stimuli on the microperimeter or other devices related to the eye movements providing biofeedback to the patient. Training the oculomotor control relating it to the sound and light makes it possible for the brain to reach the best retinal sensitivity areas on the retina in the residual visual fields and use them for fixation.

This presentation will review the literature in biofeedback training and present the results from the research developed at the University of Toronto in Canada with biofeedback training for various eye conditions, including hemianopia, nystagmus, glaucoma, and development of binocularity utilizing this therapy.

USING YOUR VISUAL IMPAIRED EYE BETTER: STRATEGIES FOR CORRECT VISUAL REHABILITATION

LOW VISION REHABILITATION SERVICES IN LOW- AND MIDDLE-INCOME COUNTRIES IN THE POST- COVID ERA

Ahalya Subramanian, Vijaya Kumari Gothwal, Ekeoma Adure Edemeraro, Allen Ming Yan Cheong, Rasha S. Moustafa, Deborah Bott
United Kingdom

Vision impairment (VI) significantly impacts daily functioning, with the majority of affected individuals residing in low- and middle-income countries (LMICs). Low vision rehabilitation (LVR) services aim to mitigate the impact of VI through various approaches, including the provision of low vision devices (LVDs) and comprehensive services such as training in daily living activities and IT use. Despite improvements, access to LVR services remains limited, particularly in LMICs.

This study provides an updated overview of LVR services in LMICs, focusing on progress and future improvements. A cross-sectional survey was conducted between July 2023 and January 2024, gathering data from 263 valid responses across 57 countries. The findings indicate a shift towards providing LVR services in public and private hospitals rather than relying predominantly on NGOs. Comprehensive LVR services, including orientation and mobility training and IT support, have improved across all regions. However, funding remains largely private, with limited government support.

The number of professionals with LV qualifications has increased, enhancing service availability. Nevertheless, barriers to using LVDs persist, including cost, difficulty of use, fear of job loss, and stigma. Addressing these barriers through awareness campaigns and strategies to increase accessibility and cost-effectiveness is crucial.

In addition to the survey, we will conduct one to one semi-structured interviews with relevant stakeholders to gain deeper insights into the challenges and opportunities in LVR services. The results of these interviews will be presented alongside the survey findings to provide a comprehensive understanding of the current state and future directions for LVR services in LMICs

IMPROVING PERCEPTION: NEUROCOGNITIVE DYNAMICS OF VISUAL IMPAIRMENT AND RELATED NEUROMODULATION

KEYNOTE LECTURE: READING DISORDERS DUE TO LESIONS ALONG THE VISUAL PATHWAY

Susanne Trauzettel-Klosinsky
Germany

Lesions along the visual pathways cause various visual field defects, which involve reading in different ways. Sensory preconditions for reading are a sufficient resolution of the retinal area used for reading and a sufficient size of the perceptual span during one fixation. In central scotoma, the insufficient resolution of an eccentric retinal fixation locus can be compensated by magnification. Stability of fixation can be improved by perceptual learning. Additional specific reading training can further improve reading performance. The hemianopic reading disorder is caused by a limited perceptual span, which can be improved by specific training techniques. Evidence-based training methods, which consider sensory and motor aspects, are presented and their indications are discussed.

IMPROVING PERCEPTION: NEUROCOGNITIVE DYNAMICS OF VISUAL IMPAIRMENT AND RELATED NEUROMODULATION

VISUAL IMPAIRMENT DUE TO STROKE

Fiona Rowe
University of Liverpool, United Kingdom

Visual impairment is common as a consequence of stroke, with an incidence of about 60%. Typically, visual impairment is categorised into impaired central vision, peripheral visual loss, eye movement disorders and visual perceptual disorders. This presentation will overview the types of visual impairment that may occur because of ischaemic or haemorrhagic stroke, and risks factors for developing visual impairment. Visual impairment after stroke is often not diagnosed or is mis diagnosed, and is considered a hidden disability. The importance, options and timing for visual screening and assessment in acute care settings will be reviewed.

IMPROVING PERCEPTION: NEUROCOGNITIVE DYNAMICS OF VISUAL IMPAIRMENT AND RELATED NEUROMODULATION

EFFECTS OF VISUAL IMPAIRMENT ON NEUROPLASTIC CHANGES IN THE VISUAL CORTEX

Antony B. Morland
United Kingdom

The primary visual cortex comprises a retinotopic map. A question that has received considerable attention is what happens to the map when the retina or connections from the retina to the brain are atypical because of disease or dysfunction. In this talk I will present our work that addresses this question by using MRI techniques to assess the functional and structural properties of the visual cortex in different congenital and acquired visual deficits that act principally on the anterior visual pathway. I will review our functional imaging studies in the context of whether, and to what extent, the map of the retina in primary visual cortex exhibits plasticity. I will then show how our anatomical assessments of the brain can reveal how visual deficits are associated with changes in the structure of the visual cortex and regions outside the visual pathway. In general, we have found that the functionally defined visual maps do not exhibit large-scale remapping of an altered visual input. However, those regions of the visual cortex deprived of input can show changes, which point to atrophy in those with visual loss resulting from an acquired visual deficit such as age-related macular degeneration. The implications of atrophy for visual restoration are unknown, but could explain some of the limitations of visual restoration following long periods of visual loss that have been reported in the literature.

IMPROVING PERCEPTION: NEUROCOGNITIVE DYNAMICS OF VISUAL IMPAIRMENT AND RELATED NEUROMODULATION

CORTICAL ACETYLCHOLINE RELEASE DURING VISUAL EXPERIENCE

Elvire Vaucher
School of Optometry, Université de Montréal, Montréal, Canada

Introduction: The cholinergic system is a potent neuromodulatory system which plays a critical role in cortical plasticity, attention and learning. Recently, it was found that boosting this system during perceptual learning robustly enhances sensory perception in rodents and human. Different studies have shown that pharmacological enhancement of the cholinergic system with inhibitors of acetylcholine esterase paired with visual training increased visual learning in the mice and human. It also facilitates restoration of visual capacities in rodents following a visual deficit. The mechanisms of cholinergic enhancement are closely linked to attentional processes, long-term potentiation and modulation of the excitatory/inhibitory balance. However, dynamics of acetylcholine (ACh) release during visual experience and visual deficit remains to be defined.

Objective: Spatial and temporal ACh release was measured by mesoscopic imaging in head fixed awake mice during standard visual stimulation or vision-guided behavior in healthy and visually deficient mice.

Methods: Cholinergic activity in AAV-delivered gACh-3.0 awake mice was measured using wide-field mesoscopic imaging. Two gaming monitors displayed either a sinusoidal grating, Random Dot Kinematogram, or a Unity-generated VR sequence in motion. ACh release (ΔF/F, %) was measured in 10 various areas, including V1. ACh release was also followed in a model of macular degeneration.

Results: During visual experience, visual areas showed activation up to 60% in V1 for ACh release with regional specificity. VR triggered significant ACh release across visual, motor, sensorimotor, and associative areas at different time points.

Conclusion: ACh release was evoked throughout the cortical mantle by dynamic visual experience, whereas it was more limited to the visual areas in response to standard visual stimuli. This suggests an important role of ACh in visual perception which will be compared to the effect of ACh potentiation on augmentation of visual capacities in human. Potential therapeutic outcomes ought to facilitate vision restoration with commercially available cholinergic agents combined with visual stimulation in order to prevent irreversible vision loss in patients.

.

IMPROVING PERCEPTION: NEUROCOGNITIVE DYNAMICS OF VISUAL IMPAIRMENT AND RELATED NEUROMODULATION

BODY-RELATED COGNITIVE EFFECTS OF LOW VISION

Silvio Ionta
Switzerland

Cognitive processing related to our body is dynamically influenced by alterations of sensory inputs. This talk examines the impact of manipulating visual inputs on body-related cognition and neural activity. Degraded visual inputs can result in increased influence of anatomical joint constraints in body-related cognitive processing, indicating a shift from visual to sensorimotor mental strategies. In addition, brain activation patterns reveal that the same body-related cognitive processing, but based on different sensory modalities, is associated with modality-specific neural activity. These observations underscore the adaptability of body-related cognitive processing, with the relative importance of visual and somatosensory inputs varying according to sensory availability. Collectively, these insights demonstrate that sensory input modulates both the behavioral and neural aspects of body-related cognitive processing. Understanding these dynamics is crucial for enhancing the evaluation of body representation in the context of low vision.

IMPROVING PERCEPTION: NEUROCOGNITIVE DYNAMICS OF VISUAL IMPAIRMENT AND RELATED NEUROMODULATION

VISUAL CORTICAL ACTIVITY IN CHARLES BONNET SYNDROME

Katrina Da Silva Morgan
United Kingdom

Visual hallucinations in individuals following sight loss (Charles Bonnet Syndrome; CBS) are believed to arise due to spontaneous, compensatory, neural activity in the visual cortex following the loss of sensory input from the eyes – known as deafferentation. Despite impacting up to 50% of people with sight loss, with approximately one-third of those affected reporting their hallucinations as distressing or disruptive to their daily lives, understanding of what leads to visual hallucinations forming and how to treat them is still lacking.

Our research utilised multi-modal neurophysiological techniques, including neuroimaging and electrophysiology, to investigate cortical activity in 19 people with CBS compared to 18 people with eye disease who did not experience visual hallucinations. Sixteen CBS participants also took part in a placebo-controlled crossover treatment trial, looking at the effect of repeated inhibitory transcranial direct current stimulation (tDCS) of the primary visual cortex on participant ratings of visual hallucinations.

A pattern of altered cortical activity was noted in people with CBS compared to those without. People with CBS demonstrated reduced visual cortical reactivity in response to eye movements and eye closure observed on both fMRI and EEG, alongside cortical slowing, consistent with altered visual cortical excitability. These alterations were also found to be most pronounced in individuals experiencing complex visual hallucinations compared to non-hallucinating eye disease participants.

Inhibitory stimulation of the early visual cortex, using tDCS, across four consecutive days was also found to result in a significant reduction in visual hallucination frequency when compared to placebo stimulation; with participants demonstrating greater resting state occipital activity prior to treatment found to be more likely to report a positive treatment response.

Our findings provide support for the role of increased visual cortical excitability in the formation of visual hallucinations following sight loss, consistent with the deafferentation hypothesis. Furthermore, we present evidence indicating that inhibitory tDCS of the visual cortex may provide therapeutic benefits to people with CBS presenting a feasible, novel intervention for CBS warranting larger scale clinical trials.

IMPROVING PERCEPTION: NEUROCOGNITIVE DYNAMICS OF VISUAL IMPAIRMENT AND RELATED NEUROMODULATION

CREATIVE INTERVENTIONS FOR CEREBRAL VISUAL IMPAIRMENT

Els Ortibus
Belgium

Cerebral Visual Impairment (CVI) is the most frequent cause of blind certificates in the developed world and increases steadily in children born in low and middle income countries. CVI-related vision problems are heterogeneous and prevalent in many conditions. However, targeted assessment and (re)habilitation, especially for young children, is lacking. The latter, moreover, is understudied as to its effectiveness. I will first cover the scientific process of developing evidence-based gamified applications for rehabilitation in children with CVI: First, an informant-led design, including focus groups with relevant stakeholders implementing a participation-via-proxy and brainstorming sessions, was performed. This resulted in four mini-games, targeting six visuoperceptual skills commonly impaired in children with CVI: (1) visual discrimination and matching, (2) object or picture recognition, (3) visual spatial perception, (4) figure-ground perception, (5) motion perception, and (6) visual short-term memory. Therapeutic game content (selecting, manipulating, and rating images; defining entry-level difficulty and in-game adaptivity rules) was evaluated by clinical and research experts. Finally, formative testing and expert feedback, including usability and user experience by clinicians, researchers, and typically developing children, resulted in final modifications in the mini-games. Second, I will give a demonstration of the IVISION games (KU Leuven and VUB, Belgium) and other game-based interventions and next, discuss the effectiveness of the IVISION games. For the latter, seventy-three children with CVI (3–12 performance age) were randomised into an adaptive individualised or the non-adaptive non-individualised group (3 sessions/week of 20 minutes, for 12 weeks). Primary outcome was change score (post-intervention – pre-intervention) of the lowest VP dimension. Both groups significantly improved on the primary outcome, maintaining at short-term. Between-group differences were not significant. Exploratory analyses revealed VP dimension improvements and clinically meaningful HRQOL improvements. Lastly, strategies for further implementation and improvement will be discussed, related to the European funded VIPPSTAR project.

READING WITH LOW VISION

ASSESSMENT OF NEWLY DESIGNED FONTS FOR VISUAL ACCESSIBILITY

Gordon E. Legge[1], Yingzi Xiong[2], Qingying Gao[2,3], Rachel Gage[1] and Taylor Knickel[1]

[1]Department of Psychology, University of Minnesota, USA; [2]Wilmer Eye Institute, Johns Hopkins University, USA; [3]Department of Computer Science, Johns Hopkins University, USA

Purpose: One goal of typeface design may be to enhance text accessibility for particular groups such as seniors or those with low vision. We were asked by a type-face design company (Monotype) and their client (Circle K) to evaluate the visual accessibility of a new font intended for commercial use. We refer to the new font as CK.

Method: We used our previous approach for comparing fonts designed specifically for people with macular degeneration to mainstream fonts (Xiong et al., IOVS, 2018). We compared the new font CK (regular and bold versions) to Courier, Frutiger, and Gotham. 22 normally sighted adults (mean age 21.1 years) were tested with a computerized version of MNREAD in two conditions: normal viewing, and text digitally filtered to simulate low-vision acuity of 20/80 (6/24).

Participants read aloud sentences (60 characters) across a range of print sizes as quickly and accurately as possible. Reading speed was calculated for each sentence and plotted as a function of print size. These plots yielded three summary measures of reading performance: reading acuity, critical print size, and maximum reading speed. Participants provided preference rankings for the fonts. We also used two state-of-the-art Optical Character Recognition models (OCR) to assess the legibility of the fonts. These models have recently been shown to closely parallel human performance for reading acuity across a range of simulated low-vision conditions (Gao et al., ARVO, 2024).

Results: CK compared well in reading acuity and critical print size with Courier, the best of the other fonts, but the differences were small (< 0.2 logMAR). Relevant to the commercial use of CK, a 0.1 or more logMAR advantage in acuity corresponds to at least a 20% difference in legible viewing distance. There were no significant differences in maximum reading speed across fonts. CK and Gotham topped the preference rankings.

Conclusions: CK exhibited good visual accessibility, comparing well with other fonts for reading small print in both normal and low-vision conditions. CK also received high preference rankings. Our study has demonstrated a method for evaluating the visual accessibility of newly designed typefaces.

READING WITH LOW VISION

READING MAGNIFIED NEWSPAPERS VERSUS NEWSPAPERS MAGNIFICATION: A NEW METHOD TO ADDRESS THE LOCAL/GLOBAL NAVIGATION PROBLEM ON DIGITAL DEVICES

Sebastian Gallardo, Aurélie Calabrèse, Monica Di Meo, Frédérique Lagniez, Christine Morfin-Bourlat, Stéphanie Baillif, Hui-Yin Wu, Dorian Mazauric, Pierre Kornprobst
France

Several simple yet effective customizations have been designed to enhance digital reading for low-vision individuals, such as text magnification, spacing adjustments, font changes, and contrast modifications. These features are well-documented in the literature and have proven highly beneficial for reading linear documents. However, navigating complex documents, such as newspapers, poses additional difficulties due to their different layouts and dense formatting; readers must not only access specific content but also understand their position within the page at any moment.

To address this issue, we proposed an approach that magnifies layout-based documents while preserving key entry points - such as headlines - to facilitate skimming and navigation. Specifically, we implement a solution that (1) magnifies the font size using a personalized magnification factor based on the reader's critical print size (CPS; determined with the MNREAD test), and then (2) generates a new layout that optimizes the number of lines required to write all headlines with this magnification factor by redistributing the position and dimensions of each article. This is, in fact, a novel variant of a 2D packing problem that we were able to solve using methods coming from genetic algorithms and combinatorial optimization.

In this talk, we will present findings from a user study comparing our approach with a conventional touch-based experience, where participants use standard gestures (pinch-to-zoom and pan) to navigate digital newspaper pages. In this experiment, we ask normally-sighted and low-vision participants to (1) read aloud newspaper pages and (2) find a specific article indicated by a keyword. During six trials with different newspaper pages, we recorded their voices and interactions to measure their performances in both conditions, together with their post-experiment feedback using NASA TLX-based questionnaire.

By comparing performance between the two conditions (standard touch-based versus our method) in two populations (low vision and normal vision), we aim to provide valuable insights into how low-vision individuals interact with each type of presentation. Our discussion will highlight the benefits and limitations of both approaches and offer perspectives on improving accessibility for digital newspapers and similar structured documents.

READING WITH LOW VISION

READING WITH LOW VISION: VISUAL ACUITY, PRINT SIZE AND MAGNIFICATION

Susana Chung
USA

Reading is often slow and challenging for individuals with low vision, making it one of the most common complaints in low vision clinics. The standard approach to addressing this issue is magnification. The principle of magnification is to provide a larger retinal image of the text to the readers. However, how much magnification do low vision readers prefer, and does their preferred print size depend on visual acuity? In a recent study, we measured passage reading performance in a group of low vision participants by digitally enlarging text on a display. Participants sat at arm's length from the display. Before testing, participants selected their preferred print size, and throughout the experiment, their viewing distance was continuously monitored to account for variations in retinal image size of the text. Our findings revealed that preferred print size (measured in degrees of visual angle) strongly predicted reading speed: when the preferred angular print size doubled, reading speed decreased by approximately 30%. Additionally, preferred angular print size was highly correlated with the better-eye acuity of participants: doubling in logMAR acuity resulted in a doubling of preferred angular print size. More importantly, these relationships held true for both English and Chinese readers, suggesting that the connection between visual acuity, magnification, print size, and reading speed may be universal across languages.

READING WITH LOW VISION

INFLUENCE OF THE LINGUISTIC WORD FEATURES WHEN READING WITH A CENTRAL SCOTOMA

Eole Lapeyre
France

Central field loss significantly affects reading ability due to the combined influence of visual and linguistic factors. While previous research has investigated these effects in simulated central scotomas, studies focusing on real patients with conditions such as AMD remain limited, especially those that comprehensively control for multiple linguistic variables. To address this gap, we present a reading experiment involving three groups of participants: young and older adults with simulated scotomas and patients with AMD.

Participants performed an oral reading task using the self-paced reading paradigm, in which sentences are presented as a whole, with only one word being visible at a time. This design allowed participants to focus their attention on a single word, while maintaining the overall sentence structure, providing a balance between ecological reading and experimental control. To accommodate the limited vision of patients with AMD, text was presented in a virtual reality environment using a headset that allowed for highly magnified text presentation. Reading time and eye fixation characteristics were analyzed with mixed-effect models to assess the combined influence of visual and linguistic characteristics of the words read.

The aim of this study is two-fold. First, we seek to refine our understanding of how visual factors (e.g., word length, visual ambiguity) and linguistic factors (e.g., frequency, predictability, orthographic similarity) affect reading in visually impaired readers with central field loss, as well as age-matched controls reading with a simulated central scotoma. Second, these findings could contribute to the development of effective text simplification methods tailored to individuals with central field loss, thereby improving reading accessibility and quality of life for those affected by conditions such as AMD.

READING WITH LOW VISION

THE USE OF PRL IN FREE READING

Arda Fidanci, Colin S. Flowers, Steve Engel, Gordon E. Legge
USA

People with central vision loss (CVL) adopt a preferred retinal locus (PRL) to target stimuli in visual scenes. The PRL is usually measured with simple fixation tasks—fixational PRL (fPRL). It has been reported that some patients might rely on different PRLs for different viewing conditions or visual tasks. However, it is unknown whether the fixational PRL (fPRL) is also used in reading, a task requiring eye movements. We developed a new eye-tracker-based method to measure the retinal location used for reading in people with central vision loss. Then, we used this method to determine if the reading PRL is in the same location as the fPRL.

In each trial, we calibrated the eye tracker using a five-point calibration task while participants used their fPRL. Then, participants read sentences taken from the MNRead test on a computer screen. While reading, we recorded binocular gaze positions using Tobii Pro Spectrum 300 Hz. Reading was interrupted randomly by replacing the sentence with a blank screen for 2 sec. The participants reported the last word being read before the interruption. The location of this word was assumed to be at or close to the reading PRL. This location was compared to the fPRL location as indicated by the eye tracker.

Eight controls reported the word at the fPRL most frequently, in 58.53% (± 14.8%) of trials, and the remaining two reported one word to the right, consistent with a “look ahead” strategy. Seventeen CVL participants reported the word at the fPRL most frequently, in 54.43% (± 13.39%) of trials, indicating the PRL used in reading is the same location used for fixation. Two participants used a “look ahead” strategy, and one had an offset of the reported word to the left of the fPRL, possibly related to excessive regressive saccades. Only one CVL participant had a pattern indicating a reading PRL different from their fPRL.

Our results suggest that most people with CVL use the fPRL in reading.

MICROPERIMETRY: FROM RESEARCH TO CLINICAL APPLICATIONS

MICROPERIMETRY – PEARLS AND PITFALLS

Georg Ansari[1], Maximilian Pfau[2]

[1]Department of Ophthalmology, University of Basel, Basel, Switzerland; [2]Department of Ophthalmology, University of Basel, Basel, Switzerland, Department of Ophthalmology, University of Bonn, Germany

Introduction: Microperimetry is a specialized functional imaging technique that combines retinal sensitivity assessment with real-time fundus tracking. Unlike standard perimetry, it allows precise correlation between retinal structure and function. The devices operate within a narrow field with high spatial resolution. As inherited retinal diseases (IRDs) and age-related macular degeneration (AMD) become central to emerging therapies, microperimetry is gaining recognition as a valuable functional clinical outcome measure.

Advantages and Clinical Applications: Microperimetry enables detailed sensitivity mapping with precise spatial distribution, even in cases of unstable fixation. Stimulus grids are highly adaptable, enabling the adjustment of the testing region of interest to suit specific study objectives. Its adaptability allows targeted functional assessment in progressive diseases such as geographic atrophy and IRDs (i.e. Stargardt disease, retinitis pigmentosa). The ability to focus on specific retinal areas makes it particularly useful in tracking disease progression and treatment effects. In clinical trials, microperimetry has played a significant role, as demonstrated in the OAKS study, where a post-hoc analysis used central 16 points to evaluate functional outcomes. This highlights its increasing importance in assessing novel therapies.

Limitations and Challenges: Despite its advantages, microperimetry has limitations, for instance due to the scarcity of large normative databanks. The Gaussian distribution of the factory-provided normative dataset consists of 270 individuals does not include age in the print-out analysis and thus may limit initial data interpretability. In general, site-specific variability significantly affects results and must be accounted for in analyses. Additionally, test-retest variability remains a challenge, particularly in long-term follow-up studies and multi-center trials.

Conclusion and Outlook: With the rising research in gene therapy and treatments for geographic atrophy, microperimetry remains one of the most robust spatially distributed functional outcome parameters. Integration of machine learning algorithms is expected to enhance data interpretation and minimize patient-specific variability. Furthermore, patient-tailored perimetry is emerging as a valuable approach, allowing precise assessment of functional changes in junctional zones of progressive lesions. Furthermore, new generation devices offer improved automation and efficiency, reducing operator dependence and testing time.

Financial disclosures: iCare (R), F. Hoffmann-La Roche (R)
Financial disclosures: BrightFocus (F), iCare (F), F. Hoffmann-La Roche (E)

MICROPERIMETRY: FROM RESEARCH TO CLINICAL APPLICATIONS

REHABILITATION PATHWAY FROM MICROPERIMETRY TO ORIENTATION AND MOBILITY

Davide Cacciatore
Italy

Microperimetry, also referred to as fundus-controlled perimetry, is a pivotal diagnostic and rehabilitative tool in the field of low vision and retinal disease management. This technique enables the precise mapping of retinal sensitivity and fixation stability by combining functional data with real-time retinal imaging. Unlike standard perimetry, microperimetry correlates each sensitivity point to a specific anatomical retinal location, offering a detailed view of functional impairments even when visual acuity appears preserved.

The clinical applications of microperimetry span several retinal conditions. In inherited retinal dystrophies such as RPGR-associated retinitis pigmentosa, it uncovers subtle functional losses and provides a reliable metric to monitor disease progression. In age-related macular degeneration (AMD), microperimetry can detect early functional deficits, allowing timely interventions. Similarly, in diabetic retinopathy, it serves as a sensitive indicator of dysfunction before structural damage is visible through traditional imaging.

A key strength of microperimetry lies in its integration with optical coherence tomography (OCT) and other imaging modalities. This multimodal approach enhances the understanding of the relationship between structural and functional changes, enabling more accurate clinical decisions and treatment planning.

In rehabilitation, microperimetry plays a central role in identifying and training new Preferred Retinal Loci (PRLs) in patients with central vision loss. Using biofeedback protocols, patients are guided to stabilize fixation on a healthier retinal area, often improving functional vision and quality of life. This process, typically involving multiple short sessions, is personalized and can be supported with at-home exercises. The technique's precision in quantifying fixation stability through BCEA (Bivariate Contour Ellipse Area) and fixation success rates ensures accurate progress tracking.

In conclusion, microperimetry bridges research and clinical application by offering a high- resolution functional map of the retina. Its role is increasingly critical not only in diagnosing and monitoring retinal diseases but also in developing and guiding personalized rehabilitation strategies.

DEAFBLINDNESS ACROSS THE LIFE-SPAN

PROTOCOL FOR THE DEVELOPMENT OF INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY, AND HEALTH CORE SETS FOR CHILDREN AND YOUTH WITH DEAFBLINDNESS

Shirley Dumassais
Canada

Deafblindness, a condition characterized by combined vision and hearing loss, profoundly affects physical, cognitive, and psychosocial development. However, the lack of standardized assessment tools presents a significant challenge in evaluating the functioning and needs of children and youth living with deafblindness. This project aims to develop International Classification of Functioning, Disability, and Health (ICF) Core Sets tailored specifically for children and youth with deafblindness, providing a structured framework for assessment, support, and intervention.

Using a four-study, mixed-methods approach, we will integrate diverse perspectives to ensure a comprehensive understanding of functioning and disability. First, a systematic literature review will identify commonly studied aspects of functioning. Second, qualitative interviews and focus groups with parents, caregivers, and adolescents with deafblindness will capture lived experiences and environmental influences on daily life. Third, an international survey of professionals, including healthcare providers, educators, and therapists, will highlight critical domains relevant to assessment and intervention. Finally, a multicenter empirical study will document real-world observations from healthcare practitioners, such as nurses and occupational therapists, to identify challenges and support strategies in clinical settings.

Findings from all studies will be systematically analyzed and mapped to the ICF framework, resulting in standardized Core Sets that enhance assessments, individualized care planning, and service provision. By bridging gaps between healthcare and education, these Core Sets will promote interdisciplinary collaboration, inform policy, and support global research consistency. Ultimately, this initiative will contribute to the well-being, inclusion, and development of children and youth with deafblindness.

DEAFBLINDNESS ACROSS THE LIFE-SPAN

THIS IS NOT ABOUT FOOTBALL ONLY, IT IS ABOUT THE RIGHT TO PARTCIPATION

Rolf Lund
Sweden

Purpose: This project explores the experiences of individuals with Combined Visual and Hearing Impairment, Dual Sensory Impairment (DSI) as spectators at football matches. The focus is on enhancing accessibility through interpreters, assistive technology, and environmental adaptations while considering the psychosocial and emotional benefits of participation. Football, like other cultural activities, fosters social inclusion, well-being, and a sense of belonging, but individuals with DSI face barriers that require targeted solutions.

Methods: To improve accessibility, the project emphasizes:

- Universal design in arenas, including tactile indicators, teleloops, captioning, ramps, and accessible seating arrangements.
- Adaptive technology, such as tactile platforms and haptic signals to convey match dynamics.
- Interpretation methods, including tactile sign language, auditory descriptions, and haptic cues to provide real-time information.

Experience consultants with DSI play a key role, offering firsthand insights into challenges and solutions. Their involvement bridges communication gaps between spectators, organizers, and researchers, ensuring more inclusive stadium environments.

Results: The project identified several effective communication strategies:

- Tactile boards, where interpreters use hand gestures to indicate ball movements.
- Haptic signals, providing touch-based cues to follow the game.
- Optimal stadium positioning, with midfield seating offering the best access to interpreters and atmosphere.
- Use of audio description with direct transmission to hearing aids.
- Use of sign language for those who use it.
- Use of optical devices ffor low vision, such as filterglasses and smartglasses

By combining these strategies, spectators with DSI experience greater engagement, understanding, and enjoyment of football matches.

Conclusions: Through universal design, adaptive communication, and technological innovation, the project promotes equal participation in sports events for individuals with DSI. Collaboration with the Interpreter company Hapti-Co has helped us to standardize haptic football signals, ensuring consistent interpretation methods. Future developments will focus on autonomous solutions, allowing individuals with DSI to customize their experiences through advanced assistive technology. By prioritizing inclusive practices, this project advocates for greater accessibility in cultural and sporting events, ensuring that everyone can fully participate.

DEAFBLINDNESS ACROSS THE LIFE-SPAN

LABOUR MARKET PARTICIPATION OF PEOPLE WITH ACQUIRED DEAFBLINDNESS

Eline Heppe, Natascha Sondergaard, Emma Klaassen, Michelle Bak, Marleen Smits & Emma Vaillant

Kentalis Academy, Royal Kentalis, Utrecht, the Netherlands

Purpose: Employment is a critical aspect of participation and well-being, yet research and practice show that people with acquired deafblindness (ADB) face substantial barriers in the labour market. This comprehensive research project investigates the labour market participation of people with ADB through three studies: a scoping review, focus groups, and a survey study. This presentation focuses on the scoping review, which aims to identify facilitators and barriers affecting labour market participation for people with ADB, providing insights to inform supportive interventions, advocacy organizations, and policies.

Methods: A systematic search was conducted in three major databases (Web of Science, MEDLINE, and PsycINFO). Studies were included if they: 1) contained data on at least one individual with ADB of working age, 2) addressed at least one facilitator or barrier, 3) were empirical studies with qualitative or quantitative data, and 4) were written in English, Dutch, or French. The identified facilitators and barriers were categorised using the International Classification of Functioning, Disability and Health (ICF) framework.

Results: Thirteen studies met the inclusion and exclusion criteria, identifying 90 facilitators and 66 barriers. Most facilitators and barriers were found in the ICF domain of 'Environmental Factors', particularly within 'Services, Systems, and Policies'. Barriers were linked to inadequate vocational support, while facilitators included tailored employment services and supportive relationships.

Conclusion: While various factors facilitate employment participation for people with ADB, significant barriers remain, particularly in vocational and social security services. Tailoring support services and improving workplace accommodations could enhance employment outcomes for people with ADB. The next phase of this project will involve focus groups with people with ADB, professionals supporting them, and (former) employers to explore facilitators and barriers in more depth, followed by a large-scale survey. During the presentation, we will share not only the scoping review results but also some preliminary finding from the focus groups.

DEAFBLINDNESS ACROSS THE LIFE-SPAN

THE INFLUENCE OF VARYING DEGREES OF DUAL SENSORY LOSS ON DAILY LIFE

E. Veenman[1,2], A.A.J. Roelofs[3], A.M. Bootsma[3], R.M.A. van Nispen[1,2]

[1]Amsterdam UMC location Vrije Universiteit Amsterdam, Ophthalmology, Amsterdam, the Netherlands; [2]Amsterdam Public Health, Quality of Care, Amsterdam, the Netherlands; [3]Royal Dutch Visio - Het Loo Erf, Apeldoorn, the Netherlands

Dual sensory loss (DSL) means having a combination of both a visual and auditory impairment. DSL significantly affects individuals' ability to perform daily activities, for example in the areas of access to information, mobility, communication and fatigue. However, the extent to which these impairments can predict the challenges experienced in daily life remains unclear. This study aims to explore whether vision and hearing tests can be used to predict the types of difficulties that individuals with DSL might experience in their daily lives.

Multiple visual and auditory tests were conducted: visual acuity, visual field, contrast sensitivity, hearing threshold, speech understanding in quiet and in noise, and directional hearing. Challenges experienced in the areas of access to information, mobility, communication and fatigue were assessed using validated questionnaires. We aim to include participants with DSL, visual impairment only, auditory impairment only, and with normal vision and hearing. Predictive statistical models will be developed to examine whether specific combinations of vision and hearing test results can forecast the daily challenges reported by participants. Confounding factors such as age, comorbidities and depression will also be considered to ensure the accuracy of predictions.

The findings of this study are expected to provide insight into whether visual and auditory tests can accurately predict daily life challenges in individuals with DSL. Ultimately, these findings may guide current clinical practice and future interventions aimed at enhancing the quality of life for people living with DSL.

DEAFBLINDNESS ACROSS THE LIFE-SPAN

AN INVISIBLE DISABILITY - DEVELOPING STRATEGIES FOR OLDER AUSTRALIANS WITH DUAL SENSORY IMPAIRMENT

Moira Dunsmore
Australia

Sensory impairments are recognised as global priorities for the ageing population with prevalence projected to increase significantly. In combination, as dual sensory impairment (DSI), a significant gap exists in care for older adults with DSI, and their family members in Australia.

This presentation provides an overview of the DSI Project based at University of Sydney. This project takes a co-designed approach to meet the needs of older Australians and their families living with DSI. This presentation will focus specifically on the microsocial aspects of care for older adults and their family carers, living with DSI.

At a macro level, the poor recognition of DSI at a policy level, in healthcare; and in health discipline curriculum is problematic for both community dwelling older adults and residents of residential aged care; the DSI project i) has created a consumer advisory network of relevant stakeholders, lived expertise and lived knowledge to advocate and develop services designed with older adults living with DSI through ongoing working group engagement and ii) is developing outreach services internationally with other deafblind organisations to support persons with DSI living in low income nations.

At an organisational level, poor health care experiences and communication increase the risk of adverse events and compromise patient safety; the DSI project i) has published a book for health care professionals (HCP) to improve practice and recognition of DSI in health and community care settings, and ii) is developing projects designed to improve HCP assessment of DSI and complex communication skills in health care settings with the development of a consumer handbook.

We are developing integrated care models to build social capital for the older person and their family carers. This is based on evidence of reduced participation and social disengagement that may reduce quality of life for both. Carers are critical to bridging a significant gap in communication and care at the client: health and social care interface. This project (funded by Association of Australian Gerontology) explores the support and educational needs of formal and informal carers in order to address communication, service and access gaps for older adults living with DSI.

ORAL PRESENTATIONS

ORAL PRESENTATIONS

PEDIATRIC LOW VISION

546

OCT-ANGIOGRAPHY TO ASSESS RETINAL VASCULAR MALFORMATIONS IN STURGE WEBER SYNDROME

Mariaelena Malvasi[1], Rosa Longo[2], Luca Polinelli[2], Elena Gusson[2], Giorgio Marchini[2]

[1]Department of Sense Organs, Sapienza University of Rome, Rome, Italy; [2]Department of Neuroscience, Biomedicine and Movement Sciences, University Of Verona, Verona, Italy

Purpose: Sturge-Weber syndrome (SWS) typically presents with a port-wine stain on the face, accompanied by leptomeningeal capillary malformations and ocular vascular anomalies, particularly involving the posterior segment, including the retina and choroid. The aim of our study was to evaluate retinal vascular density and vessel diameter to better characterize the presence of vascular alterations.

Methods: 15 patients diagnosed with Sturge-Weber syndrome and 15 healthy controls underwent comprehensive ophthalmologic evaluation, Optical Coherence Tomography (OCT) and Optical Coherence Tomography Angiography (OCTA), to evaluate the microvascular architecture of the retina and choroid. Retinal microvascularization was quantified using OCTA by measuring the proportion of white pixels relative to the total number of pixels in black-and-white images.

Results: Analysis of the processed images revealed a significant increase ($p < 0.05$) in the density of the deep capillary plexus in patients with SWS compared to healthy controls. Vascular diameter was found to be increased overall in several retinal vascular plexuses in SWS patients compared to controls, reaching statistical significance ($p<0.05$) in the deep vascular complex.

Conclusions: Our analysis highlights the promising role of OCTA as a non-invasive, high-resolution imaging technique for monitoring the progression and potential worsening of ocular diseases. The integration of novel quantitative parameters enhances the evaluation of ocular health, offering deeper insights into vascular morphology and density. These measurable changes, detectable through OCTA, can be effectively correlated with disease progression and therapeutic response. As OCTA continues to gain traction in clinical practice, it is emerging as a crucial tool for the detailed assessment of retinal and choroidal microvasculature, particularly in eyes with vascular malformations. Its use paves the way for earlier diagnosis, more accurate disease monitoring, and improved evaluation of treatment efficacy.

429

DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF A PEDIATRIC LOW VISION POPULATION IN A LOW VISION CLINIC IN TURKEY

Ozlem Bicer[1], Esra Sahli[2]

[1]Ankara University Institute of Health Sciences, Ankara, Turkey; [2]Ankara University School of Medicine, Ankara, Turkey

Purpose: To describe the characteristics of the pediatric population attending the Low Vision Centre, located in Ankara, Turkey

Methods: Clinical records for patients aged 6-17 years attending the centre from 2020 to 2025 were retrospectively reviewed. Age, gender, diagnosis, best corrected visual acuity, and prescribed low vision aids (LVA) were analyzed.

Results: Of the 485 patients, the mean age was 10.14 ± 3.17 years; 257 (52.99%) were male. In 152 (31.34%) patients, there was a family history of low vision, and 213 patients (43.92%) had a history of a parental consanguineous marriage. There were 54.23% with moderate visual impairment, 18.35% had severe visual impairment and 8.45% were blind. The leading causes of visual impairment were retinitis pigmentosa (14.02%), cone dystrophy (12.78%), albinism (12.16%), optic atrophy (11.55%), Stargardt disease (9.9%), and cerebral visual impairment (7.42%). The most frequently prescribed LVAs for distant and near vision were uniocular/binocular telescopes (24.54%) and stand magnifiers (35.67%), respectively. Also, electro-optic devices and electronic tablets were prescribed by 113 (23.3%) children.

Conclusions: Inherited eye diseases constituted the major causes of low vision in the study population. The prescription of optical aids for school-age children will help them perform better at school and contribute to their social interaction. Ensuring accessible, affordable, and high-quality rehabilitation services, particularly in developing countries, is crucial for reducing visual impairment.

419

VISUAL SEARCH IN CHILDREN WITH CVI: AN OVERVIEW OF NOVEL ASSESSMENT APPROACHES

Marinke Hokken[1, 2], Johan Pel[1], Maarten Frens[1], Johannes van der Steen[1], Marlou Kooiker[1, 2]

[1]Erasmus MC, Neuroscience, Rotterdam, The Netherlands; [2]Royal Dutch Visio, Rehabilitation, Huizen, The Netherlands

Purpose: Children with Cerebral Visual Impairment (CVI) often struggle to find objects or people in busy environments, even with normal acuity. Visual search tasks are used in CVI assessments, helping to distinguish children with CVI from neurotypical peers and to evaluate higher-order visual functions (HOVFs), particularly visual selective attention (VSA). However, it is still unclear how children with CVI perform on these tasks in terms of search behaviour. This research-project aims to improve CVI assessments with novel methods and tasks to explore their applicability in 1) differentiating CVI from ADHD or dyslexia and 2) assessing CVI in preschoolers or children with language or motor impairments.

Methods: Over the past six years, we investigated 126 school-aged children (6–12 years: 22 CVI, 32 ADHD, 28 dyslexia, 44 neurotypical) and 166 preschoolers (1–5 years: 73 CVI (-risk), 93 neurotypical), all with normal verbal IQ (>70). Modification of an existing paper-pencil tasks, resulted in search accuracy, response time (RT) and the analysis of the reconstructed cancellation-path. To avoid manual responses, we developed simple non-verbal search tasks using familiarisation trials to test preschoolers and more complex conditions including verbal responses to test school-aged children. Gaze-based search parameters included accuracy, RT and search area.

Results: In all search tasks and ages, children with CVI found fewer targets, were slower and scanned a larger area than their peers. Paper-pencil analysis showed less structured search behaviour, with longer cancellation-paths and more revisits to clustered targets. Gaze analysis revealed that preschool children with CVI often did not fixate on the target, even when it popped out. School-aged children with CVI fixated on targets as quickly as their peers but often failed to recognize them.

Conclusions: These findings underline the visual search and VSA deficits in children with CVI. The new gaze-based visual search tasks reveal that 1) children with CVI have different search patterns than children with other neurodevelopmental disorders, and 2) visual search can be assessed in preschoolers and children with language and/or motor impairments. By connecting research to clinical practice, this project contributes to a more comprehensive understanding of VSA deficits in children with CVI.

411

ASSESSING CEREBRAL VISUAL IMPAIRMENT; A MULTIDISCIPLINARY APPROACH

Pamela Anketell[1], Moyra Mcclure[2], Andrew Jonathan Jackson[2], Sonia George[3]

[1]Orthoptic Department [2]Optometry Department, [3]Paediatric Ophthalmology Department, Belfast Health & Social Care Trust, Belfast, United Kingdom

Purpose: Cerebral visual impairment (CVI) is the leading cause of vision impairment in the Western World. In CVI, visual function measures, such as visual acuity, can vary from profound impairment to mild loss. A diagnosis of CVI is associated with visual processing anomalies such as prosopagnosia, optic ataxia or blindsight. These visual processing difficulties can be subtle and masked to the clinician less experienced in CVI assessment. This project explores the assessment protocol utilised in a CVI assessment clinic.

Methods: To support children with CVI and their parents/carers/teachers/clinicians, a neuro-ophthalmic visual impairment clinic (NOVIC) was developed in 2015. NOVIC assesses childrens' eyesight potential and presence of CVI. Staff at NOVIC include a paediatric neuro-ophthalmologist, orthoptist, optometrist, occupational therapist, neurodevelopmental paediatrician and charitable support worker. Data was gathered on the range of clinical vision assessments that are utilised in a detailed written report.

Results: To date 206 children have attended NOVIC. Of data available, (92%), 89% have a diagnosis of CVI. NOVIC has a hybrid delivery; a pre-clinic telephone assessment with parents/carers outlining medical history, visual ability and concerns. Staff review historical clinical information for a positive risk factor for CVI, such as prematurity. In clinic, a range of tests assess for impairment in lower visual function (such as; reduced visual acuity, visual fields deficit, abnormal fixation/eye movements) and for impairment in higher visual function dorsal/ventral stream processing. Examples of areas assessed include facial recognition/gesture, divided visual attention, simultanagnosia, visually guided movement, optic ataxia, impact of clutter, movement perception and reaction to light. In addition to traditional clinical tests, examples of equipment used include a mirror, carpet mats, facial gestures pictures and a cluttered toy-box. Visual responses are recorded clinically in written form and collated into an individualised report.

Conclusions: NOVIC is the only multi-disciplinary clinic in Northern Ireland to investigate the presence and impact of CVI on the child. Clinicians specialising in CVI should use adaptable testing methods alongside traditional eyesight tests. A report written in laymans terms, detailing eyesight test results, is helpful for both the family network and service providers supporting the child's development.

382

A LONGITUDINAL STUDY OF DEVELOPMENT IN LANGUAGE, COGNITION, SOCIAL ADAPTATION AND EXPLORATORY BEHAVIOUR OF TODDLERS WITH VISION IMPAIRMENT

Carlijn Veldhorst[1], Sabina Kef[2]

[1]Radboud University, Nijmegen, Thr The Netherlands; [2]University of Amsterdam, Amsterdam, The Netherlands

Purpose: Research on children with vision impairment (VI) has primarily focused on comparing their development to that of sighted peers, offering limited insights into their individual developmental trajectories. To enhance early intervention, understanding these individual pathways is crucial. The current study adopted a longitudinal, prospective design to capture developmental changes over time. Such investigation aims to establish a foundation for creating tailored support and interventions reflecting the unique characteristics of individual children with VI, emphasizing the role of the severity of the VI. By accounting for individual variation, the study helps design interventions more precisely attuned to individual needs or observations to ascertain whether developmental delays self-correct.

Methods: This study examined the developmental trajectories of 24 Dutch toddlers aged 8 and 38 months with VI in four key domains: language, cognition, social adaptation, and exploratory behaviour. Participants were assessed during home visits using the Reynell Zinkin Scales. Each participant was visited for a period of two years, resulting in five to eight waves in total.

Results: Individual plots of each individual participant and linear mixed effect models revealed that children with VI have individual developmental trajectories, with most children showing progress in social adaptation and exploratory behaviour before language and cognition. No significant differences in developmental growth were found between children with moderate VI or severe VI.

Conclusions: This longitudinal investigation found that within the diverse group of toddlers with VI most of them exhibited satisfactory developmental progress and no delays. Currently, there is no reason to believe the severity of the VI is the main factor for individual variation. Various other factors should be considered in predicting development, rather than solely focusing on the VI as predictor. Thus, individual variation is not a result of -the severity of- an impairment only, but is affected by other factors as well.

342

THE INFLUENCE OF VISUAL FUNCTION ON THE MATURATION OF GMS

Daniela Ricci[1], Chiara Velli[1], Maria Petrianni[1], Lorenzo Orazi[1], Marianna Moro[1], Simona Leone[1], Marta Galanti[1], Giulia Amorelli[1], Domenico Marco Romeo[2], Filippo Amore[1]

[1]National Centre of Services and Research for the Prevention of Blindness and Rehabilitation of Low Vision Patients-International Agency for the Prevention of Blindness (IAPB) Italia ETS, Rome, Italy; [2]Child Neurology, Agostino Gemelli University Policlinic, Rome, Italy

Purpose: Visual functions play an important role in infant's neurodevelopment. Infants with visual impairment are at risk of motor, cognitive and neurosensory disabilities. The purpose of this case-control pilot study is to evaluate visual functions' influence on motor development during the first months of life, particularly on the maturation of General Movements (GMs).

Methods: The study group includes preterm and term infants aged 2 to 5 months, corrected or cronological age, with visual deficit due to ocular pathologies, normal neuroimaging and no genetic or metabolic diseases. The control group includes low risk infants. All participants underwent a structured neurovisual functions assessment, neurological examination via the Hammersmith Infant Neurological Examination (HINE), GMs evaluation following Prechtl's method through video recordings and Motor Optimality Score-Revised (MOS-R) assessment. The Student's t-test was used for statistical analysis to compare the study group and the control group.

Results: Fourteen infants have been enrolled, 8 preterm and 6 term born (mean age: 3.25 months at the assessment), 7 in the control and 7 in the study group. Visual function assessment evidenced deficits in visual acuity, contrast sensitivity and ocular motility in the study group. No abnormalities were evidenced in the control group. MOS-R assessment revealed pathological values in all study group infants, while the control group's scores were normal. The HINE assessment did not show significant differences between groups in global scores, while a mild influence on movements' quality and muscle tone was present.

Conclusions: The study's preliminary results evidence that visual impairment per sé can influence MOS-R scores. More specifically, we observe a deceleration of the maturation of age-appropriate motor patterns, impacting motor adaptation and typical neurological development, including movement quality (fluidity, speed and variability). Previous studies have shown that posture and muscle tone in severely visually impaired or blind children are subnormal and the psychomotor development is delayed. Our results evidence that even a less severe visual impairment can influence very early quality of movements and muscle tone. Therefore, it is essential to monitor infants at risk of visual impairment since the very first months of life in order to organize early targeted habilitative interventions.

284

A PILOT RANDOMISED CONTROL TRIAL OF PERIPHERAL PRISM GLASSES IN CHILDREN AND YOUNG PEOPLE WITH HOMONYMOUS HEMIANOPIA

Sian Handley[1, 2], Michael Crossland[3, 4, 5], Dorothy Thompson[2, 6], Jessica Gowing[2], Rosemary Wilson[2], Vasiliki Panteli[2], Mario Cortina-Borja[1], Alki Liasis[1, 7], Richard Bowman[1, 2], Jugnoo Rahi[1, 2, 3, 4, 8]

[1]UCL GOS Institute of Child Health, London, United Kingdom; [2]Clinical and Academic Department of Ophthalmology, Great Ormond Street Hospital for Children, London, United Kingdom; [3]UCL Institute of Ophthalology, London, United Kingdom; [4]NIHR Biomedical Research Centre, Moorfields Eye Hospital, London, United Kingdom; [5]Moorfields Eye Hospital, London, United Kingdom; [6]UCL GOS Institute of Child Health, London, United Kingdom; [7]University of Nicosia Medical Centre, Nicosia, Cyprus; [8]Ulverscroft Vision Research Group, UCL GOS Institute of Child Health, London, United Kingdom

Randomised controlled trial (RCT) evidence has shown the effectiveness of spectacle-mounted horizontal peripheral prisms in adults with homonymous hemianopia (HH) after stroke to increase navigational awareness of objects in the non-seeing visual field, but there is little evidence about their value in children and young people (CYP). We ran a pilot RCT of similar design to that undertaken in adults to investigate whether it is possible to undertake trials of peripheral prisms in CYP with HH from a broader range of causative pathology and associated neuro-disability.

The pilot double-masked crossover RCT of peripheral prisms was undertaken at Great Ormond Street Hospital, London, UK. Participants wore both 40PD peripheral prisms and 4PD 'sham' prisms for approximately 4 weeks each. Prism order was allocated with minimisation balancing for side of HH. The primary outcome measure was parental and CYP intention (Yes/No) to continue wear.

Twenty-two (47%) of eligible subjects participated: aged 5-17 years (mean 12) 8 female. Ten had right HH. All completed the trial. One was excluded from analysis as new pathology found. All CYP were able to complete the primary outcome i.e. indicating interest or not in continuing wear with parental support. A significantly higher proportion of CYP said "yes" to real (66.7%) compared to sham prisms (14.3%) [McNemar's $p = 0.016$]. A similar proportion was reported by parents with 71.4% "yes" to real prisms compared to 19% to sham [McNemar's $p = 0.002$]. At trial end 15 (71.4%) chose to continue peripheral prism use. Long-term follow-up is ongoing with responses from 8/15 currently captured median 221.5 days (range 124-465 IQR 110.5) post-trial end indicating a minimum of 53.3% long term use.

An RCT of peripheral prism for HH is feasible in selected CYP, with families willing to participate. Adaptions to HH trials designed for adults can be made to implement them with CYP and these should be considered when age inclusion criteria are set for future interventional trials. Both CYP and their parents showed a preference for peripheral prisms over sham, with higher long-term adherence than seen in adults. These findings will inform design of future studies including a potential full-scale RCT.

QUALITY OF VISION AND QUALITY OF LIFE

479

SEEING BEYOND VA: USING VIRTUAL REALITY TO PREDICT DAILY LIFE FUNCTIONING WITH VISION IMPAIRMENT

Kirsten Veerkamp[1], Henk Stam[2], Daniel Müller[1], David Mann[1], Christian Olivers[1]

[1]Vrije Universiteit Amsterdam, Faculty of Behavioural and Movement Sciences, Amsterdam, The Netherlands; [2]Bartiméus, Zeist, The Netherlands

Purpose: It can be challenging in a clinical setting to predict how vision impairment will impact daily life functioning. Common assessment tools often focus on the source of the vision impairment instead of its consequences, and lack real-life representativeness in terms of the visual stimulus, task demands, and participants' movements. Our aim is to develop a tool to predict daily life functioning with a vision impairment.

Methods: Participants (n = 44; MD n = 21, RP n = 6, glaucoma n = 6, Stargardt n = 5, other n = 6; mean VA = 0.79 logMAR; mean age = 71 years; sex: 18 males; data collection ongoing) performed a search task in a virtual reality (VR) supermarket environment and completed questionnaires. Participants performed four search tasks in the VR supermarket, each consisting of a sequence of four product searches, based on a memorised shopping list, and under different lighting conditions (high, low contrast). Search performance, navigation, memory, and gaze/head/body coordination were measured. Principal component analysis reduced the variables to three components describing most of the variance: (1) task performance, (2) eye and gaze behaviour, and (3) body and head orienting behaviour. Furthermore, participants completed the Impact of Vision Impairment (IVI) questionnaire, measuring self-reported daily life functioning; the Fatigue Assessment Scale (FAS); and the Utrecht Coping List (UCL-R). Correlations were performed between the IVI scores, and each of the three sets of VR variables, acuity, age, FAS scores, and UCL-R scores.

Results: Performance in the VR search task showed a near-significant prediction of daily life functioning (i.e., with IVI score, $R2 = 0.09$, $p = 0.06$) whereas visual acuity and age did not ($R2 = 0.00$, $p > 0.72$). IVI scores were best predicted by the UCL-R subscale of passive/avoidance ($R2 = 0.14$,$p = 0.02$) and by the FAS score ($R2 = 0.11$, $p = 0.04$). Furthermore, the UCL-R subscale of seeking distractions showed a borderline prediction of IVI scores ($R2 = 0.10$, $p = 0.05$).

Conclusions: The functional consequences of a vision impairment go beyond the measured vision loss. Performance in a realistic VR search task seems to better predict the consequences of vision impairment than visual acuity does, and is comparable with questionnaire measures of coping and fatigue. Future analyses with more participants allow us to assess to what extent these measures explain common versus unique variance.

345

THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF) CORE SET VISION LOSS

Billiet Lorenzo[1], Ruth van Nispen[1], Hilde Van Der Aa[1], De Baets Stijn[2], Van de Velde Dominique[2]

[1]Amsterdam UMC, Amsterdam, Thr The Netherlands; [2]Ghent University, Ghent, Belgium

Purpose: Our aim is to introduce the International Classification of Functioning, Disability, and Health (ICF) Core Set for vision loss. The Core Set provides a standardized framework for describing the impact of vision loss on functioning and participation, considering both environmental and personal factors. This work brings together five sub-studies conducted to identify the most relevant ICF categories for vision loss.

Methods: The ICF Core Set for vision loss was developed by an international and multidisciplinary panel of experts. The decision-making process was informed by four preparatory studies: (1) a systematic literature review analyzing 349 studies on vision loss and 100 outcome measures, (2) an international survey capturing the perspectives of 291 healthcare professionals from 52 countries across 16 disciplines, (3) focus group discussions with 18 visually impaired individuals in Flanders (Belgium) to understand their daily experiences, and (4) a global patient survey involving 663 online surveys and 100 individual interviews from 61 countries in 11 languages.

Results: Each preparatory study produced a list of candidate categories, offering diverse perspectives on functioning with vision loss. The systematic review identified commonly assessed outcome domains, while the healthcare professional survey highlighted clinical and rehabilitation priorities. Patient perspectives, gathered through focus groups and a global survey, emphasized the significance of mobility, leisure, social participation, and support systems. Comparing professional and patient viewpoints revealed key differences: professionals focused on mental functioning and task execution, whereas patients prioritized mobility, social support, and compensatory aids. The final consensus process integrated these perspectives to develop the Comprehensive and Brief ICF Core Sets for vision loss.

Conclusions: This study presents the Comprehensive and Brief ICF Core Set for vision loss, providing a structured, standardized tool to assess functioning and disability related to vision impairment. The process ensured that the selected ICF categories comprehensively reflect the lived experiences of individuals with vision loss, bridging the gap between clinical priorities and patient-reported outcomes. This Core Set will facilitate global comparability in research and healthcare, enhancing patient-centered care and policy development.

312

THE IMPORTANCE OF ENVIRONMENTAL FACTORS IN QUALITY OF LIFE OF CHILDREN WITH CEREBRAL VISUAL IMPAIRMENT: A GLOBAL APPROACH IN REHABILITATION

Elena Cocchi[1], Chiara Baghino[1], Matilde Bernardi[1], Francesca Gandini[1], Virginia Cillara[1], Sara Castiglione[1]

[1]Fondazione David Chiossone, Genoa, Italy

Purpose: This study explores intervention strategies in Cerebral Visual Impairment (CVI) while examining the environmental factors that affect visual functioning in everyday settings. In rehabilitation practice, we address sensory complexity, movement, and strategies for effectively using functional vision. The goal is to optimize the evaluation of the child's overall functioning in order to suggest better-suited interventions that would improve his/her quality of life. We analyse the environment and recommend adjustments to support more effective outcomes for the child.

Methods: The review of existing literature is meant to support observed outcomes in rehabilitation practice. The assessment of the child's global functioning is compared to expected developmental milestones. The introduction of an eye-tracking tool to analyse, observe and record the child's functional vision allows for a more personalised intervention approach. This new technology not only tracks eye movements, but also monitors head movements and fixation point while the child performs tasks in natural settings. The multidisciplinary team includes orthoptist, ophthalmologist, occupational therapist, pediatric neuropsychiatrist, physiotherapist, speech therapist and neuropsychomotor therapist. The habilitation intervention provides practical solutions to adjust environments and improve functional vision, focusing on visual challenges, sensory complexity, and movement effects.

Results: Comprehensive vision functioning exams and direct observations are essential in the habilitation process for children with CVI. The introduction of the eye-tracker as an assessment tool provides valuable insights into how to support the child during tasks and make necessary environmental adjustments. The rehabilitation intervention follows a holistic approach, integrating both visual and non-visual strategies. Environmental factors are key to facilitating visual engagement and supporting children's participation in everyday life settings.

Conclusions: Three key themes emerged: (1) the importance of a multidisciplinary approach that includes caregiver input, (2) the need for improved assessment tools, ensuring that observation leads to actionable interventions, and (3) recognizing that CVI affects multiple domains beyond vision, including motor skills and communication. By integrating professional expertise with environmental research, the value of holistic, interdisciplinary approach becomes clear. Improving assessment strategies and optimizing everyday settings will enhance the quality of life of children with CVI, their independence and participation.

224

CONSENSUS ON BARRIERS AND OPPORTUNITIES FOR LABOR MARKET PARTICIPATION OF PEOPLE WITH VISUAL IMPAIRMENTS IN THE NETHERLANDS: A DELPHI STUDY

Katharina Diehl[1], Chris Van Klaveren[1], Ilja Cornelisz[1], Eline Heppe[2], Nino de Ponti[1]

[1]Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; [2]Koninklijke Kentalis & Vrije Universiteit Amsterdam, Amsterdam, The Netherlands

Purpose: Empirical research consistently showed that people with visual impairments (VI) face significantly lower employment rates than those without VI across countries, including The Netherlands. Reduced labor market participation contributes to the broader socioeconomic challenges associated with VI. While this issue is widely acknowledged, there is no clear consensus on the key factors driving lower employment rates among people with VI. Existing studies primarily highlighted unmodifiable factors (e.g. race and gender), and targeted labor market interventions have had limited success in improving employment outcomes. This study aims to bridge this gap by identifying key barriers and opportunities, clarifying their impact, and informing future policy and interventions.

Methods: To establish expert consensus on the barriers and opportunities affecting labor market prospects of people with VI in The Netherlands, we conducted a Delphi study. Our panel of 36 experts, included 12 individuals with VI, 14 vocational rehabilitation professionals, 4 researchers, and 6 employers. Participants evaluated statements on legal and regulatory factors, environmental barriers, and personal factors influencing labor market participation.

Results: The Delphi study progressed through at least three rounds. The first round introduced 25 statements. Consensus (≥ 80% agreement) was reached on seven statements, with near-consensus (70-80% agreement) on four statements. The second round resubmitted 17 previous statements and introduced 13 new ones, resulting in consensus on 12 statements and near-consensus on 6 statements. The third round, currently ongoing, includes 19 statements, of which 17 are refinements from previous questionnaires and two are newly added. Results from all completed rounds will be presented at the conference.

Conclusions: By establishing expert consensus on key barriers, opportunities and potential solutions, this study provides critical insights into improving labor market participation for people with VI. The findings inform future research, guide policy development, and enhance rehabilitative interventions to improve employment outcomes for people with VI.

217

THE IMPACT OF COVID-19 ON INDIVIDUALS WITH VISION IMPAIRMENT IN THE UK

Elizabeth Frost[1], Dave Edgar[1], Chris Dickinson[2], Ahalya Subramanian[1]

[1]Optometry and Visual Science, City St George's, University of London, London, United Kingdom; [2]Pharmacy and Optometry, University of Manchester, Manchester, United Kingdom

Purpose: Individuals with vision impairment (IVI) generally live independently or in a household group. However, most rely on the close physical presence of others to assist with daily living tasks. The COVID-19 pandemic severely limited personal freedoms, including requiring people to socially distance, thus disrupting IVIs' support for every-day living. The main aim of this study was to investigate IVIs' experiences of the impact of the pandemic and the perceptions of this impact by service providers (SPs) who provided IVIs with low vision support services.

Methods: Separate surveys for each group (SP N=80; IVI N=60) were conducted during the pandemic. Telephone interviews (SP N=11; IVI N=13) were conducted during and post-pandemic. Thematic analysis of anonymised data was undertaken.

Results: Three emerging themes were identified. Infection control: Shops and public spaces introduced temporary infection control measures during the pandemic, e.g. one-way systems, but many IVIs were unable to see clearly enough to read the signs. Visual impairment (VI) made social distancing impossible for some. Face masks could reduce vision (misting up / reduced field of view) and limited communications. Shops stopped providing physical help to IVIs, thus preventing some from shopping in person. IVIs were not a priority group for access to online shopping, thus preventing some IVIs accessing this service. SPs reported some IVIs being unable to source food. Vaccines and testing: VI prevented some IVIs accessing vaccine centres and undertaking home COVID-19 testing. A negative test result was required to access some services, e.g. in-person GP appointments. Wellbeing: Negative impacts on mental wellbeing and support networks were reported by both IVIs and SPs.

Conclusions: In any future pandemic, consideration should be given to VI being a criterion for allowing access to on-line shopping and local centres for pandemic-specific vaccinations, and for providing assistance with COVID-19 testing. Social distancing guidance should allow IVIs to be closely accompanied by a sighted guide; and transparent face masks or shields should be permitted for IVIs. IVIs should be encouraged to use a symbol to indicate when they need additional assistance.

207

EMPLOYMENT OUTCOMES OF PEOPLE WITH VISUAL IMPAIRMENTS IN THE NETHERLANDS: USING ADMINISTRATIVE DATA

Eline Heppe[1], Katharina Diehl[2], Ilja Cornelisz[2], Chris Van Klaveren[2]

[1]Royal Kentalis & Vrije Universiteit Amsterdam, Utrecht, The Netherlands; [2]Faculty of Behaviour and Movement Sciences, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands

Purpose: Research shows that people with disabilities, including those with visual impairments (VI), face unequal employment opportunities. However, the existing evidence specifically for people with VI is limited and largely based on small-sample survey data. This study contributes by utilizing large-scale administrative data to examine the employment status and job characteristics of people with VI in The Netherlands.

Methods: Using administrative data from 2015 to 2019, we analysed records from 61,954 people who claimed sensory disability care for VI (VI claimants) and compared them to a matched control group (n = 61,954). Propensity score matching was applied based on age, gender, education level, and migration background. Employment participation was assessed through the percentage of people with paid employment and their main sources of income. Job characteristics were examined in terms of average hourly wages, working hours, employment sectors, and job duration.

Results: VI claimants had significantly lower employment rates (36%) compared to the matched control group (76%). They were also more likely to receive income from social benefits and sick leave. On average, VI claimants earned lower hourly wages and were more likely to work part-time compared to their matched counterparts. Additionally, they were more frequently employed in the work and (re)integration sector, as well as in government positions.

Conclusions: This study reveals significant employment disparities between people with VI and a matched control group in The Netherlands. This highlight the need for targeted interventions and policies to improve labour market outcomes for people with VI. By the time of the conference, additional results will be available, incorporating more recent data and expanding the dataset with a larger number of VI claimants. Furthermore, additional research is needed to explore the underlying causes of these disparities.

VISUAL FIELD AND NEUROPHTHALMOLOGY

349

MICROPERIMETRIC RETINAL SENSITIVITY AND BIOFEEDBACK TRAINING IN HEMIANOPSIA: ABNORMALITIES ON THE IPSILATERAL HEMI-FIELDS AND IMPROVEMENTS AFTER TRAINING

Monica Nido[1], Ghaliah Nsour[1], Jessica Cao[1], Samuel Markowitz[1]
[1]Ophthalmology, University of Toronto, Toronto, Canada

Purpose: This prospective non-randomized controlled study aims to analyze the ipsilateral hemifields and effects of the audio-luminous Biofeedback Training (BT) on the retinal sensitivity (RS) in patients with hemianopia. BT for stimulation of the transition zone between blind and intact hemifields was applied. We compared the outcomes to a control group.

Methods: A C 10-2 program on the MAIA microperimetry (Centervue, Italy) was performed before and after BT. Five weekly BT sessions of 20 minutes were delivered. 32 subjects were enrolled, 26 in treatment and 6 into control groups. Outcomes were the RS average of the central two columns, RS average on the central column of the blind hemifield, RS average on the central column of the ipsilateral hemifield, and RS average in the whole ipsilateral hemifield. Paired t-tests were used for statistical analysis.

Results: There was no difference between the control and treatment groups in terms of sex, age, treated eye, or diagnosis. In the control group, no difference was found between pre-and-post BT outcomes. The mean pretreatment RS on the ipsilateral hemifield for all patients was 19.0 ± 4.3, significantly lower than the normal cut-off value of 25dB ($p < 0.001$) for MAIA C 10-2 test. Treated group had improvements in RS of the central two columns ($p = 0.012$), central column of the ipsilateral hemifield ($p = 0.03$), and whole intact hemifield ($p = 0.008$). No significant change was observed in the whole field or blind hemifield for the treatment group.

Conclusions: The ipsilateral hemifields are not normal in hemianopsia as it used to be thought, although this was previously described with Humphrey perimetry. This is the first study to show this using eye tracked microperimetry. BT significantly improved RS on the two central columns, the central column of the ipsilateral hemifield, and the RS in the entire ipsilateral hemifield. There were found no changes in the control group. These findings suggest BT may enhance retinal sensitivity in patients with hemianopia, possibly inducing neural plasticity.

313

USING THE EYE-TRACKER BY A VISUAL FIELD DEFICIT DURING ORIENTATION AND MOBILITY INTERVENTION

Evelien Hollestelle[1], Paulien Zuidervaart[2]
[1]Bartiméus, Rotterdam, The Netherlands; [2]Bartiméus, Zeist, The Netherlands

Purpose: Evelien Hollestelle (Occupational Therapist, Bartiméus) and Paulien Zuidervaart (Occupational Therapist, Bartiméus) explain how the mobile eye-tracker can be used within orientation and mobility interventions for clients with a visual field deficit.

Methods: In 2020 Bartiméus implemented a project to explore how the (mobile) eye-tracker can be used within vision rehabilitation for adults with a visual field deficit. During this presentation mobility instructors Evelien Hollestelle (Bartiméus) and Paulien Zuidervaart (Bartiméus) will explain what the eye-tracker is, how it is used (practically) and how it can be implemented within orientation and mobility for someone with a visual field deficit to measure the effectiveness of the intervention or to give insight into what impact the visual field deficit has on mobility. This will be done through the use of a case study of someone with a visual field deficit (Hemianopia).

Results: This project concluded that the implementation of the eye-tracker within the domain of orientation and mobility was a useful tool to evaluate and give insight into how and to what extend someone with a visual field deficit participates in traffic. It also proved to be a very useful tool to provide clients and their network with psycho-education. The eye-tracker was used in the diagnostic phase of rehabilitation to establish a base-line reading. After training it was used to compare the results to the base-line reading to establish effectiveness of intervention.

Conclusions: At the end of the presentation participants will have some insight into how the eye-tracker could be used within their own practice to provide clients and their network with insight into their visual field deficit, to evaluate how someone with a visual field deficit participates in traffic and to measure effectiveness of intervention.

292

USING CONTINUOUS VISUAL STIMULUS TRACKING FOR DETECTING AND QUANTIFYING VISUAL FIELD DEFECTS

Anne Vrijling[1, 2], Minke de Boer[2], R.J. Renken[3], J.B.C. Marsman[3], Joost Heutink[4], F.W. Cornelissen[2], Nomdo Jansonius[5]

[1]Rehabilitation and Advice, Royal Dutch Visio, Huizen, The Netherlands; [2]Laboratory of Experimental Ophthalmology, [3]Cognitive Neuroscience Center, [5]Department of Ophthalmology, University Medical Center Groningen, Groningen, The Netherlands; [4]Department of Clinical and Developmental Neuropsychology, University of Groningen, Groningen, The Netherlands

Purpose: Glaucoma and acquired brain injury (ABI) can lead to visual field (VF) defects. VF assessment is important for detecting, characterizing, and monitoring vision loss as well as guiding visual rehabilitation strategies. Standard automated perimetry (SAP) is the current gold standard for VF assessment, but performing SAP can be too demanding. We simplified the task to following a moving stimulus on a screen with the eyes (SONDA; Standardized Oculomotor and Neurological Disorder Assessment). This study investigated whether SONDA can be used to detect and quantify VF loss from glaucoma or ABI.

Methods: We evaluated tracking performance (agreement between gaze and stimulus positions) of 36 glaucoma cases with early, moderate, or severe glaucoma (median [IQR] age 70 [67-74] years; SAP Mean Sensitivity [MS] 21 [15-25] dB), 16 cases with homonymous VF defects from ABI (age 66 [62-68] years; SAP MS 19 [15-21] dB), and 36 controls (age 70 [67-72] years). All participants monocularly tracked a moving stimulus (Goldmann size-III) at three Weber contrast levels (40-160-640%), while their eye movements were recorded.

Results: The presence of either glaucoma or ABI significantly reduced tracking performance compared to controls. All stimulus contrasts performed similarly well for detecting ABI cases, but for detecting new glaucoma cases, 40% contrast was optimal: this was the only contrast at which we could effectively distinguish between controls and those with early glaucoma. Glaucomatous VF loss (SAP MS) best correlated with tracking performance at 160% contrast, while all contrast levels showed a modest correlation with ABI VF loss (SAP MS), with no single contrast level demonstrating clear superiority. ABI cases with comparable VF loss to glaucoma cases showed less reduction in tracking performance.

Conclusions: SONDA can detect VF loss from glaucoma and ABI. The observed reduction in tracking performance depends on the amount of VF loss and underlying pathology. Possible explanations include differences in how ABI and glaucoma compensate for VF defects with eye movements, or statokinetic dissociation, where moving stimuli activate visual pathways that bypass the primary visual cortex, potentially allowing perception in apparently blind parts of the visual field.

168

CAN PROVIDING NEAR-VISION GLASSES AS AN EARLY INTERVENTION ENHANCE VISUAL OUTCOMES IN INFANTS AT RISK OF PERINATAL BRAIN INJURY? FINDINGS FROM THE BABIES IN GLASSES (BIG) FEASIBILITY STUDY

Raimonda Bullaj[1], Leigh Dyet[2], Subhabrata Mitra[3, 4], Catey Bunce[5], Caroline Clarke[3], Naomi Dale[4], Neil Marlow[3], Anna Horwood[6], Kathryn Saunders[7], Richard Bowman[4]

[1]Developmental Neurosciences, University College London, London, United Kingdom; [2]University College London Hospital, London, United Kingdom; [3]University College London, London, United Kingdom; [4]Great Ormond Street Hospital, London, United Kingdom; [5]London School of Hygiene and Tropical Medicine, London, United Kingdom; [6]University of Reading, Reading, United Kingdom; 7Ulster University, Coleraine, Ireland

Purpose: Cerebral visual impairment (CVI) is a major cause of childhood visual impairment linked to perinatal brain injury. Early intervention is vital as neuroplasticity decreases with age. The Babies in Glasses (BiG) study investigates early spectacle intervention for hypo-accommodation in children and evaluates whether spectacles can reduce the visual burden in children with CVI, improving outcomes by addressing accommodation issues early. The primary objective of this study is to assess the feasibility and acceptability of recruitment, adherence to spectacle wear, and measurement of visual outcomes.

Methods: The BiG study is a parallel-group, open-label randomised feasibility trial (n = 75) for a definitive randomised controlled trial (RCT). The primary objective is to establish feasibility and acceptability to babies and parents of recruitment and completion of study components, including spectacle wear adherence and measurement of visual outcomes. Parents of eligible infants were approached and, if recruited, randomised (1:1:1) to one of three arms, group A (visual assessment/no spectacles), and two intervention groups: B1 (visual assessment/spectacles at 8 weeks) or B2 (visual assessment/spectacles at 16 weeks). Infants in B1 and B2 were prescribed full time near-vision spectacles (full cycloplegic refraction plus +3.00DS).

Results: Of the 55 families recruited, 35 (50%) attended the baseline assessment, while 20 could not attend due to health issues or other commitments. Of the 35 infants who attended, 31 (89%) completed the study. Visual acuity improvement from baseline to final follow-up was as follows: Arm A: 0.47 (95% CI 0.05–0.89), Arm B1: 0.66 (95% CI 0.34–0.98), and Arm B2: 0.34 (95% CI 0.02–0.65). Arm B1 showed a clinically significant improvement of two lines on a traditional vision chart compared to Arm A. Development of object permanence was higher in the glasses group, with 60% in Arm B1 compared to 28.6% in Arm A at 8 months.

Conclusions: This study demonstrates feasibility, and funding will be sought through National Institute for Health and Care Research (NIHR) for a definitive RCT to evaluate the impact of proactively prescribing near-vision spectacles on visual outcomes in at-risk infants, compared to the current standard of waiting until problems are detected.

121

SACCADIC FUNCTIONS IN CHILDREN WHO SURVIVED POSTERIOR FOSSA TUMORS: THE INFLUENCE OF TUMOR CHARACTERISTICS

Marina Shurupova[1, 2, 3], Alexander Karelin[1]

[1]Oncology and Immunology, Dmitry Rogachev National Medical Research Center of Pediatric Hematology, Moscow, Russian Federation; [2]Federal Center of Brain and Neurotechnologies, Moscow, Russian Federation; [3]Lomonosov Moscow State University, Moscow, Russian Federation

Purpose: Saccades and fixations are critical components of the oculomotor system, forming the basis of visual perception. In previous research, we identified saccadic hypermetria (overshooting visual targets) and poor gaze stability in children who survived posterior fossa tumors (PFT). Both the tumor and its treatment can damage cerebellar centers responsible for eye movement control. This study aimed to explore the impact of tumor- and treatment-related factors on oculomotor functions in PFT survivors.

Methods: The study was conducted at Clinical Research Rehabilitatio Center "Russkoe Pole", a part of Dmitry Rogachev National Medical Research Center Of Pediatric Hematology, Oncology and Immunology. The study included 66 PFT survivors (mean age 12.7 ± 2.6 years, range 9–17) with a mean remission period of 47.0 ± 35.4 months. Diagnoses included medulloblastoma (61%, n = 40), astrocytoma (32%, n = 21), and ependymoma (7%, n = 5). Oculomotor functions were assessed using three tests: fixation on a static object, visually guided saccades, and visual search. Eye movements were recorded using an Arrington eye tracker (60 Hz). Ten tumor- and treatment-related factors were identified by neuro-oncologists, and their impact on fixation and saccadic parameters was analyzed using the Kruskal-Wallis test.

Results: Two factors significantly influenced oculomotor functions: age at onset and tumor localization. Children who developed the disease at an older age demonstrated more stable gaze fixation ($p = 0.003$) and a higher proportion of accurate saccades compared to those with earlier onset ($p = 0.035$). Patients with tumors localized in the cerebellar hemispheres exhibited fewer oculomotor impairments than those with tumors in other regions – cerebellar vermis, 4th ventricle or both ($p < 0.001$ for fixation, $p = 0.026$ for saccades). Additionally, metastasis staging (M-stage) influenced fixation stability: patients with M0 and M1 stages had more stable fixation than those with M2 and M3 stages ($p = 0.029$), with a trend toward fewer hypometric saccades ($p = 0.063$). However, the type of therapy did not significantly affect oculomotor outcomes.

Conclusions: This study is the first to demonstrate the influence of tumor- and treatment-related factors on fixation and saccadic functions in PFT survivors. These findings highlight the importance of considering such factors in the neurorehabilitation of affected children.

79

BIOFEEDBACK TRAINING TO IMPROVE FIXATION STABILITY, VISUAL FUNCTION OUTCOMES, AND QUALITY OF LIFE IN HEMIANOPIA PATIENTS

Monica Daibert-Nido[1], Samuel Markowitz[1], Ghaliah Nsour[1], Michelle Markowitz[1], Yulia Pyatova[1], Mariana Misawa[1]

[1]University of Toronto, Toronto, Canada

Purpose: Biofeedback training (BT) is an innovative rehabilitation method using audio-luminous stimuli. We aimed to use BT to improve fixation stability (FS), relocate blind hemifields, and increase the paracentral retinal sensitivity (PRS) in patients with hemianopia due to brain injury. This is a prospective study aimed at evaluating the visual functions and quality of life pre- and post-BT in Hemianopia patients.

Methods: Five weekly BT sessions of 20 minutes were delivered on the MAIA microperimeter. Ten subjects were randomized into Group A (6 patients, BT training) and group B (4 patients, control assessment plus BT training). The outcomes were PRS, distance monocular best corrected visual acuity (BCVA), near binocular BCVA, reading speed (RS), FS, contrast sensitivity (CS), stereopsis and Massof-48 questionnaire. Paired t-tests were used for statistical analysis.

Results: Ten patients were treated. The average age for Group A was 69.1 ± 15.3, and for Group B 73.7 ± 12.3. The time post-brain injury ranged from 2.5 to 36 months, with one patient having less than 5 months. 7 subjects had a stroke, none had macular sparing. The eye ipsilateral to the hemianopia was treated. In Group A,1-week post-BT, FS, near vision, RS improved, while BCVA, general retinal sensitivity, and stereopsis did not change significantly. The control group showed no improvement in any variable. PRS using the spontaneous Preferred Retinal Locus (PRL) microperimetry was performed 1 month or longer after BT and showed improvement. Massof- 48 QoL questionnaire improved in group A in visual ability, visual information, reading, and mobility. No differences were found in the control group. The PRL did not relocate in the control group, but did in the other group.

Conclusions: BT improved significantly the FS and PRS in patients post-brain injury with hemianopia. Improving the oculomotor functions and paracentral visual fields probably contributed to an improvement in near vision, RS, CS, and quality of life post-BT. PRL relocated slightly post-BT when compared to the control group, also confirming a different use of the retinal sensitivity. This study brings strong evidence to use BT as a novel vision rehabilitation method for enhancing visual function and independence post-brain injury in hemianopia patients.

VISUAL REHABILITATION

551

EXPLORING THE ACCESSIBILITY OF SCHOLARLY CONFERENCES: PERSPECTIVES FROM INDIVIDUALS WHO ARE BLIND, DEAFBLIND OR WHO HAVE LOW VISION

Natalina Martiniello[1, 2,3], L. Penny Rosenblum[4], Aaron Johnson[2, 3, 5], JR Rizzo[6, 7], Mahadeo A. Sukhai[8, 9, 10], Bonnielin Swenor[11], Walter Wittich[1, 2, 3], Yueh-Hsun Wu[12]

[1]School of Optometry, Université de Montréal, Montreal, Canada; [2]Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal (CRIR), Institut Nazareth et Louis-Braille du CISSS de la Montérégie-Centre, Longueuil, Canada; [3]Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal (CRIR), Centre de réadaptation Lethbridge-Layton-Mackay du CIUSSS du Centre-Ouest-de-l'Île-de-Montréal, Montreal, Canada; [4]Vision for Independence LLC, Tucson, USA; [5]Concordia University, Department of Psychology, Montreal, Canada; [6]Department of Rehabilitation Medicine, [7]Department of Neurology, New York University, New York, USA; [8]IDEA-STEM, Kingston, Canada; [9]Faculty of Business and Information Technology, Ontario Tech University, Toronto, Canada; [10]Department of Ophthalmology, Queens University, Kingston, Canada; [11]School of Nursing, John Hopkins University, Baltimore, USA; [12]College of Optometry, The Ohio State University, Columbus, USA

Purpose: The unemployment rate of individuals who are blind, deafblind, or who have low vision remains above 70% across most Global North nations. Scientific conferences are critical to career development, providing researchers with vital opportunities to network, share their work with others, and establish new collaborations. The goal of this study was to explore the conference accessibility experiences of individuals with visual impairments, including barriers and proposed solutions.

Methods: An online survey was distributed in 2024 through social media platforms targeting individuals who are blind, deafblind or who have low vision above the age of 18. Ninety respondents (62.2% women, 36.7% men, 1.1% preferred not to answer; 63.35 blind, 28.9% low vision, 7.8% deafblind/dual sensory impaired) from 8 countries participated.

Results: Challenges accessing conference websites persist, with inaccessible website elements (74.4%) and screen reader incompatibility (64.4%) identified as major issues. Social media platforms, often crucial for conference participation, also presented barriers, especially related to image (98%) and video (57%) accessibility. Participants highlighted barriers related to in-person events, notably in navigating venues, locating conference materials, and accessing poster sessions or exhibit halls. Only 24% of participants reported attending a conference with excellent accessibility, while nearly one-third experienced significant accessibility challenges. Crucially, 71.4% of participants facing severe accessibility issues were unable to access presenter materials during sessions, and only 14.3% received all requested accessible materials. Poster sessions were especially problematic, with most attendees relying heavily on sighted assistance to navigate and access information. Participants also emphasize financial and logistical burdens, including additional transportation costs.

Conclusions: Findings underscore the need for proactive accessibility practices, including advanced provision of accessible conference materials, venue orientation, and environmental accessibility considerations. Implications of findings will be discussed, including the co-development of a toolkit to enhance conference accessibility that is now available online in multiple languages.

545

MODULATING SACCADIC FUNCTION WITH VISUAL FEEDBACK IN BILATERAL CENTRAL VISION LOSS

Nicole Ross[1, 2], Sonisha Neupane[2], Chris Yeung[1], Cecilia Idman-Rait[1], Peter Bex[2]
[1]Specialty Care and Vison Science, New England College of Optometry, Boston, USA;
[2]Northeastern University, Boston, USA

Purpose: To examine whether different types of visual feedback can improve saccadic eye movements in individuals with central vision loss(CVL), given the importance of saccades in reading and daily visual tasks.

Methods: 22 CVL participants (mean age: 61.5 years; range: 19 - 85 years) with normal cognitive function (assessed by Mini-Mental State Examination) were recruited. All exhibited binocular central scotomas were confirmed via a computerized tangent screen task. During testing, participants tracked a 4° target abruptly shifted in randomized horizontal, vertical, or oblique directions to a new location on a 16° eccentric ring, to initiate a saccade. Eye movements were recorded using an EyeLink eye tracker at a sampling rate of 2000 Hz. Participants were instructed to direct their gaze above the moving target, simulating use of an inferior preferred retinal locus (PRL). At random intervals, the target was replaced for 0.5s with a Gabor (σ = 1°), whose spatial frequency and contrast were controlled by a QuestPlus algorithm that adaptively converged on the contrast sensitivity function (CSF). Participants indicated if the grating was tilted ±45°. To assess the role of visual feedback, two conditions were tested: (i) Scotoma Awareness – a gaze-contingent black circle (1° larger than the binocular scotoma) to represent CVL; (ii) PRL Feedback – a dynamic gaze-contingent ring showing preferred peripheral fixation location in real time. Repeated-measures ANOVA with Bonferroni correction was used to compare conditions. Outcomes included visual performance (CSF acuity, AULCSF) and saccadic parameters (latency, duration, peak velocity, starting/landing error, amplitude).

Results: Mean (SD) binocular visual acuity was 0.65 logMAR (0.27), with a mean binocular scotoma radius of 3.5° (2.1°). There was a significant main effect of scotoma size on saccade parameters ($p = 0.001$), including saccadic duration ($p = 0.02$), starting error ($p = 0.001$), landing error ($p < 0.001$), and amplitude ($p = 0.014$). There were no significant main effects of scotoma awareness or PRL feedback. A significant interaction between feedback conditions on starting error was observed. ($p = 0.047$).

Conclusions: Individuals with CVL exhibit impaired saccadic eye movement control; however, short-term visual feedback training did not lead to immediate significant improvements in saccadic performance.

446

AUGMENTED REALITY SIMULATIONS ENHANCED EMPATHY IN OPTOMETRY STUDENTS FOR LOW VISION CARE

Wing Yan Yu[1], Helen Eng[1], Joseph Yau Kei Chan[2], Allen Cheong[1]

[1]School of Optometry, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong; [2]Department of Ophthalmology, School of Clinical Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Pokfulam, Hong Kong

Purpose: This study assessed whether augmented reality (AR) simulations of severe visual impairments improve empathy among optometry students, enhancing their readiness for low vision rehabilitation.

Methods: Forty-seven optometry students (20 females, 27 males) completed the modified Toronto Empathy Questionnaire (TEQ; 16 items, 0-64 scale) before and after AR simulations of severe age-related macular degeneration and retinitis pigmentosa using the ViSymulation Pro app. Real-life tasks during simulations included clinic navigation, equipment use, and daily activities with peer guidance. Post-simulation realism ratings (scale: 1-5) and qualitative takeaways were collected. A test of normality was carried out on the distribution of the TEQ scores. Two-tailed paired t-test and Pearson's Correlation Coefficient were used to analyse the data.

Results: Empathy scores rose significantly from 40.38 ± 6.36 to 42.77 ± 7.82, a mean gain of 2.38 ($t(46) = 5.93$, $p < 0.0001$), with 72.3% showing increases (mean +3.47), 21.3% unchanged, and 6.4% decreased. Key item gains included "urge to help" (+0.34, $p = 0.0028$) and "enjoy making patients feel better" (+0.32, $p = 0.0015$). Averaged simulation realism rating was 4.47 ± 0.62, correlating positively with empathy gains ($r = 0.32$, $p = 0.026$). Qualitative thematic analysis revealed enhanced empathy (91.5%), guiding skills (66.0%), and awareness (55.3%). No significant gender differences were observed.

Conclusions: AR simulations significantly improved empathy among optometry students, potentially enhancing their preparedness for low vision care. Simulation realism modestly augmented empathy gains, underscoring AR's immersive value. The study supports the AR's role in enhancing empathy in clinical training. These findings advocate for AR's integration into empathy-focused education and encourage its application beyond optometry to students in other healthcare professions. Future longitudinal and controlled studies are essential to explore the broader application of AR in interdisciplinary healthcare education.

365

VISUAL ACUITY: PREDICTIVE POWER HIDING IN PLAIN SIGHT

Bennett McAllister[1]
[1]*Eye Care Institute, Western University of Health Sciences, Pomona, California, USA*

Purpose: Current, widespread low vision practice involves visual acuity taken with various charts and methods then applying formulae with multiple assumptions to reach a reading lens power or telescope to meet the patient needs. This process is often very time consuming and yields variable results which must be refined. The purpose of this abstract is to explain and demonstrate the predictive power of a well taken, psychometrically accurate visual acuity in reaching the proper reading power, working distance and telescope to meet a patient's needs.

Methods: Beginning with a look into the origins, foundations and development of modern visual acuity charts will show they follow the principles of human perception and how the ETDRS' just noticeable difference progression as stated in Weber's Law turns the ETDRS chart into a calculating device, much like a slide rule. This phenomenon permits a single, well taken visual acuity measurement to predict performance, to a high degree of accuracy, of changes in reading lens power, working distance and even telescopes without formulae or calculations. In addition, it is possible to find reciprocals between working distance and lens power built into the ETDRS charts.

Results: Demonstration of a four-step process allowing one to make high confidence prediction of lens power, working distance and telescope power based on a single, psychometrically accurate visual acuity will be given with only an ETDRS chart. The four-steps will be graphed out for verification of accuracy.

Conclusion: There is a powerful way of utilizing the ETDRS chart in quickly and accurately, achieving patient success and satisfaction in reading and telescopes with only a single visual acuity measurement.

84

CHALLENGES IN EMPLOYMENT AND SUPPORT MECHANISMS FOR INDIVIDUALS WITH VISUAL IMPAIRMENTS IN BANGLADESH

Mozadded Hossen[1], Rashedul Islam[2], Adib Miraj Utsab[3], Abdul Hadi Al Mehedi Hasan[3], Mostafa Tanim Anik[3]

[1]School of Psychology, Frankfort, Kentucky State University, USA; [2]Projonmo Research Foundation, Study Physician, Dhaka, Bangladesh; [3]Shahid Mukul Foundation, Dinajpur, Bangladesh

Purpose: The purpose of the study is to understanding the factors that impacted employment outcomes for individuals with visual impairment, including access to education and training, availability of employment supports and services, and attitudes towards individuals with visual impairment in the workplace in Bangladesh.

Methods: A survey design was employed to collect data from a sample of 144 individuals with visual impairments who were either employed or seeking employment, the research included questions on demographics, education and training, employment history, employment support, and stigma experienced by individuals with visual impairments in the workplace. Data analysis was descriptive.

Results: The findings of the study conducted among individuals with visual impairments in Bangladesh shed light on the different challenges they face in getting and retaining employment. The results highlight various barriers that these individuals encounter, ranging from difficulties in networking and obtaining job search tools to transportation constraints, language barriers, and comprehending employment legislation. A considerable majority of participants identified this as a severe barrier. This underscores the need for interventions to improve networking opportunities suited to those with visual impairments, such as networking events specifically planned for them or mentorship programs.

Conclusions: This study contributes to a deeper understanding of the employment barriers, supports, and outcomes for individuals with visual impairments in Bangladesh. By addressing the identified challenges and implementing the suggested recommendations, policymakers, social organizations, and many nonprofit organizations can work towards creating a more inclusive and equitable labor market for individuals with visual impairments, enhancing their economic independence and overall well-being.

44

ASSESSING THE FUNCTIONAL VISUAL PERFORMANCE OF OLDER ADULTS USING THE PERFORMANCE QUALITY RATING SCALE

Debbie Boey[1], Tamara Tse[2], Kerry Fitzmaurice[2], Mei Leng Chan[1], Leeanne Carey[2]
[1]Tan Tock Seng Hospital, Singapore, Singapore; [2]La Trobe University, Melbourne, Australia

Purpose: Visual impairment has distinct impacts on the activities of older adults. Quantifying the functional impact of visual loss would complement self-reported outcome measures commonly used and facilitate targeted rehabilitation. In this study, we aim to 1) develop an observational assessment of the functional visual performance of older adults based on the Performance Quality Rating Scale (PQRS) for seven pre-selected activities; 2) test the feasibility and inter-rater agreement in a pilot sample of older adults with visual impairment.

Methods: A convenience sample of older adults with visual impairment (N = 20) performed seven pre-selected activities in an outpatient clinic. Performance was videoed (N = 126 videos) and rated by two raters using specific operational definitions customized for the PQRS.

Results: All participants completed the performance of seven activities with the given resources and 90% of videos were successfully rated using the developed PQRS. Overall, there was substantial inter-rater agreement (weighted Kappa 0.71; 95% CI [0.64, 0.79]) for all the activities. Five activities had substantial to excellent inter-rater agreement while two activities had moderate inter-rater agreement.

Conclusions: The developed PQRS for functional vision is feasible, with substantial inter-rater agreement, to assess observed functional visual performance of older adults in an outpatient setting. Future research is needed to evaluate the assessment on a larger sample with different types of visual impairment and its usefulness in identifying activity limitations of older adults with a range of functional visual performance capacities.

10

LOW VISION REHABILITATION TRAINING AND REFERRAL PATTERNS AMONG OPHTHALMOLOGISTS IN THE USA

Joshua Robinson[1], Janice Law[1], Ansley Kunnath[2]

[1]Ophthalmology & Visual Sciences, Vanderbilt University Medical Center, Nashville, Tennessee, USA; [2]Vanderbilt University School of Medicine, Nashville, Tennessee, USA

Purpose: As the rates of eye diseases such as age-related macular degeneration and glaucoma continue to increase, the societal burden of visual impairment grows. The clinical practice of low vision rehabilitation ("LVR"), which relies primarily on ophthalmology as a referral source in the USA ("US"), has been shown to improve quality of life in those with visual impairment. Within the last decade, the American Academy of Ophthalmology has authored a Preferred Practice Pattern ("PPP") defining early referral to LVR services as the standard of care for patients with permanent visual impairment. However, training protocols related to LVR vary widely across US ophthalmology residency training programs. We aimed to assess LVR training experience and referral patterns among practicing ophthalmologists in the US.

Methods: A questionnaire assessing LVR training history and referral patterns was created and administered through ophthalmologic subspecialty professional societies in the US. Practicing ophthalmologists from all subspecialties were invited to participate. Subjects were categorized based on duration of practice, clinical subspecialty and exposure to LVR during residency training. Conclusions were drawn by analyzing responses between and within various subject categories.

Results: A total of 185 practicing ophthalmologists responded to the survey. Ophthalmologists practicing for 6 or less years were more likely to have had a formal LVR rotation during their residency training compared to ophthalmologists practicing for 7 or more years ($p = 0.03$). Ophthalmologists who completed a formal LVR rotation during residency reported greater confidence in their ability to appropriately identify patients who could benefit from LVR referral ($p = 0.04$) and referred patients at earlier visual acuity thresholds ($P = 0.04$). Clinical subspecialty did not have a significant effect on LVR referral confidence or thresholds.

Conclusions: Residency training programs with formal LVR rotations lead to improved referral confidence and earlier referral for these vital services, aligning more closely with American Academy of Ophthalmology PPP standards. Increasing LVR exposure and training in ophthalmology residency programs may promote earlier referrals and provide improved quality of life for the growing number of individuals living with visual impairment.

LOW VISION ORGANIZATION AND SERVICES

461

CHARACTERIZING PROFITABILITY AND PRACTICE PATTERNS IN LOW VISION SERVICE PROVISION IN THE USA

Janet Szlyk[1, 2], Grace Sorci[1], Patricia Grant[1, 2], Kara Crumbliss[1, 3], Tracy Matchinski[1, 3], Jeffrey Jackson[1], William Seiple[4, 5]

[1]The Chicago Lighthouse, Chicago, USA; [2]Ophthalmology & Visual Sciences, The University of Illinois at Chicago, Chicago, USA; [3]Illinois College of Optometry, Illinois Eye Institute/Rosenbloom Center, Chicago, USA; [4]Lighthouse Guild, New York, USA; [5]Ophthalmology, New York University School of Medicine, New York, USA

Purpose: This study describes the characteristics and methods of low vision service provision that enhance financial viability.

Methods: A 50-item survey was administered to optometrists providing low vision care in the USA. The survey addressed practice characteristics, referral patterns, patient demographics, financial strategies, and perceived barriers to care. Data were analyzed at the practice setting level to characterize service delivery models and financial strategies. Of the 241 responses received, 111 responses from optometrists providing low vision services were included in the analysis. Responses from other types of low-vision providers were excluded due to insufficient sample sizes.

Results: Of the 111 respondents, 25% reported the low vision portion of their practices were incurring a loss, 36% were breaking even, and 39% were profitable. Profit-generating practices tended to have a single low vision provider (63%) and refer externally for specialized services, such as occupational therapy. Whereas non-profit generating practices were more likely to provide specialized services internally. Profit-generating practices reported prescribing more low vision devices and assistive technologies overall, but were more likely to refer externally for these technologies (60% versus 31% in non-profit generating practices). Compared to non-profit generating practices, profit-generating practices were less likely to accept Medicaid patients (44% vs. 22%) and uninsured patients (47% vs. 21%). Optometrists from both types of practices perceived self-pay and private health insurance options as more favorable for generating revenue, Medicare and state-run exchange options as more likely to achieve a break-even point, and Medicaid as more prone to incurring a loss. While technicians are utilized in both profit and non-profit generating practices, technicians in profit generating practices often performed tasks that are typically conducted by physicians in non-profit generating practices, such as visual field mapping.

Conclusions: Overall, these findings highlight key characteristics of a low vision care model that promotes financial stability and outlines a pathway for future research aimed at establishing a more financially sustainable approach to low vision care.

242

INTEGRATING VISION INTO STROKE CARE: ESTABLISHING THE NORWEGIAN VISION IN STROKE (NORVIS) NETWORK

Helle Falkenberg[1], Torgeir Mathisen[1]

[1]Vision and Eye Care, National Centre for Optics, University of South-Eastern Norway, Kongsberg, Norway

Purpose: The ability to see and understand our surroundings is crucial. After a stroke, over 65% of survivors experience impaired vision. Failing to identify vision problems can severely impact coping, rehabilitation, recovery, and quality of life. Vision rehabilitation can significantly improve these outcomes. Despite this, ensuring that all stroke survivors receive proper vision rehabilitation remains a challenge in Norway and internationally. The Norwegian Vision in Stroke (NorVIS) network was founded to reduce the burden of stroke by promoting research-based routines for vision assessment, care, and rehabilitation throughout Norway's health, social, and educational stroke services.

Methods: The Norwegian Vision in Stroke network (NorVIS) was founded in 2019 through an initiative co-created by user groups, academics, and clinicians, supported by The Research Council of Norway. To ensure equality and fair distribution of health and educational resources across Norway, NorVIS partners represent all regions of the country. NorVIS has a steering committee and various work groups to plan, execute, and communicate activities.

Results: NorVIS now includes 40 partners from academia, patient and user organizations, and healthcare and education professionals across disciplines and sectors. International experts from the UK, Sweden, Denmark, and The Netherlands also contribute their expertise. NorVIS engages partners, stakeholders, and stroke survivors through physical and digital meetings, courses, discussions, popular science and media dissemination, research projects, and policy initiatives. NorVIS has initiated several research projects and changes to vision care policy after stroke. NorVIS has facilitated the implementation of vision assessment in interdisciplinary stroke health, improved competence and awareness of health and educational professionals across sectors and informed the public. These services promote brain and general health, coping, the ability to perform meaningful activities, and quality of life.

Conclusions: NorVIS has improved the knowledge and awareness of vision problems after stroke and brain damage and changed clinical practice. It serves as a significant consortium partner and platform for coordinating and developing national and international interdisciplinary education, research, and innovation, thereby strengthening clinical practice in vision rehabilitation after stroke. The key to implementing change is working together and sharing knowledge, in collaboration with interdisciplinary partners and stroke survivors with vision problems.

218

NEW APPROACH FOR REHABILITATION AND EDUCATIONAL SUPPORT WITH PARENTS INVOLVEMENT

Doaa Mabrouk[1]

[1]*Baseera Foundation, Cairo, Egypt*

Purpose: To be able to serve more kids with good quality, to increase parent acceptance and decrease pressure and anxiety among the family.

Methods: Introducing new ways of rehabilitation of the visually impaired through the new activities introduced to the Visually impaired and their families. At first Baseera started to focus on the integration of the visually impaired through the sessions they attend at Baseera centers, that focuses on developing the life skills motors as well as helping them through the integration in their schools and their communities, However, we figured out that there are still some challenges that they face within their own families and friends. Their families still need to work on accepting their children's special cases and being able to help them live normally, that is why we started by having several social activities to overcome this issue such as:

1) Creating support groups between the parents of all the visually impaired so that they can create a support system for each other
2) Making mother- children camps and outings
3) Making camps for the whole family
4) Father camps and Mothers outings
5) Rehabilitation camps for young adults.

Results: The above-mentioned social activities have led to

1) Making the whole family more involved in the visually impaired son's life and have more acceptance and be able to manage the surrounding community.
2) The kids have better educational and social support.
3) Increased the community awareness about the VIP lives through the world of mouth

Conclusions: Baseera has tried a new approach to obtain a holistic rehabilitation of the visually impaired and to help them become more integrated in the community and increase the acceptance of their parents, which has led to incredible results in the development of our visually impaired children to be independent, proactive and productive member of an accepting surrounding community.

171

MODEL OF CARE FOR THE PEOPLE WITH LOW VISION IN BOLIVIA

Ariel Cordova[1], Mesías Vinueza[1], María Rodríguez[1], Shirley Quilo[1], Jonathan Jackson[2, 3], Poonam Shah[4], Juan Carlos Rojas[1]

[1]Fundación San Ignacio de Loyola, Cochabamba, Bolivia; [2]Northern Ireland Clinical Research Network, Belfast, United Kingdom; [3]Optometry, Royal of Hospitals, Belfast, United Kingdom; [4]CBM Global Disability Inclusion, Amstelveen, The Netherlands

Purpose: Although there are institutions caring for blind people in the cities of Cochabamba, Oruro, Sucre and Tarija, mild and moderate visual impairment, and associated disabilities, remain invisible. Bolivia has 140,000 people with low vision or blindness. This project, led by San Ignacio de Loyola Foundation (Fundasil) aims to make low vision visible.

Methods: A coordinated approach with 3 institutions (one in each city) has been implemented. Tools and training developed and used to advance skills in screening; low vision care provision using a model of care and provision of resources. Links formed with hospitals, medical societies, educational networks and Organisations of Persons with Disabilities (OPDs) and information dissemination sessions held.

Model of care:

1. Ophthalmic evaluation.
2. Care plan development by Ophthalmologist, Rehabilitator and Visual Stimulator.
3. Visual stimulation and rehabilitation - functional training to utilize residual vision, improve mobility, orientation and adaptation to daily life.
4. Support by psychologists and social workers on the emotional impact of low vision and enhancing social inclusion.
5. Accessible technology training (e.g. voice systems and apps).
6. Monitoring progress and emotional well-being and adjustment of care plan.

Results: From February to December 2024:

- Visual stimulation and rehabilitation rooms installation in each center.
- Training of trainers by international experts in low vision.
- Development of materials and training platform.
- Training of 2 professionals per institution.
- 5 ophthalmologists trained in low vision practices.
- Agreements with ophthalmological societies for low vision care provision.
- Low vision awareness raising for 103 health professionals, 720 teachers and parents of 23 educational units, 202 people with disabilities (OPDs).
- 4059 students and 758 people from 12 educational institutions screened.
- 805 patients referred for ophthalmological assessment.
- 163 people registered with low vision.
- Stimulation and rehabilitation service for 65 patients.
- 2 self-help groups formed.
- Mental health support for 52 patients.
- Institutional strengthening of 3 organizations for the blind.

Conclusions: Despite social, economic and political instability in Bolivia and some resistance to updating of skills, the achievements so far are due to the vision and personalized and multidisciplinary care of professionals. This will contribute to improved quality of life of people with low vision.

130

WORLD HEALTH ORGANIZATION VISION REHABILITATION STANDARDS: AN INTERNATIONAL FRAMEWORK FOR QUALITY OF SERVICE AND NETWORKING

Federica Calabria[1], Laura Bozeman[2], Geraldine Neill[3], Joaquín Herrera Medina[4, 5]

[1]Fondazione David Chiossone, Genoa, Italy; [2]University of Massachusetts-Boston, School for Global Inclusion and Social Development, Boston, USA; [3]ChildVision, Dublin, Ireland; [4]National Organization of Spanish Blind People ONCE, Madrid, Spain; [5]Universidad de Valladolid, Valladolid, Spain

Purpose: The aim of WHO Vision Rehabilitation Standards is to raise awareness on rehabilitation amongst policy-makers and civil society in the healthcare systems and in Higher Education research and development. They aim to support countries in building comprehensive rehabilitation service delivery models, including key skills and multidisciplinary workforce, to progressively achieve equitable access to quality services for all the population, including those in rural and remote areas.

Methods: The revision process, starting from the first document released in 2015, involved experts in vision rehabilitation from public and private health organizations - from different countries - and added a new panel of specialists that come from service, professional societies, HEIs and beneficiary representatives. New opportunities gained with the technological advancement and remote assistance led to a more flexible approach about devices and infrastructures. Rehabilitation is recognized as a core component of the healthcare continuum; the principle of providing rehabilitation services that are individualized and person-centered is key to any discussion. A new specific chapter on visually impaired children enhances the attention on the specific approach to habilitation in a lifelong intervention, considering the developmental milestones of infancy.

Results: The WHO International Standards define principles and essentials of comprehensive rehabilitation models, establishing baseline for quality of care, as well as a stepwise development of services to be provided to people with vision impairment. A modular approach that is likely to fit all WHO Member States, according to the socio-economic development level and resources available in the community. The complete document also displays the main professional figures and competences in learning outcome oriented curricula.

Conclusions: The discussion on the International Standards is meant to promote methodological innovation, research and professional upskilling, in the multidisciplinary field of vision rehabilitation. At an organizational level, the reference to a shared document can also promote local and transnational cooperation, establishing and strengthening networks and partnerships in rehabilitation, particularly between low-, middle- and high-income countries. The dissemination of the revised WHO Vision Rehabilitation Standards is a means of promotion of quality of care and rights of people with visual disabilities.

78

PROMOTING LOW VISION REHABILITATION AND PSYCHOSOCIAL COUNSELLING FOR OLDER PEOPLE WITH VISUAL IMPAIRMENT IN SWITZERLAND

Vivianne Visschers[1]

[1]*Swiss National Association of and for the Blind SNABLIND, Zurich, Switzerland*

Purpose: The number of older people with a visual impairment will continue to increase worldwide, therefore also in Switzerland. The country not only offers excellent ophthalmological care, but also an extensive network of low vision and psychosocial counselling centres, also called "vision counselling centres" here. Although previous research has shown that low-vision rehabilitation improves people's quality of life and heightens their self-esteem, only few elderly with a visual impairment seem to make use of counselling services in Switzerland. SNABLIND and Retina Suisse therefore set up the research project PROVIAGE (PROfessional network for Visual Impairment at old AGE) to: (1) identify gaps in the current professional network for elderly with a visual impairment and (2) provide recommendations on how to close these gaps and bring more elderly to benefit from the vision counselling centres.

Methods: We conducted two surveys to investigate the attitudes, decision-making strategies and knowledge of various professionals as well as elderly people with a visual impairment. An online survey was completed by 309 professionals (e.g. ophthalmologists, general physicians and managers of counselling centres). 154 elderly that were affected by visual impairment after the age of 65 took part in a telephone survey.

Results: The rate of referral of elderly people to the vision counselling centres was indeed very low (12%). Many ophthalmologists mentioned their lack of time and patients' lack of willingness as obstacles to referral, while general physicians had little knowledge about counselling centres. Professionals disagreed about the appropriate time point and the method for referring patients to vision counselling. The visually impaired elderly did not feel that the counselling centres were of interest to them because they were not "disabled".

Conclusions: Our study has revealed many gaps and opportunities to bring more elderly with a visual impairment to vision counselling centres. We identified four areas for action: knowledge and attitudes, contacts, referral practices and the removal of barriers. Overall, the dialogue between the various professional groups should be fostered so that elderly with visual impairment can be guaranteed a good quality of life in old age.

48

LOW VISION: DELIVERING A COORDINATED TRAINING APPROACH IN LOW AND MIDDLE INCOME COUNTRIES (CBM GLOBAL DISABILITY INCLUSION - CBMG)

Poonam Shah[1], Jonathan Jackson[2, 3]

[1]CBM Global Disability Inclusion, Amstelveen, The Netherlands; [2]Optometry, Royal of Hospitals, Belfast, United Kingdom; [3]Northern Ireland Clinical Research Network, United Kingdom

Purpose: As the global population increases and ages, the extent and social impact of sight loss rises. This presentation outlines characteristics of a training model developed to build skills for delivering Low Vision services in Bolivia.

Methods: Fundasil (Fundación San Ignacio De Loyola - Cochabamba), a longstanding partner of CBMG, hosted a "Training the Trainers" as part of a 3-year Low Vision Program. A group of personnel suitable for training were identified consisting of ophthalmic medical, optometric, vision rehabilitation and programmatic personnel employed in public & private sector organisations (clinical and non-clinical). Subsequent training was provided to teachers at a school for visually impaired learners. Pre-training knowledge, clinical and rehabilitation skills were identified through surveys (10). Pre-training virtual meetings (6) were organised with local coordinators. A training schedule covering the epidemiology of sight loss, low vision management and the use of rehabilitation and psychological strategies, was developed. Equipment necessary to deliver training was procured and volunteer patients invited to assist.

Results: Pretraining surveys identified refraction skills; visual assessment; mental health information and visual aid provision as areas needing attention. 8.5 hours of lectures and 9 hours of practical workshops were delivered to 14 staff over 3 days. Thereafter, a 2-day training in the city of Sucre (Aprecia, Escuela para ciegos), was completed by 2 trained personnel from Fundasil, for 11 staff. Observational feedback was provided by the international trainers. Local engagement was excellent. Delivering training in a multiprofessional inter-agency manner facilitated development of local networks and should encourage ownership and sustainability. Post-training surveys demonstrated improved confidence in knowledge and skills with almost 100% of answers to all questions showing increased confidence in various aspects of Low Vision service delivery. Challenges included the need for translation and different levels of baseline skills in refraction, optical aid dispensing, and patient management.

Conclusions: The model will steer the development of a CBMG low vision framework and provide a continuum of care through Integrated People-Centred eye care, in collaboration with community mental health services. CBMG thanks the hosts in Bolivia for the hospitality extended to the authors during their time in Bolivia.

EPIDEMIOLOGY AND PSYCOLOGY

41

CHALLENGES IN UNDERSTANDING HUMAN VISUAL PERCEPTION AND LOW VISION

Kazim Hilmi Or
Germany

This advanced course provides an in-depth examination of the complexities underlying human visual perception, with a particular focus on the challenges posed by low vision. Designed for scientists and professionals in ophthalmology, neuroscience, and vision research, the session will critically explore the mechanisms governing normal and impaired visual processing, the role of compensatory phenomena, and emerging perspectives on perceptual adaptation in individuals with visual impairments.

The course will begin with an overview of fundamental principles of human visual perception, highlighting key neural and cognitive mechanisms that enable the processing of visual information. Special attention will be given to physiological visual illusions and their implications for understanding perceptual stability and cortical processing. Building on this foundation, we will examine compensatory mechanisms such as physiological fill-in phenomena (e.g., blind spot) versus pathological fill-in processes observed in scotomas, questioning their functional and maladaptive roles in visual rehabilitation. A significant portion of the course will address pathological alterations in perception, including conditions such as blindsight and sightblindness, which challenge traditional models of conscious vision. Participants will engage in discussions on how these conditions inform our understanding of residual visual processing and the neural plasticity of the visual system. Additionally, the course will explore the impact of illumination on visual perception, analyzing how different lighting conditions affect both individuals with normal vision and those with low vision. This will include a critical evaluation of current paradigms in lighting design and their implications for visual accessibility.

By the end of the session, participants will have gained a comprehensive understanding of the complexities inherent in visual perception, particularly in the context of low vision. The course aims to foster critical discourse on unresolved questions in vision science, encouraging interdisciplinary collaboration and novel research directions

549

PERCEPTIONS AND IMPLICATIONS OF VISION IMPAIRMENT TERMINOLOGY AND DEFINITIONS ACROSS THE EUROPEAN UNION AND THE UK: A COMPARATIVE EXPLORATION

Blaithin Gallagher[1], Laura Cushley[2, 3], Jonathan Jackson[2, 4]

[1]BAM Gallagher Consulting, Leitrim, Ireland; [2]Belfast Health and Social Care Trust, Department of Ophthalmology, Belfast, United Kingdom; [3]Centre for Public Health, Belfast, Queen's University Belfast, United Kingdom; [4]Belfast Health and Social Care Trust, Northern Ireland Clinical Research Network, Belfast, United Kingdom

Purpose: This scoping review maps and compares definitions of blindness and low vision across the European Union (EU) and the United Kingdom (UK). There is currently no harmonised standard for defining visual impairment, and these variations may influence service provision, social inclusion, and policymaking. By analysing existing definitions and their alignment with World Health Organisation (WHO) guidelines, this study provides a comprehensive overview of terminological inconsistencies and their implications.

Methods: A scoping review methodology was used. An information specialist was consulted to identify keywords and databases were searched to identify, select, and synthesise existing knowledge on blindness definitions within EU member states and the UK. These papers were uploaded into Covidence for abstract and title screening, full text screening and data extraction. Extracted data was analysed using frequency analysis on SPSS Version 29 and thematic and comparative analysis was used to identify key gaps and inconsistencies. Surveys were collected from organisations representing vision impaired individuals across EU member states and the UK to gather anecdotal evidence on how these definitions impact quality of life, social inclusion and access to services. Data was analysed using frequency and thematic analysis.

Results: Definitions of blindness and low vision vary significantly across jurisdictions. Some have statutory backing, others are based on formal charitable frameworks, while a number are rooted in historical traditions. Certain definitions rely on quantitative thresholds, whereas others employ qualitative descriptions. This review examines these variations in detail. Such inconsistencies can influence policy implementation and service accessibility. Additionally, the study highlights how these variations can affect individuals with visual impairments, particularly in terms of social participation and legal recognition.

Conclusions: This study contributes to vision science research by highlighting disparities in the definitions of blindness and low vision across Europe. The findings offer evidence-based recommendations for greater standardisation and alignment with WHO guidelines to ensure equitable treatment and service provision. This research provides valuable insights for policymakers, healthcare providers, and advocacy groups, informing future discussions on standardisation and harmonisation in the field of visual impairment.

521

IS PERCEIVED SOCIAL SUPPORT RELEVANT FOR DEPRESSION AND ANXIETY IN PATIENTS WITH AGE-RELATED NEOVASCULAR MACULAR DEGENERATION?

Ida Nilsson[1, 2], Hugo Senra[3], Karthikeyan Baskaran[1], Camilla Mohlin[4], Antonio Filipe Macedo[1]

[1]Department of Medicine and Optometry, [4]Department of Chemistry and Biomedical Sciences, Linnaeus University, Kalmar, Sweden; [2]Department of Ophthalmology, Region Kalmar, Kalmar County Hospital, Kalmar, Sweden; [3]Institute of Electronics and Informatics Engineering of Aveiro (IEETA), University of Aveiro,Aveiro, Portugal

Purpose: To determine if perceived social support is relevant for depression and anxiety in patients with age-related neovascular macular degeneration.

Methods: This observational cross-sectional study involved participants diagnosed with neovascular age-related macular degeneration (nAMD) from Sweden. All participants were receiving treatment for their condition. Anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS), while perceived social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS). Visual acuity was evaluated using ETDRS charts, and the number of hospital episodes related to mental health visits was obtained from electronic records.

Results: Of the 179 participants included in this study, 124 (70%) were female, and the mean age was 78.6 (SD = 7.60) years. The mean acuity in the better-seeing eye was 0.26 (SD = 0.24) logMAR. The mean anxiety score was 4.97 (SD = 3.33), and the mean depression score was 4.25 (SD = 3.26). The mean social support score was 5.73 (SD = 1.29). Significant multivariate regression models were found for anxiety ($p < 0.001$), depression ($p < 0.0001$), and both combined as given by the total HADS score ($p < 0.0001$). Higher perceived social support was independently associated with lower anxiety and depression, while a greater number of mental health–related hospital visits was independently associated with higher anxiety and depression.

Conclusions: We found that perceived social support was indeed relevant to depression and anxiety in patients with neovascular AMD undergoing anti-VEGF therapy. As a modifiable factor, targeted interventions that enhance social connectedness may help mitigate mental health risks in this patient group.

450

A RETROSPECTIVE ANALYSIS OF CERTIFICATION OF SIGHT IMPAIRMENT IN NORTHERN IRELAND (2014-2024): CHALLANGES AND CRITICAL REFLECTIONS

Jonathan Jackson[1, 2], Laura Cushley[3], Roseleen Mccann[1], Tanya Moutray[1]

[1]Belfast Health & Social Care Trust, Ophthalmology & Optometry, Belfast, United Kingdom; [2]BHSCT, NICRN, Belfast, United Kingdom; [3]Queens University Belfast, Ophthalmology & Optometry, Belfast, United Kingdom

Purpose: This study highlights challenges and critical reflections on certification of visual impairment (CVI) pathways over the past 11 years in Northern Ireland (NI).

Methods: Our team has collected and analysed NI certification data from 2014-2024. Substantive changes to the certification of visual impairment process were introduced in 2018. COVID-19 affected overall numbers in 2019/2020. Data on all CVI forms were entered into an excel database and analysed using SPSS (version_28). Data validation was conducted on 10% of data to ensure accuracy.

Results: A total of 5901 people were certified in NI over the last 11 years. Annual numbers generally increasing year on year. A total of 315 people were certified in 2014 versus 688 certified in 2024 with a large spike of certifications in 2023 (824). Children's certifications have increasing annually from 17 in 2014 to 65 in 2024. Our data aligns with figures from other regions of the United Kingdom. More people are certified as severely sight impaired than sight impaired which is not the case in England and Wales. More females are certified annually than males. The biggest cause of certification in adults in NI is AMD, attributing to around 50% of certifications annually. Glaucoma and Diabetic Eye Disease are the 2nd & 3rd largest causes, alternating throughout the years. These account for between 4-10% of annual certifications. In working age adults, diabetic eye disease is the leading cause of certification however optic atrophy has increased by 8-fold in the last 11 years. Cortical visual Impairment accounts for 50% of childhood certification.

Conclusions: The introduction of a new CVI certification process (2018) and increased awareness of certification resulted in a consistent increase in certification year on year. Service restrictions and patient apprehension about sourcing health and social care assistance during the COVID-19 pandemic (2020) resulted in marked month on month variability in 2020. NI certification figures are now proportionally similar to figures in Great Britain. A new Electronic Care Record system is likely to impact future trends.

417

ARE VISUAL FUNCTION QUESTIONNAIRE GOALS ALIGNED WITH GOALS IDENTIFIED IN CLINICAL PRACTICE?

Phillippa Dorling[1], Bianca Guzman[1], Sonaina Merchant[1], Melissa Ngo[1], Alexis Malkin[1], Nicole Ross[1], Micaela Gobeille[1]

[1]New England College of Optometry, Boston, USA

Purpose: Clinical intake questionnaires are not uniformly implemented for low vision (LV), although visual function questionnaires (VFQs) could be used if their content aligns with clinical goal identification strategies. Here we evaluate alignment of categories of goals identified by VFQ and in LV clinical practice.

Methods: Patients (N = 100) completed three VFQs before a LV exam: 50 Activity Inventory goals (AI-G), NEI VFQ-25c visual function subscale (NEI-VF), and VA LV VFQ-48. VFQ goals were any items receiving difficulty ratings. Clinical goals were identified from the plan of care from each patient's medical record. VFQ and clinical goals were filtered into functional categories (i.e., reading, driving, social interactions, hobbies, technology, activities of daily living (ADLs), and mobility). Trends in the frequency of patients with one or more goal(s) were explored for each category, for each goal identification method (i.e., clinical, AI-G, NEI-VF, VA LV VFQ-48).

Results: Mean age of subjects was 62 years (SD = 17), with a mean better eye VA of 0.56 (SD = 0.44) logMAR. Common diagnoses included: macular disease (N = 32), glaucoma (N = 23), and retinitis pigmentosa (N = 10). Clinically, an average of 5.1 goals (SD = 2.3) were reported per patient. Category frequencies varied (reading 65%, mobility 30%, technology 29%, driving 24%, ADL 9%, hobbies 6% and social interactions 1%). An average of 19.3 AI-G (SD = 10.3), 20.8 NEI-VF (SD = 5.8) and 27.3 VA LV VFQ-48 goals (SD = 12.1) were reported per patient. All NEI-VF and VA LV VFQ-48 categories were frequently identified (> 85%), while AI-G frequencies varied (hobbies 97%, social interactions 94%, reading 85%, technology 84%, ADL 78% mobility 55%, and driving 52%). Clinical goals not addressed by VFQ included: emotional wellbeing (2%), prism/corrective lenses (8%), lighting (8%), community resources (19%), and glare control (42%). No technology items were included in NEI-VF or VA LV VFQ-48.

Conclusions: While reading, the most frequent clinical goal, is represented in all VFQs, gaps in item content result in a lack of items evaluating glare sensitivity, technology, and emotional wellbeing. These should be addressed to facilitate clinical integration.

386

SLEEP PROBLEMS IN ADULTS WITH VISUAL IMPAIRMENT

Ruth van Nispen[1], Hilde Van Der Aa[1], Gianni Virgili[2], Katie Curran[3], Tunde Peto[3], Ysbrand van der Werf[4], Roselie Diederen[1]

[1]Ophthalmology, [4]Neuroscience, Amsterdam UMC, Amsterdam, The Netherlands; [2]University of Florence, Florence, Italy; [3]Dentistry and Biomedical Sciences, School of Medicine, Queen's University Belfast, Belfast, United Kingdom

Purpose: Sleep plays a vital role in physical and mental health, but sleep problems are often mentioned in persons with visual impairment (VI). The aim was to investigate the association between VI and sleep disorders in a case-control study and a systematic review.

Methods: In a secondary cross-sectional data analysis, adults with VI (N = 247) were compared to controls with normal sight (N = 233). The Holland Sleep Disorders Questionnaire was administered in telephone interviews. In addition, a literature search was performed in PubMed, Embase and Cochrane. Next to a systematic review, a meta-analysis was performed to quantitatively summarize the association between eye diseases and sleep disorders.

Results: The case-control study showed a significant association between VI and sleep disorders (OR 3.3; 95% confidence interval (CI) [1.0 - 10.7]). Within cases, this association increased with VI severity from OR 3.5 (95%CI 0.8-15.8; mild VI) to 8.5 (95%CI 2.7 - 26.2; blindness). Compared to controls, having glaucoma had the highest odds on having sleep disorders (4.9; 95%CI [1.2 – 20.8]), followed by retinitis pigmentosa (3.6; 95%CI [0.9 – 15.5]), macular degeneration (2.7; 95%CI [0.6 – 12.3]) and cortical impairment (2.5; 95%CI [0.4 – 17.4]). Out of 3267 hits, 80 studies were eligible for inclusion in the systematic review. Patients had higher odds of having obstructive sleep apnea (OR: 1.8; 95%CI: 1.5 – 2.0) and insomnia (OR: 4.1; 95%CI: 1.2 – 14.4). Patients reported more often excessive daytime sleepiness (standardized mean difference (SMD): 0.48; 95%CI: 0.1 – 0.9) and lower sleep quality than controls (SMD: 0.80; 95%CI: 0.1 – 1.5).

Conclusion: Both the case-control study and meta-analyses showed that having VI is associated with sleep disorders, with higher odds related to the severity of VI or certain eye diseases. A large effect size indicating lower sleep quality was found in persons with VI. As similar sleep problems occur across various eye diseases, underlying mechanisms related to melanopsin and the circadian cycle, stress and cortisol levels, vascular or neurological damage, inflammatory, behavioural or other patient-related factors have been described in the literature. We recommend to increase awareness of sleep problems in persons with VI and to refer to existing interventions to improve sleep.

263

THE PREVALENCE OF VISUAL IMPAIRMENT IN THE NETHERLANDS: A META-ANALYSIS AND FORECAST

Ellen Elsman[1], Petra Rausch[1], Hilde Van Der Aa[1], Jan Keunen[2], Caroline Klaver[3], Ruth Van Nispen[1]

[1]Amsterdam UMC, Ophthalmology, Amsterdam, The Netherlands; [2]Radboud UMC, Ophthalmology, Nijmegen, The Netherlands; [3]Erasmus MC, Ophthalmology, Rotterdam, The Netherlands

Purpose: Accurate prevalence estimates of visual impairment in The Netherlands are lacking. This study aims to estimate the current prevalence of visual impairment among adults in The Netherlands and forecasts the prevalence up to 2050.

Methods: Databases were included if they contained data on vision (visual acuity, self-reported visual ability, or International Classification of Primary Care (ICPC) codes), had the last measurement after 2010, and were roughly representative of the Dutch general population. Self-reported visual ability was categorized as A) near vision difficulties; B) distance vision difficulties; C) either of these; and D) both. Population-based prevalences were calculated for each database, as were stratified prevalences for sex and age categories. Population-based prevalences for the different categorizations were pooled using a meta-analysis of proportions with a random-effects model. Heterogeneity was analyzed and subgroup analyses were conducted. Age-effects were modeled as well using generalized linear mixed-effects models.

Results: Eight databases including 1,814,194 persons were included and analyzed. Prevalence ranged from 0.2 to 0.5% for visual acuity or ICPC codes, 1.1 to 5.9% for near vision difficulties, 0.6 to 2.7% for distance vision, 1.6 to 6.5% for either of these, and 0.2 to 1.0% for both. The pooled prevalence including difficulties with near vision was 1.16% (95% CI: 0.45-3.41) and including distance vision 0.91% (95% CI: 0.42-1.57). Pooled prevalence for either criteria was 2.09% (95% CI: 0.58-4.50) and for both criteria 0.47% (95% CI: 0.29-0.70). In all models, heterogeneity was high (>90%). Subgroup analyses in most models indicated moderating effects of data source (visual acuity vs. ICPC vs. self-reported visual ability). The estimated prevalence of visual impairment increased with advancing age for all assessment types and definitions. Based on the age- and assessment-specific prevalence estimates, and averaging across assessment types, approximately 181,909 Dutch adults have visual impairment in 2025. This number is projected to increase steadily in the coming decades due to population growth and aging, reaching 224,117 by 2050.

Conclusions: This study provides more accurate estimates of visual impairment in The Netherlands, informing future demands for eye care and low vision services, and guiding healthcare policy in this high income country.

64 - EPIDEMIOLOGY AND SOCIAL IMPACT

CHALLENGES FACED BY INDIVIDUALS WITH VISUAL IMPAIRMENT ACCESSING HEALTHCARE IN THE UK

Chris Dickinson[1], Chu-Heng Lin[1]
[1]University of Manchester, Manchester, United Kingdom

Purpose: Individuals with visual impairment have increased risk of additional health conditions and mental health issues. Consequently, the importance and frequency of accessing healthcare to receive timely medical attention for individuals with visual impairments is high. This study explored the challenges that these individuals face when accessing healthcare services in the UK.

Methods: Semi-structured interviews were conducted with individuals with visual impairment without hearing or learning disabilities, recruited from across the UK via specialist charities. Interviews took place remotely and were recorded for later transcription and analysis. Data was imported into NVivo 12 software, and thematic analysis was employed.

Results: Fifteen individuals were interviewed and all were severely sight impaired. Ages ranged from 31-82 years, and the interviews were between 17 and 76 minutes in length (mean 43 minutes).

Themes which were identified were Infrastructure (subthemes included: Written communication, Public health information, Staff awareness and training, Aids and devices, Carers and helpers); Appointments (subthemes: Making an appointment, Letters and reminders, Travel to appointment, Building layout, Waiting areas); The healthcare encounter (subthemes: Being collected from Reception, Experiences with professionals, Negative feelings, Delivering visual information, Consent) and Medication and Medical Devices (subthemes: Ordering and collecting medication; Recognising medication; Managing medication; Reading information). Difficulties occurred at all stages of the patient journey, including travel to the appointment, and inaccessible direction signage and self-registration systems in the healthcare facility. Participants reported that many healthcare providers were unaware of their visual impairment and did not offer assistance during the appointment. Individuals reported repeatedly receiving information in inaccessible formats. There was poor appreciation by professionals of the importance of Braille labelling to some individuals. Assistance from companions was required at multiple timepoints whilst accessing care.

Conclusions: Challenges were identified from making an appointment to managing the treatment. The healthcare environment was not user-friendly, staff were unprepared and unaware of how to interact with an individual with visual impairment, and modern IT systems were often inaccessible. Participants suggested improvements to services such as appointment reminders, improved awareness of visual impairment to provide proactive assistance, adopting preferred communication methods, and designing more accessible layouts in healthcare facilities.

27

THE PSYCHOLOGICAL ASSESSMENT OF CHILDREN WITH VISUAL IMPAIRMENT: RESULTS FROM THE PACVI STUDY

Moire Stevenson[1, 2], Annie Chatillon[3, 4], Mariah Lisi[2, 3]

[1]Lethbridge-Layton Mackay Rehabilitation Centre, CIUSSS West-Central Montreal, Montreal, Canada; [2]Centre de Recherche Interdisciplenaire en Readaptation de Montreal Metropolitain, Montreal, Canada; [3]CIUSSS Centre-Ouest de Montreal, Montreal, Canada; [4]Centre de Recherche Interdisciplenaire en Readaptation de Montreal Metropolitain, Montreal, Canada

Purpose: Understanding a child's cognitive functioning and neurodevelopment is crucial for providing appropriate rehabilitation services and education. However, there is a lack of suitable assessment measures for children with visual impairment and blindness (VIB). This gap exists for several reasons. Many standardized measures used for sighted children rely heavily on visual stimuli, which children with VIB cannot access. Additionally, there are overlapping characteristics between children on the autism spectrum and children with VIB, making assessments more complex. Furthermore, we lack sufficient knowledge about how neurotypical children with VIB develop.

Methods: Since 2020, we have been conducting a three-phase study to address these challenges and develop guidelines for assessing cognitive functioning and autism spectrum disorders in children with VIB. The first phase involved a scoping review to summarize the state of the science in this field. The second phase, a Delphi Study, aimed to identify current practices and reach a consensus on best practices for psychological assessment. The final phase synthesized the findings to create a protocol and guidelines for clinicians.

Results: The scoping review revealed a critical need for specific guidelines and considerations when assessing children with VIB. In the Delphi Study, we discovered that most clinicians relied on similar measures and made similar adaptations, accommodations, and allowances to meet the unique needs of these children. Combining the knowledge from the first phase with the practices reported in the Delphi Study, we developed a comprehensive protocol and assessment tool for clinicians thus providing practical guidelines for conducting assessments tailored to children with VIB.

Conclusions: Our presentation will detail the research findings and offer an overview of the guidelines and assessment tool, contributing to improved psychological assessments for this population.

19

MENTAL HEALTH AND WELLBEING IN INHERITED MACULAR DISEASE

Michael Crossland[1, 2, 3], Lottie Wood[1], Marc Tibber[1], Tessa Dekker[1, 3], Michel Michaelides[1, 2, 3]

[1]University College London, London, United Kingdom; [2]Moorfields Eye Hospital NHS Foundation Trust, London, United Kingdom; [3]NIHR Moorfields Biomedical Research Centre, London, United Kingdom

Purpose: It is not fully understood why people with vision impairment have higher levels of mental ill-health and lower mental wellbeing than those with better vision. To explore this, we assessed depression, anxiety and wellbeing in adolescents and adults with vision impairment caused by inherited macular disease. We explored the associations between mental health and multiple demographic, clinical and psychosocial factors, including age, visual acuity, duration of vision impairment, loneliness, vision-related health utility and level of disability.

Methods: People aged 13 years or older with vision impairment in both eyes caused by inherited macular disease were recruited. Demographic and clinical details were extracted from hospital records. Depression, anxiety, mental wellbeing, loneliness, vision-related health utility and level of disability were assessed in a telephone interview, using age-appropriate instruments. Logistic regression was used to identify the effect of age, sex, socioeconomic status, ethnic group, years of disease, visual acuity, loneliness, vision-related health utility, and level of function and disability on the presence of depression and anxiety. Linear regressions were constructed to evaluate the effect of the same variables on mental wellbeing.

Results: 36 participants were recruited, with a mean age of 38 years (sd: 21, range: 13-76). Six participants (17%) screened positive for depression and nine (25%) for generalised anxiety disorder. Significant associations were found between loneliness and wellbeing ($F = 17$, $p < 0.001$); vision-related health utility and anxiety (Chi-square $= 4.9$, $p < 0.05$); vision-related health utility and wellbeing ($F = 15.3$, $p < 0.001$); and level of disability and wellbeing ($F = 8.89$, $p < 0.01$). There was no relationship between mental health or wellbeing and age, sex, visual acuity or duration of disease.

Conclusions: Lower loneliness, higher vision-related healthy utility and lower levels of disability were associated with better mental wellbeing in people with inherited macular disease. Severity or duration of vision impairment were not associated with any of the indices of mental ill-health or wellbeing. Although these findings are cross-sectional, they highlight the potential benefits of interventions to reduce loneliness and increase health utility on the mental wellbeing of people with vision impairment.

9

ENHANCING ACCESS TO LOW VISION SERVICES FOR SCHOOL CHILDREN WITH OCULO-CUTANEOUS ALBINISM IN NIGERIA: INSIGHTS FROM THE BRIDGE OF SIGHT FOUNDATION/NORVATIS PROJECT

Ekeoma Adure Edemeraro[1, 2], Luke Edemeraro[1]

[1]Bridge of Sight Foundation, Abuja, Nigeria; [2]DIA Hospital, Abuja, Nigeria

Purpose: Oculo-Cutaneous Albinism (OCA) is a genetic condition causing significant visual impairment, affecting children's education and social development. Despite being a leading cause of low vision in Nigerian children, access to specialized care is limited. This paper explores insights from a Bridge of Sight Foundation project, supported by the Novartis XOVA award, aimed at improving visual outcomes for school children with OCA in North Central Nigeria.

Methods: The project was implemented in collaboration with The Albino Foundation (TAF) Africa and local health authorities across seven states in Nigeria's North Central region. The primary intervention involved the training of 14 optometrists in basic clinical low vision rehabilitation and the distribution of subsidized spectacles and free low vision devices such as reading stands, and optical devices. Information on the barriers and enablers of low vision service uptake were collected via interviews with caregivers, state coordinators of TAF Africa, and eyecare providers.

Results: The project successfully trained all 14 optometrists, distributed essential low vision devices, and reached over 50% of target children within the first year. Barriers included low caregiver awareness, financial constraints, rural security challenges, and inadequate school support. Cultural blindness in healthcare delivery also played a significant role, as many families did not recognize low vision due to OCA as a manageable condition. Stigma and misconceptions, such as beliefs that albinism is a supernatural condition, discouraged families from seeking care. However, community-led awareness campaigns, engagement with relevant stakeholders, and culturally sensitive training for optometrists improved acceptance and service uptake. Key outcomes included increased access to low vision services, enhanced visual function, and improved academic engagement. The project also boosted awareness of low vision rehabilitation among healthcare professionals.

Conclusion: Addressing socio-economic, cultural, and logistical barriers is crucial for improving low vision service uptake among children with OCA in Nigeria. Sustainable solutions, including culturally competent eye care, scalable collaborations, and continuous awareness campaigns, are essential for long-term impact. These strategies can help overcome systemic obstacles and enhance the quality of life for children with OCA.

VISUAL REHABILITATION

548

PERCEPTUAL LEARNING OF A CROWDING TASK IN PATIENTS WITH CENTRAL VISION LOSS - IS THERE A TRANSFER TO OTHER VISUAL TASKS?

Elena von Perponcher[1], Mark Greenlee[1], Tina Plank[1]
[1]*Institute for Experimental Psychology, Regensburg, Germany*

Purpose: Macular degeneration leads to central vision loss, often causing patients to rely on eccentric fixation at a preferred retinal locus (PRL) in the intact peripheral retina. Visual crowding refers to the difficulty in recognizing objects presented in the periphery when surrounded by distractors. This effect, characterized by a "critical distance" between the target and flankers, can be mitigated through perceptual learning. In this ongoing study, we examine whether perceptual learning of a crowding task, performed by patients with central vision loss at their PRL, transfers to other visual tasks such as contrast sensitivity, visual acuity, lexical decision-making, or reading.

Methods: Fifteen patients (mean age = 61.9 years) with age-related macular degeneration or hereditary macular dystrophies participated in an eight-session training of a crowding task. In each trial, they were presented with a Landolt C target at their PRL, surrounded by flankers (same-sized circles) arranged either radially or tangentially around the target. Their task was to identify the gap direction of the Landolt C. A 2-down, 1-up adaptive procedure adjusted the critical target-to-flanker distance based on performance. Learning success was assessed by measuring reductions in this critical distance. Before and after training, participants were additionally tested on letter visual acuity (FrACT), Vernier hyperacuity (FrACT), contrast sensitivity (FrACT), a lexical decision task (discriminating three-letter words from non-words), and reading speed (IReST).

Results: Preliminary findings indicate significant improvements in the trained crowding task ($p = .012$). Transfer effects were observed in Vernier hyperacuity (FrACT), which improved by an average of 18.8%, and reading speed (IReST), which improved by 19.2%, while the lexical decision task and letter visual acuity showed only moderate transfer effects (5.3% and 6.7%, respectively). Contrast sensitivity (FrACT) showed no improvement (-0.8%).

Conclusions: These preliminary results suggest that training on a Landolt C crowding task may provide benefits for hyperacuity and reading speed in patients with central vision loss. Further investigation with a larger sample and comparison with age-matched controls will determine the statistical robustness of these initial effects.

444

VR4EVR: VIRTUAL REALITY FOR ENRICHED VISUAL REHABILITION

Minke de Boer[1,2], Jente Vermeer[1,3], Ward Nieboer[1], Martina Dossi[4], Ilan Hartskeerl[4], Angelos Chatzimparmpas[4], Tanja Nijboer[5], Renske Grootendorst[2], Frans Cornelissen[1]

[1]Laboratory of Experimental Ophthalmology, University Medical Center Groningen, Groningen, The Netherlands; [2]Royal Dutch Visio - Centre of Expertise for Blind and Partially Sighted People, Huizen, The Netherlands; [3]Hanze University of Applied Sciences, Allied Health Care and Nursing, Groningen, The Netherlands; [4]Information and Computing Sciences, [5]Experimental Psychology - Helmholtz Institute, Utrecht, University of Utrecht, The Netherlands

Purpose: Stroke-related damage to the central neural pathways from the eye to the brain can result in homonymous hemianopia (HH). This impairment results in half field blindness, which severely impacts the physical, social, and emotional wellbeing of people with HH, and limits their ability to maintain a healthy lifestyle and participate in society. Current vision training programs are difficult to access due to waiting lists, the requirement for frequent in-person rehabilitation sessions and fatiguing and non-engaging training. Our aim is to understand how to make vision training more accessible, engaging, and effective, and how this translates into healthier living in those with HH.

Methods: With VR4eVR, we will create an enriched, adaptive, at-home vision training system that deploys virtual reality (VR) technology, serious gaming elements, and on-line monitoring through a visual analytics dashboard. Additionally, the VR will be used to demonstrate to family, employers, and caregivers, in simulation, the consequences of the visual impairment. We will co-create this VR-solution together with HH individuals and healthcare professionals through field labs. Field labs allow gathering wishes and demands for the solution as well as testing prototypes. In addition to the field labs, we will run a Delphi study to develop a test battery that allows measuring to what extent VR-based vision training translates into healthier living.

Results: We will present our preliminary insights from our first field labs, detailing user requirements, accessibility barriers, and potential training enhancements, as well as from the Delphi study on the healthy living test battery.

Conclusions: We expect that applying technologies such as VR through co-creation with HH individuals and healthcare therapists will enable us to improve vision training. Ultimately, we expect this to translate into increased participation in society, a healthier lifestyle, and improved quality of life. The findings could also serve as a basis for treatment and rehabilitation of other vision impairments.

339

EFFECT OF ACTION VIDEO GAME TRAINING AND CONVENTIONAL PHYSICAL TRAINING ON GLAUCOMA PATIENTS' VISUAL COGNITIVE PERFORMANCE

Yihong Peng[1], Iris Lau[2], Stanley Winser[2], Ben Thompson[3], Allen Cheong[1]

[1]School of Optometry, [2]School of Rehabilitation Science, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; [3]University of Waterloo, Waterloo, Canada

Purpose: Glaucoma patients often experience impaired visual cognitive deficits, including reduced attention and diminished visuomotor coordination. While action video game (AVG) training has been shown to enhance visual cognitive abilities in healthy individuals through neuroplastic changes, its effects on glaucoma patients remains underexplored. This study aimed to investigate whether AVG training could improve visual attention and visual field performance in glaucoma patients, potentially modulating visual cortex neuroplasticity. Data collection for this project is ongoing, and group decoding has not been conducted.

Methods: Twenty-eight glaucoma subjects were randomly assigned to one of the two masked groups (1 & 2), with 14 subjects in each, corresponding to AVG or Physical Training. Each group completed 20 1-hour training sessions and assessments occurred at four time points: baseline (T1), after 10 sessions (T2), after 20 sessions (T3), and one month post-training (T4). Visual cognitive function was evaluated using: 1) reaction time tests (Simple Reaction Test [SRT] and Choice Reaction Test [CRT]); 2) useful field of view tests (Processing Speed Test [PST], Divided Attention Test [DAT], and the Selective Attention Test [SAT]); and 3) the 24-2 SITA full-threshold Humphrey visual field test.

Results: No significant differences were found between the groups at T1. For reaction time, Group 1 showed a significant reduction in SRT at T2 ($p = 0.036$), which was maintained through T3 and T4, and reduced CRT across all time points. For visual attention, Group 1 significant improved in the SAT at T2, T3, and T4 ($p = 0.026$), but not in the PST or DAT. For visual field performance, Group 1 showed a significant improvement in mean deviation for the better eye across all time points ($p = 0.018$). Group 2 only showed reducing CRT across all timepoints while others didn't show the effect.

Conclusions: Preliminary findings suggest that Group 1 may enhance specific visual cognitive functions more effectively than Group 2 in glaucoma patients, with benefits persisting at least one month post-training. The full study results will be available by June 2025. Further studies with larger samples are needed to explore the underlying neural mechanisms.

208

THE IMPACT OF COVID-19 ON UK LOW VISION ASSESSMENT SERVICES - A MIXED METHODS INVESTIGATION OF SERVICE PROVIDERS' AND SERVICE USERS' PERSPECTIVES

Elizabeth Frost[1], Dave Edgar[1], Chris Dickinson[2], Ahalya Subramanian[1]

[1]Optometry and Visual Science, City St George's, University of London, London, United Kingdom; [2]Pharmacy and Optometry, University of Manchester, Manchester, United Kingdom

Purpose: Individuals with vision impairment (IVI) often require low vision (LV) support services. During COVID-19 these were disrupted, with some provided remotely. The aim was to investigate Service Providers' (SPs) and IVIs' experiences of, and views on remote LV assessments during and immediately post-pandemic; and their views on future service provision.

Methods: Separate surveys for each group were conducted both during (SP N = 80; IVI N = 46) and after (SP N = 27; IVI N = 35) the pandemic. Telephone interviews (SP N = 11; IVI N = 13) were conducted during and post-pandemic.

Results: Some SPs and IVIs reported using pre- or post-clinic phone calls for information gathering and discussing test results but did not regard these as remote / hybrid services. SPs reported a significant increase ($p < 0.001$) in the proportion of LV assessments provided remotely during the pandemic (either alongside face-to-face provision, or remotely only), compared to pre-pandemic. SPs also expected this increase to continue post-pandemic compared to pre-pandemic ($p < 0.001$). However, the later survey showed that the increase in the proportion of LV assessments actually provided remotely post-pandemic was not statistically significant ($p = 0.20$). Advantages (e.g. ability to provide support during the pandemic) and limitations (e.g. issues for hearing-impaired users) of remote LV assessments were highlighted. IVIs reported positive experiences of remote assessments, but there were concerns about the appropriateness of LV aids provided remotely and the lack of clinical examinations. Advantages (e.g. no infection risk) and limitations (e.g. lack of social contact) were identified. SPs preferred the option of hybrid services combining remote and face-to-face, with concerns raised regarding the inability to assess magnification and provide training in using LV aids in fully remote services. IVIs raised concerns around accessibility and that funding for services could be cut in future.

Conclusions: There is potential for some remote / hybrid LV assessment services. However more research into effective procedures (e.g. teaching magnifier use remotely), workforce training and producing protocols would be beneficial. This would also help protect services in any future pandemic. Future services require adequate funding and should be user-centred, addressing challenges such as access.

567

NEW PERSPECTIVES IS LOW VISION REHABILITATION

Kazim Hilmi Or
Germany

Course Description: This advanced course provides an in-depth exploration of emerging approaches in low vision rehabilitation, integrating recent technological advancements, novel therapeutic strategies, and interdisciplinary research perspectives. Designed for scientists and professionals in ophthalmology, optometry, and vision sciences, the course aims to critically examine innovative solutions that enhance functional vision and quality of life for individuals with visual impairments. The session will commence with an overview of the epidemiological landscape of low vision, emphasizing demographic shifts, the growing burden of age-related ocular diseases, and the impact of these conditions on visual function. Participants will engage in a discussion on the limitations of traditional rehabilitation paradigms and the need for novel methodologies that leverage contemporary scientific insights. A central focus of the course will be on cutting-edge assistive technologies, including AI-driven vision enhancement systems, adaptive lighting solutions, and the integration of 2D metalenses in intraocular devices. Additionally, the role of neuroplasticity-based rehabilitation approaches, such as perceptual learning and sensory substitution, will be critically evaluated. Participants will examine emerging research on augmented reality (AR) and brain-computer interfaces (BCIs) as potential game-changers in the field. Beyond technological advancements, the course will also address psychosocial considerations, emphasizing the role of mental health support, social integration strategies, and the ethical implications of novel rehabilitative interventions. Case studies will illustrate the practical application of these innovations, fostering discussion on realworld challenges and future research directions. By the end of the session, participants will have gained a comprehensive understanding of the latest developments in low vision rehabilitation, equipping them with the knowledge to contribute to ongoing advancements in the field. The course encourages critical thinking and interdisciplinary collaboration, providing a foundation for future scientific inquiry and clinical translation.

56

A RETROSPECTIVE STUDY OF BIOFEEDBACK TRAINING IN LOW VISION PATIENTS

Ghaliah Nsour[1], Mariana Misawa[2], Monica Daibert-Nido[1], Samuel Markowitz[1], Max Goldsmith[3], Kate Teplitsky[3], Michelle Markowitz[2], Tina Felfeli[2]

[1]The Department of Ophthlamology and Vision Sciences-Low Vision Rehabilitation Service, University of Toronto, Toronto, Canada; [2]University of Toronto, Toronto, Canada; [3]Eyes First Eyecare, Private Clinic, Toronto, Canada

Purpose: Biofeedback training (BT) is a technique for oculomotor control training in low-vision patients. Previous studies with a limited number of patients highlighted the positive benefits of BT in various diseases. Till today, we have treated more than 300 cases using BT. However, our totality of cases has never been studied, hiding valuable clarifications about BT efficacy. We propose a retrospective cohort study comparing pre-and-post BT visual function data in different groups of diseases.

Methods: Patients treated with audio-visual BT on the MAIA microperimeter were analyzed pre-BT, short term follow up (< 6 months) and long term follow up (> 6 months). Outcomes were monocular best corrected visual acuity (BBCVA) for distance, binocular near vision, reading speed (RS), fixation stability (FS), average retinal sensitivity in the 10-2 program, and preferred retinal locus (PRL) relocation.

Results: 223 patients were studied. The average age was 56.68 ± 2.24 years. 123 (55%) were female. In the short-term follow-up, BCVA for distance improved 0.08 ± 0.11 logMar ($p < 0.001$) in the trained eye, 0.06 ± 0.14 logMar ($p < 0.001$) in the fellow eye, and near vision increased 0.04 ± 0.10 logMar ($p < 0.001$). Fixation stability improved 1.31 ± 7.32o2 ($p = 0.019$) in the trained eye and 1.57 ± 5.68o2 ($p = 0.03$) in the fellow eye. There was no significant difference in retinal sensitivity values or PRL relocation before and after training. Comparing short and long-term results, there was no significant difference in the BCVA for the trained eye, the fellow eye, or near vision. However, FS improved further 2.92 ± 8.78o2 ($p = 0.034$) in the trained eye in the long term, but not in the fellow eye. There were no adverse effects, though tiredness during the training was frequent.

Conclusions: Biofeedback training yielded significant improvement in BCVA for distance, near, and fixation stability in patients with low vision in the short and long-term follow-up. Fixation stability in the trained eye continued improving in the long term suggesting that the BT mechanism of action continues after training. As a safe and cost-efficient rehabilitation technique, this study substantiates that BT is a relevant visual rehabilitation for patients with various diseases and in different age groups.

45

CHARACTERIZING PERFORMANCE IN SELECTED ACTIVITIES AND PARTICIPATION OF OLDER ADULTS WITH DIFFERENT TYPES OF VISUAL IMPAIRMENT IN SINGAPORE: A PILOT STUDY

Debbie Boey[1], Tamara Tse[2], Kerry Fitzmaurice[2], Mei Leng Chan[1], Leeanne Carey[2]
[1]Tan Tock Seng Hospital, Singapore, Singapore; [2]La Trobe University, Melbourne, Australia

Purpose: Different types of visual impairment may restrict older adults' function differently and thus require targeted visual rehabilitation. In this study we aim to characterize the restrictions in performance of selected activities, and participation, of older adults with different types of visual impairment.

Methods: Older adults with visual impairment (N = 20) were categorized into having different types of visual impairment using a classification algorithm developed based on low vision visual acuity and visual field criteria (Boey et al., 2022). Participants with two types of visual impairment performed seven structured activities standardized for an outpatient clinic. Their performances were rated by two raters using the Performance Quality Rating Scale, customized for visual impairment. They were also evaluated on their restrictions in participation using the Activity Card Sort and Canadian Occupational Performance Measure.

Results: Participants in both groups performed best for the similar activity (Insert Key). Participants with visual type "any visual field defect due to a cortical event" (N = 6) were rated with better observed performance for four activities (Take Medication, Dial Handphone, Walk to Nearby Clinic and Buy Food) compared to participants with "any visual field loss but more than ten degrees of available field" (N = 14). Overall participation in daily living was reduced in both groups. Both groups self-reported restrictions in reading, mobility, and leisure participation.

Conclusions: While there were similarities between the groups, trends observed in the activity performance and participation highlighted there may be different functional needs for older adults with these two types of visual impairments, in relation to the visual requirements of performing different activities. Future research should examine this issue with a larger sample and investigate how visual rehabilitation can be enhanced to be effective for people with different types of visual impairment.

PREVENTION AND SCREENING PROCESSES

533

VISUAL SCREENING MODEL FOR FULL-TERM NEWBORNS IN A PUBLIC MATERNITY HOSPITAL IN THE STATE OF SÃO PAULO, BRASIL

Rita Montilha[1]

[1]*University of Campinas, Campinas, Brazil*

Purpose: To present a visual screening model for full-term babies born in a public university maternity hospital in the state of São Paulo, Brazil.

Methods: After discharge from the maternity ward, infants who did not undergo hearing screening during the rooming-in period are referred to attend hearing and visual screening at the university's Center for Studies and Research in Rehabilitation. An anamnesis is performed, hearing screening through otoacoustic emissions, and guidance on the sensory development of babies and its importance for global development is provided.Regarding visual screening, the evaluation method applied consists of nine tests that assess: ocular fixation; eye contact with the examiner; smile as a response to social contact; horizontal and vertical visual tracking; visual exploration of the environment; and movements of the upper limbs to reach visualized objects. Parents receive guidance on normal vision development in the first 6 months of life and what to expect for each month.Cases that do not respond adequately to the protocol and/or present risk factors for visual impairment are referred to an ophthalmologist and begin early stimulation in the same service where the visual screening was performed. Family members are interviewed to verify their knowledge about visual development and instructed on how to stimulate it, as well as stimulate global development.

Results: This visual screening program restarted in February 2023. During this period, 500 infants were evaluated, mostly in the 1st month of life. The tests that obtained positive results corroborated with the literature, being: fixation, horizontal and vertical visual tracking, and visual contact with the examiner. Cases that presented altered red eye reflex in the maternity ward (8) or did not respond adequately to visual behavior tests were referred for ophthalmological evaluation (15) and entered the early intervention program with visual stimulation, family guidance, and follow-up during the first 3 years of life.

Conclusions: The visual screening program proves to be effective, promoting the evaluation and referral of infants for ophthalmological diagnosis. In cases where visual stimulation and follow-up are necessary, this occurs in a timely manner, preventing aggravation. Families are welcomed and guided.

517

A DIGITAL SCREENING TOOL FOR CEREBRAL VISUAL IMPAIRMENT: PERCEPTO

Harini Kannan[1], Sahithya Bhaskaran[1], Krishna Madhav Chinnari[2], Raj Agrawal[2]

[1]Pediatric Ophthalmology and Vision Rehabilitation, Aravind Eye Hospital, Madurai, India; [2]Vellore Institute of Technology, Computer Science and Engineering, Vellore, India

Purpose: Cerebral Visual Impairment (CVI) is one of the leading causes of pediatric vision impairment globally, significantly impacting a child's learning, mobility, and daily activities. Current CVI assessment tools are expensive and require specialized expertise, limiting accessibility to timely diagnosis and intervention, especially in low-resource settings. To address this gap, we developed Percepto, a digital screening application designed to identify children at risk for CVI through engaging, game-based assessments.

Methods: Percepto evaluates all ten visual perceptual skills, including figure-ground discrimination, visual closure, and visual discrimination, using interactive tasks designed for children. The app records key response metrics, such as accuracy and reaction time, to provide insights into a child's visual processing abilities. The application was designed in collaboration with various healthcare personnel to ensure clinical relevance and usability.

Results: Built-in scoring algorithms are used to display metrics about the child's performance in a report page, which can guide referrals for further clinical evaluation. Initial trials have demonstrated promising accuracy and usability, with non-specialist professionals successfully able to use the tool in clinical settings. Ongoing data collection aims to refine the app's scoring system and integrate a machine learning algorithm to enhance predictive accuracy.

Conclusions: By providing an affordable, accessible, and user-friendly screening tool, Percepto has the potential to increase early detection rates for CVI and facilitate timely intervention. The accessibility and performance of the app suggest it could reduce barriers to early CVI diagnosis, ultimately improving developmental outcomes for children with CVI.

504

INCLUSIVE VISION SCREENING FOR MULTIPLE DISABILITIES : AN OUTREACH MODEL

Sahithya Bhaskaran[1], Vijayalakshmi Perumalsamy[1]
[1]Aravind Eye Hospital, Madurai, India

Purpose: Children with multiple disabilities (MD) face a significantly higher prevalence of visual impairment (VI) compared to their non-disabled peers (10.5% vs. 0.16%). Early identification and intervention are critical to improving developmental outcomes and quality of life. This study evaluates the efficiency, feasibility, and cost-effectiveness of an outreach school-based screening model versus a hospital-based model for children with Multidisabilities.

Methods: Nine schools for children with MD in one district were randomized into two groups: five schools underwent on-site outreach vision screening (Model I), while four schools participated in hospital-based vision screening (Model II). Model I employed a multidisciplinary team (ophthalmologists, rehabilitation specialists, and special educators) to conduct comprehensive ocular and functional vision assessments (FVA) within schools. Model II required children to visit a hospital with parents and educators for similar evaluations. Both models included history-taking, cycloplegic refraction, standard ocular exams, FVA, and tailored interventions.

Results: 251 children in outreach model (OR) and 154 children through hospital based model (HB) were screened respectively. 37 % children had refractive error in OR and 32 % in HB. 70% children found to have functional vision imapirment in OR and 68% in HB. Comparing the screening efficiency,the not testability numbers were lesser in OR model (20%) than HB model (42%); In outreach model children complete their eye examination including functional vision assessment in 3 stations, where as in Hospital model children go through 9 stations. OR team consisted of 8 staff compared to 13 in HB. OR screened 25 children/day vs 5 children/day in HB. Outreach model was five times more cost effective as compared to the hospital model.

Conclusions: The outreach model demonstrated superior efficiency, accessibility, and cost-effectiveness, with higher compliance rates and reduced logistical burdens for families. By providing multidisciplinary care in a familiar environment, it minimizes stigma and enhances early intervention. This study advocates for community-based outreach screening as the preferred model for equitable eye care in children with MD, aligning with global low-vision rehabilitation goals.

447

SCREENING PATIENTS FOR BLINDNESS AND LOW VISION SERVICES: A TOOL FOR PRACTITIONERS

Kerry Lueders[1], Jamie Maffit[1], Fabiana Perla[1]

[1]Department of Blindness and Low Vision Studies, Salus at Drexel University, Elkins Park, USA

Purpose: This presentation discusses the development, pilot test, and refinement of the Blindness and Low Vision (BLV) Services Screening. These services enhance the independence and quality of life for patients who have low vision. The intent of the tool is multifaceted: (1) educate providers, patients and their families on an array of specialty blindness and low vision services; (2) generate referrals; (3) promote interprofessional collaboration; and, (4) generate data that can inform staffing and delivery of services.

Methods: University faculty representing four blindness and low vision disciplines identified areas from their respective scopes of practice that would warrant a referral to their disciplines. Following development of the closed-ended questions in the tool, low vision clinic providers administered the tool to their new low vision patients. Data were gathered and analyzed to inform revisions of the tool.

Results: Preliminary data from the tool's initial implementation are discussed for 111 new low vision patients. The results identified the following positive screens: 103 for low vision therapy, 81 for orientation and mobility, 76 for vision rehabilitation therapy, and 11 school-aged patients for a referral to education services for students with vision impairment. The screening question with the highest number of positive responses (91) across all patients screened was, "Are you experiencing difficulty reading or writing as a result of your vision loss?"

Conclusions: Patients who have low vision may benefit from learning about these professions and what services may be available to support their independent living goals. Professionals working with patients who have low vision may benefit from utilizing the BLV Screening to bridge the gap between clinical and specialty education and rehabilitation services and to promote interprofessional collaborative practice. Future developments may include a validation study, video tutorials, exploration into why patients decline referrals, prioritization of need, and the screening for additional disciplines.

399

PROGRAM FOR SCREENING AND VISUAL MONITORING OF FULL-TERM NEWBORNS

Rita de Cassia Ietto Montilha[1]

[1]*University of Campinas, The School of Medical Sciences, Campinas - SP, Brazil*

Purpose: To present a visual screening model for full-term babies born in a public university maternity hospital in the state of São Paulo, Brazil.

Methods: After discharge from the maternity ward, infants who did not undergo hearing screening during the rooming-in period are referred to attend hearing and visual screening at the university's Center for Studies and Research in Rehabilitation. An anamnesis is performed, hearing screening through otoacoustic emissions, and guidance on the sensory development of babies and its importance for global development is provided.Regarding visual screening, the evaluation method applied consists of nine tests that assess: ocular fixation; eye contact with the examiner; smile as a response to social contact; horizontal and vertical visual tracking; visual exploration of the environment; and movements of the upper limbs to reach visualized objects. Parents receive guidance on normal vision development in the first 6 months of life and what to expect for each month.Cases that do not respond adequately to the protocol and/or present risk factors for visual impairment are referred to an ophthalmologist and begin early stimulation in the same service where the visual screening was performed. Family members are interviewed to verify their knowledge about visual development and instructed on how to stimulate it, as well as stimulate global development.

Results: This visual screening program restarted in February 2023. During this period, 500 infants were evaluated, mostly in the 1st month of life. The tests that obtained positive results corroborated with the literature, being: fixation, horizontal and vertical visual tracking, and visual contact with the examiner. Cases that presented altered red eye reflex in the maternity ward (8) or did not respond adequately to visual behavior tests were referred for ophthalmological evaluation (15) and entered the early intervention program with visual stimulation, family guidance, and follow-up during the first 3 years of life.

Conclusions: The visual screening program proves to be effective, promoting the evaluation and referral of infants for ophthalmological diagnosis. In cases where visual stimulation and follow-up are necessary, this occurs in a timely manner, preventing aggravation. Families are welcomed and guided.

351

OCT A AND ANTI MALARIAL DRUG-INDUCED MACULOPATHY: A NEW SCREENING TOOL?

Asma Khallouli[1], Kallel Zeineb[1], Selmi Slim[1], Nourhene Aidi[1], Afef Maalej[1]
[1]Ophthalmology, Military Hospital of Tunis, Tunis, Tunisia

Purpose: To assess the contribution of OCT angiography in screening early stages of Hydroxychloroquine (HCQ) maculopathy by analyzing the retinal perfusion changes

Methods: We conducted a prospective, cross-sectional, descriptive and analytical study, involving 91 eyes from 91 subjects (61 patients treated with HCQ and 30 age and sex matched contols) at the hospital in Tunis, were examined at the ophthalmology department of the same hospital over a period of 18 months (from January 2022 to June 2023). Macular OCT-A sections of 6x6 mm were made for all the patients.

Results: The central avascular area was larger in the "G" group but with no statistically significant difference compared to controls ($p < 0.05$). Vascular densities in the superficial capillary plexus in the "G" group were significantly decreased compared to those in the "T" group. Only temporal parafoveolar and nasal perifoveolar vascular densities did not show a significant difference. Vascular densities in the deep capillary plexus of patients treated with antimalarial drugs were significantly lowered compared to controls OCT-A between the G1 and G2 groups (duration of treatment with HCQ > 5 years and < or = at 5 years respectively) didn't showed a significant difference in vascular density in the superficial capillary plexus but statistically significant difference in vascular density in the deep capillary plexus between these two groups.

Conclusions: Involvement of retinal microcirculation, mainly in the deep capillary plexus, is an early warning sign of early maculopathy induced by HCQ.

347

THE PREVALENCE OF REDUCED VISION AMONG IN-PATIENTS IN REHABILITATION HOSPITAL SETTINGS AND THE DEVELOPMENT OF A VISION SCREENING TOOL

Amritha Stalin[1], Tammy Labreche[1], Shamrozé Khan[1], Lisa Christian[1], Abhishek Narayan[2], Andre Stanberry[1], Susan Leat[1]

[1]University of Waterloo, Waterloo, Canada; [2]Grand River Hospital, Kitchener, Canada

Purpose: Vision disorders are common among older hospital in-patients, yet they often remain undiagnosed, potentially leading to adverse outcomes such as falls and delayed recovery. This study assessed the prevalence of reduced habitual vision (RHV) among adult in-patients in hospital rehabilitation units and developed a practical screening tool to identify RHV in resource-limited hospital settings.

Methods: A cross-sectional study was conducted among 112 adult in-patients (mean age: 74.5 ± 14.3 years) in rehabilitation units of an acute care hospital in Ontario, Canada, from October 2018 to February 2019. Data collection included demographic, general and ocular histories, self-reported visual function, and assessment of habitual vision (visual acuity, contrast sensitivity, visual fields and stereopsis). Logistic regression analysis was used to determine significant predictors of RHV, defined as visual acuity > 0.3 logMAR, contrast sensitivity < 1.40 logCS, or any visual field defect.

Results: RHV was present in 48.7% of participants (a further 26% had reduced stereopsis). Nearly 60% of participants reported some difficulty reading a newspaper or distinguishing a face from across a room or were "not happy" with their corrected vision despite 70% having undergone an eye examination in the previous two years. The optimum predictive factor for the presence of RHV was a direct assessment of visual acuity and visual fields, yielding 96% sensitivity. Other significant predictors included self-reported "happiness" with current corrected vision and difficulty reading a newspaper. However, the combination of three self-reported questions (happiness with vision, difficulty reading a newspaper, and difficulty distinguishing facial expressions) was the optimum combination and achieved 74% sensitivity for identifying RHV.

Conclusions: Reduced vision has a high prevalence among hospital in-patient rehabilitation populations but often goes unaddressed. Integrating vision screening with the hospital intake process would identify patients at risk for potential falls, enhance recovery, improve rehabilitation outcomes and ensure appropriate referrals for eye care are made during or after the hospital stay. When direct vision screening is not possible, a combination of self-reported questions offers a practical alternative for identifying RHV. Further research is warranted to refine and validate the tool for broader healthcare applications.

287

A DISCUSSION ON THE STRATEGIES ADOPTED TO IMPROVE LOW VISION PREVENTION AND SCREENING IN GHANA

Nazif Mohammed[1], Gifty Boafo[1], Agatha Mensah-Debrah[1], Jeremiah Badu Shayar[2]
[1]Ghana Health Service, Accra, Ghana; [2]Presbyterian Health, Accra, Ghana

Purpose: To examine the impact of strategies adopted by the Ghana Health Service and international NGOs for the prevention of Low Vision through improved screening and early detection of cases

Methods: Awareness creation by Department of Children (DoC) and Ghana National Education Campaign Coalition (GNECC). More than 110 social workers trained to manage Children living with Visual Impairment. 410 teachers trained on inclusive education pedagogies to support their colleague teachers in implementing the Inclusive Education strategies in regular schools. Training of community health nurses and 70 special education teachers in primary eye care. 73 Ophthalmic Nurses trained and equipped to appropriately screen and refer cases of Low Vision. The skills of about 60 Optometrists upgraded on Low Vision evaluation, assessment and rehabilitation. 4 major school vision screening organized by the National Eye Care Unit with support from NGOs, Ophthalmologists, Optometrists and Ophthalmic Nurses. Certification of cases of Low Vision before learners are admitted to the designated schools for the blind and visually impaired. The Family Health Division of the GHS trains for care givers on geriatric eye health

Results: For the year 2024, 5,700 individuals were directly engaged whilst 25,490 were impacted during awareness creation by the DoC and the GNECC. More than 563 home visits by social workers to families of children living with visual impairment; resulted in 125 children being referred to hospital for further screening. Teachers identify cases, liaise with SPED coordinators for referrals and come up with innovative classroom management strategies. Community health personnel identify cases of visual impairment and make timely referrals. Ophthalmic Nurses perform low vision screenings and make appropriate referrals. More Optometrists are offering Low Vision services because they are well equipped and better trained. Ophthalmologists' certify the Visually Impaired before enrolment to special schools and therefore identify progressive cases that can advance to blindness

Conclusions: Ghana has a structure in place to ensure the early detection of Visual Impairment cases, suspected Low vision cases and referrals to qualified practitioners, monitoring of progressive low vision cases to prevent blindness. Monitoring and enforcement of the above is, however, weak and needs improvement.

QUALITY OF VISION AND QUALITY OF LIFE

552

THE LIFE FOR LOW VISION QUESTIONNAIRE (LIFE4LVQ): A VALIDATED QUESTIONNAIRE EVALUATING ABILITY AND INDEPENDENCE

Stavroula Almpanidou[1], Diamantis Almaliotis[2], Mara Gkioka[2], Konstantinos Ch. Chatzisavvas[2], Vasileios Karampatakis[2]

1Program LIFE4LV-Laboratory of Experimental Ophthalmology, School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece; [2]Program LIFE4LV-Laboratory of Experimental Ophthalmology, Thessaloniki, Greece

Purpose: Low vision (LV) significantly affects an individual's daily functioning, and patient-reported outcome measures (PROMs) are increasingly utilized to assess this condition. The purpose of this study was to describe the development and validation of the "Life for Low Vision Questionnaire (LIFE4LVQ)" as a tool for evaluating daily functionality in individuals with LV and to investigate its psychometric properties.

Methods: A total of 294 participants completed the LIFE4LVQ, and the data were analyzed using Rasch analysis to assess various psychometric properties, including response category ordering, item fit statistics, principal component analysis, precision, differential item functioning, and targeting. Test-retest reliability was examined over a three-week period using intraclass correlation coefficients (ICC). The correlation between questionnaire scores and Best Corrected Visual Acuity (BCVA) was assessed using Spearman's correlation coefficient.

Results: Rasch analysis indicated that, for most items, the infit and outfit mean square fit values were near 1, both for the overall scale and its subscales (ability and independence). The person separation index was 5.18, with a reliability of 0.96, demonstrating strong discriminant ability and a good model fit. All items displayed five response categories. The ICC was 0.96 ($p < 0.001$; 95% CI, 0.93–0.98), indicating excellent repeatability. A significant negative correlation was found between poorer BCVA and lower questionnaire scores (rho = 0.559, $p < 0.001$), supporting excellent convergent validity.

Conclusions: The 40-item LIFE4LVQ was shown to be a reliable and valid instrument for measuring the impact of LV on an individual's ability and independence.

398

RISKS FOR ABUSE OF PERSONS WITH VISION IMPAIRMENTS: A NATIONWIDE STUDY IN THE NETHERLANDS

Sabina Kef[1], Dorien Graas[2], Luc Brants[3]

[1]University of Amsterdam, Amsterdam, The Netherlands; [2]Windesheim, Zwolle, The Netherlands; [3]Private Business, Eindhoven, The Netherlands

Purpose: What are risks and mechanisms of abuse of youth with vision impairments (VI)? A national retrospective research in The Netherlands (period 1945-1985) points to circumstances related to abuse that should be avoided in the future.

Methods: A mixed method was used consisting of an archive and literature study, a focusgroup (N = 7), and interviews (N = 13). All respondents were living in residential units during their childhood. Standardized and open questions were used. Audiorecordings were transcribed and coding schemes were used for frequencies of abuse and factors that contributed to the mechanisms underlying.

Results: A majority of interviewed persons VI and all focusgroup respondents had experienced physical abuse (like hitting, kicking, pinching), psychological abuse (like humiliation, threatening, isolation, bullying) and sexual abuse (like assault or rape). Perpetrators were mainly adults who were familiar to them, and in a few cases other VI-peers from residential groups. For two respondents, physical, psychological and sexual violence also occurred at home. A majority of respondents talked about how it was ambiguous that they also received support on primary basic needs from persons who were inflicting violence on them. Other mechanisms related to abuse are hierarchical structures leading to power imbalances in organizations, catholic backgrounds of organizations, the dependence of persons with disabilities in general and the fact that other persons with VI are not able to see what is happening with their peers VI. The strict regime at the facilities increased risks for abuse, as were the facts of being taken from their family in childhood and a lack of staff training in sensitivity in supporting youth with disabilities.

Conclusions: Elevated risks for abuse and higher frequency of violence has been reported in this study, in accordance with the high prevalence of abuse found in the literature for persons with disabilities. Especially in group facilities the hierarchical imbalances could attract persons with malicious intents and because of their disabilities, persons with VI are a 'easy' victim. Staff training and staff support is needed to prevent abuse. Also the organizational structures on dividing tasks, working with volunteers and including family members are important topics to constantly address.

394

QUALITY OF LIFE ASSESSMENT OF VISUALLY IMPAIRED STUDENTS: AN APPLICATION STUDY BASED ON INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH

Yuhong Xie[1, 2, 3], Ting Chen[1, 2], Haixia Lin[1, 2], Jianmin Hu[1, 2]

[1]The Second Affiliated Hospital of Fujian Medical University, Quanzhou, China; [2]Engineering Research Centre of Assistive Technology for Visual Impairment, Fujian Province University, Quanzhou, China; [3]Quanzhou Women's and Children's Hospita, Quanzhou, China

Purpose: This study aimed to develop an International Classification of Functioning, Disability and Health (ICF) based quality of life (QOL) scale for visually impaired students, using Chinese-version Low Vision Quality of Life Questionnaire (CLVQOL) as a reference, thereby providing an ICF grounded assessment tool for their QOL evaluation.

Methods: The ICF QOL scale was developed by linking CLVQOL's 25 items to ICF items via meaningful concepts, using ICF core set method and expert consensus. 118 visually impaired students were assessed using this scale. Data collected included demographics, clinical details, and QOL scores. Cronbach's α coefficient was employed to assess the internal consistency of ICF QOL scale. The scale's validity was evaluated using content validity and both exploratory and confirmatory factor analyses. Non-parametric tests were conducted to compare ICF item scores among different factors, followed by post-hoc tests when significant differences were identified.

Results: Content validity analysis linked the CLVQOL to ICF categories, with most concepts related to "physical function", "activity and participation" and "environmental factors", and the ICF QOL scale comprised 11 items covering these dimensions. The scale demonstrated high reliability with Cronbach's α coefficients above 0.8 for the total scale and most dimensions. Exploratory factor and confirmatory factor analysis confirmed a robust structure with acceptable loadings and reliability. Mann-Whitney U tests found no significant gender-based score differences in most ICF items. However, Kruskal-Wallis H tests revealed significant score variations across age groups in some items like reception of language and communication with-receiving-written messages. Significant differences were also found among students with different etiologies and degrees of visual impairment in several ICF items, indicating the scale's sensitivity to these factors.

Conclusions: The ICF QOL scale showed good reliability and validity for assessing visually impaired students' QOL. Factors like age, etiology, and degree of visual impairment significantly affect their QOL, and this scale can inform personalized rehabilitation services.

378

PATHS TO ACHIEVING AUTONOMY IN DAILY LIFE: EXPERIENCE FROM THE VENETO REGION

Alessandro Trovato[1]

[1]*Unione Italiana Ciechi ed Ipovedenti, Regione Veneto, Padova, Italy*

Purpose: To promote the highest possible degree of autonomy in the daily life of visually impaired, low vision, or completely blind individuals in various areas of life: personal, domestic, and work.

Methods: Activation of a multidisciplinary training course for orientation, mobility, and personal autonomy technicians, following the training model of the US and Northern European schools, totaling 1200 hours including practical training, theory, and internship. Carrying out Orientation, Mobility, and Indipendent Living courses: individual rehabilitation activities that start from the person's needs and their life context to build, through specific techniques, strategies, and aids, individualized paths that lead visually impaired people to gain confidence in their potential and autonomy in daily life activities. The rehabilitation interventions, funded by the Veneto Region, are coordinated by UICI Veneto, validated, and supervised by the Low Vision Center of the University Hospital of Padua, directed by Dr. Giovanni Sato.

Results: The training of 8 new orientation, mobility, and personal autonomy technicians has enabled the creation of rehabilitation paths for 200 visually impaired people of various ages (child, young, adult, senior). At the end of the courses, people have acquired or increased their autonomy in moving and managing their daily life, both personally and domestically. These interventions have improved the quality of life of individuals and reduced social costs.

Conclusions: It is essential to:

- Understand the importance of orientation, mobility, and personal autonomy rehabilitation paths for improving the quality of life of visually impaired people.
- Establish a permanent economic fund to ensure the continuity of these rehabilitation activities, allowing all visually impaired individuals who need them to access them at any time.
- Increase the number of orientation, mobility, and personal autonomy technicians nationwide through training courses to spread these interventions.

246

LOW VISION AND VISUAL REHABILITATION CARE IN THAILAND: PATIENT'S CHARACTERISTICS AND EXPECTATIONS AMONG TERTIARY CARE

Pakornkit Phrueksaudomchai[1], Bhak Nitithum[2], Jiraporn Jensuriyarkun[2]

[1] Ophthalmology, Thammasat University Hospital, Faculty of Medicine, Thammasat University, Pathumtani, Thailand; [2]Faculty of Medicine, Thammasat University, Pathumtani, Thailand

Purpose: To explore the quality of life and expectations of patients under low vision and visual rehabilitation care in Thailand.

Methods: Patients were included from the Low Vision Clinic at Thammasat University Hospital between 2022 and 2023. The examination results were evaluated using the following data: gender, age, diagnosis of low vision, physical comorbidities, patients' visual acuity, patient needs, depression assessment (9-question depression assessment), quality of life assessment (low vision quality of life assessment), treatment and recommendations provided. Data were collected and analyzed in terms of percentage, mean, and standard deviation, ANOVA, and multiple regression model.

Results: Total 75 patients were included. There were 40 males and 33 females; the range age was 9-88 years and means 51.9 years. 30 were diagnosed blindness with retinal cause, followed by 25 congenital and genetic cause, 14 neuropathy cause and 6 glaucoma cause. As WHO visual impairment categories were shown as 30 WHO category 1, 17 WHO category 3, 14 WHO category 2, 10 WHO category 4 and 3 WHO category 5. The most reported expectations among the low vision patients in order were the desire for low vision devices, with a prevalence of 63 patients (84.0%), advising for registration of rights of persons with disabilities at 46 patients (61.3%), activities of daily living program at 23 patients (30.7%), patient's family members care program at 22 patients (29.3%), and occupational training program at 7 patients (9.3%). There are 13 patients (17.4%) had 9 questions for depression screening more than or equal 7 scores. The means scores of Low vision quality-of-life questionnaire are 19 scores.

Conclusions: Low vision and visual rehabilitation care in Thailand was limited in data and research, The most common cause of blindness was retina. The most expectations of patients were the desire for low vision devices. The Low vision quality-of-life questionnaire was quite low.

156

IMPACT OF VISION AND HOME ENVIRONMENT ON THE OBJECTIVE EVALUATION OF PAYING A BILL

Aleksandra Mihailovic[1], Xindi Chen[1], Louay Almidani[1], Xinxing Guo[1], Zhuochen Yuan[1], Ram Swaminathan[1], Rhonda Miller[1], Seema Banerjee[1], Mariah Diaz[1], Pradeep Ramulu[1]

[1]Johns Hopkins Wilmer Eye Institute, Baltimore, USA

Purpose: This prospective observational study seeks to examine the relationship between home environmental factors, vision impairment, and the ability to complete a key household task: writing and mailing payment for a bill.

Methods: Participants in the Safety And Functionality Eye Research (SAFER) study had either glaucoma (MD ≤ -3 dB in both eyes [OU], ≤ -5 in one eye), retinal disorders (VA < 20/30 OU), or were normal-vision controls (VA ≥ 20/32 OU, > 20/25 in one eye). A standardized task of writing a check was evaluated, including acquiring 4 items (envelope, stamp, pen, check), writing the check, and finalizing the envelope. Sub-task times were recorded, and environmental factors graded including lighting (by luxmeter), and clutter and contrast (both categorized as none/mild, moderate, or severe by standardized rubric). Regression models and generalized estimating equations analyzed how sub-task times were influenced by clutter, contrast, lighting, and subject's contrast sensitivity (CS), as well as whether CS severity modified these relationships.

Results: 193 individuals (age = 76 years [SD = 8.3], 57% female, 16.6% Black) were included. Total time for acquisition, check-writing, and finalizing envelope (median = 210 sec [IQR = 161, 270]) increased with worse CS (β = 3.3% longer per 0.1 logCS decrement [95%CI: 1.2%, 5.4%], p = 0.001). Acquisition sub-task time was influenced by light, clutter, and CS. Severe clutter corresponded with longer times (β = 32.2% more time in severe vs. mild/no clutter [95%CI = 7.7%, 62.3%], p = 0.008). Higher light levels were associated with shorter times (β = 3.5% faster per 0.1 loglux [95%CI: 2.3%, 4.6%], p < 0.001), and worse CS with slower times (β = 3.5% longer per 0.1 logCS decrement [95%CI: 0.5%, 6.8%], p = 0.023). Increased times for writing the check and finalizing envelope sub-tasks were linked with worse CS (β = 4.1% longer per 0.1 logCS decrement, [95%CI: 1.8%, 6.5%], p = 0.001; β = 3.5% longer per 0.1 logCS decrement, [95%CI: 1.6%, 5.4%], p < 0.001) but not environmental factors. The impact of environmental factors on times did not vary by CS damage severity (p > 0.05).

Conclusions: Home factors like clutter and poor lighting lengthened item acquisition times. Reduced CS slowed performance times across sub-tasks, especially during writing where environmental factors had little effect. Further research is needed on how home conditions affect elderly people with VI.

101

HEALTH-RELATED QUALITY OF LIFE AMONG VISUALLY IMPAIRED ADULTS IN HEALTHCAMP© GROUPS

Heidi Siira[1], Maria Tyhtilä[2], Mari Laine[3], Georg Schleifer[3], Maria Kääriäinen[1]

[1]University of Oulu, Research Unit of Health Sciences and Technology, Oulu, Finland; [2]The Association of Health and Well-Being of the Visually Impaired, Oulu, Finland; [3]The Association of Health and Well-Being of the Visually Impaired, Helsinki, Finland

Purpose: to describe the self-assessed health-related quality of life among visually impaired adults before and after participating in HealthCamp© groups organized by the Visus project. The project focused on promoting the health and wellbeing of the visually impaired people in Finland. The three-year (2023–2025) project was funded by the Ministry of Social Affairs and Health and implemented by The Association of Health and Well-Being of the Visually Impaired in collaboration with the Finnish Association of the Visually Impaired and its regional associations.

Methods: Data was collected before and after the HealthCamp© groups in autumn 2023 and spring 2024 using the 15D© health-related quality of life instrument with interview administration. The HealthCamp© groups met 10 times once a week for 2–3 hours. The topics of the group sessions related to healthy nutrition, exercise, sleep, rest and recovery, mental wellbeing and psychosocial wellbeing, intoxicants, smoking and musculoskeletal health. Participants received practical information on how to promote healthy lifestyles and increase overall wellbeing in their everyday lives. The data was analyzed statistically.

Results: A total of 19 people with the average age of 68 (range 45–85 years) participated in the study. On average, the subjects assessed their health-related quality of life as reasonably high already at baseline (0.832). After the HealthCamp© groups, the average 15D score was slightly higher (0.8427) than at baseline, but the difference was neither statistically significant (p=0.149) nor clinically important (0.011). Changes in the different dimensions of health-related quality of life were not statistically significant, but many clinically important changes were however observed at baseline and at the 10-week follow-up. Clinically important improvements were observed in mobility, excretion, usual activities, discomfort and symptoms, depression, distress and vitality.

Conclusions: The HealthCamp© groups appear to have a positive impact on the quality of life among visually impaired people. Therefore, similar group activities to promote health should be implemented and further developed in the future.

PEDIATRIC LOW VISION

47

CONSIDERATIONS IN PAEDIATRIC LOW VISION (RE)HABILITATION

Bennett McAllister, Serena Sukhija
USA

Low Vision Rehabilitation is a bit of a misnomer when it comes to children. It is argued that a more applicable term is Low Vision Habilitation as most of the young patients with visual impairment never had good vision toward which they can be rehabilitated. This presentation will begin with a look at this and other points of departure from the more common adult low vision patient approach. These differences are critical in our paradigm of examining, treating and managing the child with low vision. Visual acuity charts, visual field devices, instruments and techniques will all be presented for their relevance in this patient demographic. A tri-level approach will be posited with the entry level being amenable to implementation in a primary eye care practitioner's office, the second level more appropriate for an office emphasizing pediatric habilitation and finally the third tier,which is mainly applicable for a specialist practicing full time in this field. It is hoped that the practitioner currently not seeing low vision pediatric patients will realize that what is required for adding this important service is not a piece or two of equipment, but rather more fundamentally, a shift of mind-set. This course aims to empower all practitioners to include the pediatric population in their low vision care model.

541

MANAGING LOW VISION IN SCHOOL CHILDREN IN VICTORIA, AUSTRALIA

Susan Carden[1], Deborah Davidson[2]

[1]Ophthalmology, Royal Victorian Eye and Ear Hospital, Melbourne, Australia; [2]Department of Education, Melbourne, Australia

Purpose: To describe how primary and secondary school students with vision impairment are supported at school in Victoria, Australia.

Methods: Qualitative description.

Results: School students with vision impairment are referred from multiple sources to the Education and Vision Assessment Clinic at the Royal Victorian Eye and Ear Hospital. Here they undergo an extensive ophthalmological examination and both a clinical and functional assessment are made with an orthoptist and Specialist teacher in vision present.

Conclusions: In Victoria, Australia teachers and doctors collaborate to synthesize clinical and functional assessment findings to create a holistic plan that supports the educational journey of students with vision impairment. This interdisciplinary approach not only ensures that the medical aspects of the impairment are properly managed but also addresses the functional implications within the school setting. By working together, doctors and teachers enhance accessibility, promote inclusion, and foster the full academic and social potential of students with vision impairment.

524

OPTIC ATROPHY IN CHILDREN WITH VISUAL IMPAIRMENT: ETIOLOGY, CLINICAL FEATURES AND LOW VISION AID PREFERENCES

Burcin Cakir[1, 2], Ozlem Bicer[1], Zisan Onaran Uner[1], Demet Yabanoğlu[1, 3], Esra Sahli[4]

[1]Ankara University Institute of Health Science, Ankara, Turkey; [2]Sakarya University Faculty of Medicine, Sakarya, Turkey; [3]Hacettepe University Faculty of Medicine, Ankara, Turkey; [4]Ankara University Faculty of Medicine, Department of Ophthalmology, Vision Studies and Low Vision Rehabilitation Unit, Ankara, Turkey, Ankara University Graduate School of Health Sciences, Ankara, Turkey, Ankara, Turkey

Purpose: To evaluate the clinical features and etiology of optic nerve atrophy (OA) and to investigate low vision aid (LVA) preferences in children with low vision.

Methods: The records of patients followed in Low Vision Rehabilitation Center were retrospectively reviewed and the records of children under 18 years of age diagnosed with nonglaucomatous OA were included. Best corrected visual acuity (BCVA), near visual acuity (NVA), ocular movement disorders were noted. Management technique, additional ocular and systemic diseases, and genetic test results were evaluated.

Results: A total of 76 children (152 eyes) were reviewed. Among them, 14 (18,4%) had strabismus, 11 (14,5%) had nystagmus, and 6 (7,8%) had the both. All patients had binocular OA. Mean BCVA, and NVA were 1.22 ± 0.59, and 3.49 ± 3.02, respectively. In 25 patients (32.9%), the onset of visual complaints occured since birth or in the first year of life. The mean age of other patients at disease onset was 6.44 ± 3.44 years. Hereditary optic neuropathy was seen in 20 (26.3%), cranioorbital tumor was seen in 15 (19.7%), cerebral visual impairment was seen in 12 (15.8%), craniosynostosis was seen in 7 (9.2%), and DIDMOAD was seen in 7 (9.2%) patients. Rest of them were in idiopathic (13.2%) and in others (6,6%) group. The most frequent genes responsible for the disease were SCL52A2, OPA1, and WFS1 among the 8 patients with genetically proven OA. Of 76 patients, 42 (55.3%) patients preferred LVA for near and 39 (51.3%) preferred LVA for distance.

Conclusions: Ocular movement disorders was present in approximately 1/3 of the patients. Hereditary optic neuropathies, cerebral visual impairment, and tumor related OAs were commonly seen in children with OA. Nearly half of the patients got benefit from near and distance low vision aids.

500

FEASIBILITY OF AN APP - BASED ASSESSMENT TOOL FOR CEREBRAL VISUAL IMPAIRMENT SCREENING

Sahithya Bhaskaran[1], Harini Kannan[2], Vijayalakshmi Perumalsamy[2]

[1]Paediatric Ophthalmology, Aravind Eye Hospital, Madurai, India; [2]Aravind Eye Hospital, Madurai, India

Purpose: Cerebral visual impairment (CVI) is one of the most common causes of pediatric vision impairment.This condition often goes undiagnosed due barriers to access in assessment.Traditional assessment tools are expensive and require expertise to perform. This study evaluates if an app-based (VIKAS app) visual perceptual skills tests serve as a feasible replacement for traditional CVI assesment tools.

Methods: Children with suspected CVI >5yrs who were referred for assessment were included. Subjects completed the traditional(physical tool) assessment and the app-based assessment. We compared the child's ability to complete each of the ten visual perceptual skills tests in both modalities, the time to complete each modality and each specific skill test, and the difficulty of the task based on how much prompting or help the child needed.

Results: Of 51 children, 34 completed the traditional assessment, and 37 completed the app-based assessments. The app showed 85% agreement with the physical tool. Task difficulty was comparable in 7 of 10 tasks, and completion time was only 14 seconds longer in the app. 63% of children were able to successfully complete more tasks in the app than in the physical kit.

Conclusion: Our findings suggest app-based visual perceptual tests are a promising, low-cost, and scalable tool for CVI screening, providing comparable results with added accessibility and efficiency. This innovation could improve early detection and intervention for children with CVI even in outreach settings.

426

STUDY OF EXECUTIVE FUNCTIONS IN CHILDREN WITH VISUAL IMPAIRMENT: THE PROPOSAL OF AN EARLY NEUROPSYCHOMOTOR INTERVENTION

Elena Cocchi[1], Marika Rolando[1], Giulia Perasso[2], Giulia Gavazzi[1]

[1]Fondazione David Chiossone, Genoa, Italy; [2]Dipartimento di Scienze della Formazione Università degli Studi di Genova, DISFOR, Genova, Italy

Purpose: Cognitive regulation is fundamental for children's executive functioning (e.g. planning, self-control, decision-making) and, as literature suggests, can be trained. Executive functions are influenced by conditions such as visual impairment (VI) and by the emotional and cognitive exchanges within parent-child interaction. The aim is to study a proper intervention to foster cognitive regulation in low vision children.

Methods: This contribution includes: (1) a literature review, (2) a study involving a set number of six children aged 4 to 6 years with visual impairment and no other disabilities, with psychomotor assessment, evaluation of visual functions. (3) This work also includes a proposal of an intervention adapted to executive function deficits for children with visual impairment, while supporting parents, as well as caregivers.

Results: By reviewing the literature, this study aims to identify and discuss evidence-based research on cognitive regulation in children with VI. Data collection from the target group will help identify and observe delays and needs in executive functioning. Finally, the project proposal outlines how interdisciplinary teams can support interactions to facilitate cognitive regulation, providing tailored psychoeducational guidance for parents and caregivers of children with VI.

Conclusions: This contribution advances the study of executive functions in this population, for which there is limited available literature. Early intervention to support executive functions in children with low vision promotes the development of strong social skills in school-age children. According to the literature, children who demonstrate better inhibitory control at age six show improved social skills and greater behavioural self-regulation in response to environmental demands two years later. Addressing executive function developmental deficits in children with low vision allows for the adaptation of expectations to match their abilities. Research on preterm-born children indicates impairments in working memory, poor inhibitory control, impulsive responses, and deficits in planning.

269

INCREASED PHYSICAL ACTIVITY IN CONGENITALLY BLIND AND LOW VISION CHILDREN WEARING A PEDIATRIC BELT CANE

William Penrod[1], Robert Enzenauer[2], Grace Ambrose-Zaken[3]

[1]Northern Illinois University, DeKalb, USA; [2]Children's Hospital of Colorado, Aurora, USA; [3]City University of New York, New York, USA

Purpose: The most obvious adverse consequence of blindness is the inability to visually avoid obstacles. Children with a congenital mobility visual impairment or blindness (MVI/B) who lack the capacity to use handheld assistive safety devices self-restrict their purposeful physical activity to when they are provided physical assistance. The purpose of this study was to compare the physical activity of fifty children with a congenital MVI/B (60% boys) aged 11 to 56 months old (M = 29.04, SD = 11.41) before and after they began wearing an assistive safety device, the Safe Toddles Pediatric Belt Cane.

Methods: Study protocols included weekly videos of the children engaged in free play before and when wearing the Pediatric Belt Cane. Video coders logged the time children spent in eight mutually exclusive physical activities (lying down, crawling, sitting, assisted standing, assisted walking, standing, walking, and running).

Results: Pre-video: These 2 ½ year old children spent 67% of their time lying down, sitting, or assisted standing. They spent almost half of their time (45.5%) sitting quietly. Post-video: Most (81.3%) of the children's time was spent independently standing, walking, and running. The children spent significantly more time Walking Solo in post-videos (M = 86.68, SD = 95.70) compared to Walking Solo in pre-videos (M = 30.46, SD = 46.32; t(49) = -4.29, p <.001).

Conclusions: Before Pediatric Belt Cane, these participants with an MVI/B were expected to walk independently although it exposed them to the unsafe condition of walking blind. The children appeared idle and reliant on physical assistance to stand or to walk to a destination. These are uncharacteristic motor behaviors for children above the age of eighteen months who are physically able to walk. Wearing the Pediatric Belt Cane, the participants with an MVI/B significantly increased their independent physical activity. Their improved outcomes were consistent with prior studies of children with an MVI/B before and after the introduction of a Pediatric Belt Cane. For children with a congenital MVI/B wearing a Pediatric Belt Cane is a medical necessity. The Pediatric Belt Cane protects and informs children with a congenital MVI/B about the path ahead as they enjoy their age-appropriate daily recommended physical activity.

219

PEDIATRIC PATIENT WITH PATHOLOGICAL HIGH MYOPIA AND MYOPIC MACULOPATHY: A MULTIDISCIPLINARY APPROACH TO LOW VISION MANAGEMENT AND CHALLENGES IN AN AFRICAN NATION

Chinenye Timothy[1]

[1]*Ophthalmology, State House Medical Centre, Aso Rock, Abuja, Federal Capital Territory 9, Nigeria*

Purpose: To outline the burden and challenges of high myopia on children in a typical low- and/or middle-income economy and the role of eye care professionals in providing prompt and adequate/effective intervention to reduce the impact of the resulting visual impairment on their education and overall wellbeing.

Methods: This includes a comprehensive functional low vision assessment of the patient and evaluation by an ophthalmologist and a myopia control specialist.

Results: The case presentation was an 8-year-old female pupil referred to our facility for a low vision evaluation. Ocular and visual assessment with diagnostic tools showed features of pathological high myopia with axial length of 28.1mm on right eye and 29.43mm on left eye, alternating exotropia, jerky nystagmus, disc pallor, tessellated retina with absent macula/foveal reflex and chorioretinal scars of the macular and posterior pole bilaterally. Functional difficulties were basically poor distance vision, bringing reading materials closer to the eyes to read, and jumping of lines while writing. Relatively fair visual outcome was recorded, with vision corrected in both eyes from 1.8 logMAR to 1.0 logMAR at distance and N8 at near after the detailed low vision assessment and optimal refractive correction. Low dose atropine 0.1% was initiated and patient monitored every six months.

Conclusions: Early onset myopia and excessive elongation of the eyeball are associated with severe posterior pole pathologies including myopic maculopathy, an important blinding complication of high myopia. Effective collaboration among eye care professionals and early treatment and control interventions are fundamental in improving clinical outcome, reducing the risk of complications and the resulting functional disability. The increasing prevalence of myopia among school-aged children in Africa underscores the urgent need for effective prevention and control strategies to reduce the public health burden especially in low- and/or middle-income nations where the cost, availability and accessibility of advanced/high-tech treatment and control measures are beyond the reach of the poor and most vulnerable. This is also a clarion call for relevant stakeholders in eye and vision care (both locally and internationally) to collaborate and explore alternative therapeutic strategies in African regions that will halt the progression of myopia.

VISUAL REHABILITATION

372

EFFECT OF MOTOR AND COGNITIVE REHABILITATION STRATEGIES ON VISUOMOTOR FUNCTIONAL CONNECTIVITY IN GLAUCOMA PATIENTS: A PILOT STUDY

Rohit Misra[1], Gokulraj Prabhakaran[1], Mahima Rebello[1], Khaldoon Al-Nosairy[1], Constantin Freitag[2], Cynthia Djuloun[1], Francie Stolle[1], Martin Behrens[3, 4], Lutz Schega[2], Michael Hoffmann[1, 5]

[1]Ophthalmic Department, University Hospital Magdeburg, Otto von Guericke University, Magdeburg, Germany; [2]Department of Sport Science, Institute III, Otto von Guericke University Magdeburg, Magdeburg, Germany; [3]University of Applied Sciences for Sport and Management Potsdam, Potsdam, Germany; [4]Department of Orthopaedics, Rostock University Medical Center, Rostock, Germany; [5]Center for Behavioral Brain Research, Magdeburg, Germany

Purpose: Visual field damage in glaucoma is linked to disruptions in visuo-motor function underlying an increased risk of falls. Motor-cognitive training has been shown to affect visuomotor functional connectivity (FC) in healthy controls (HC) and could be viable for glaucoma (GL) treatment.

Methods: Using resting state functional-MRI (rs-fMRI), we studied the effect of motor training (unimodal intervention [UMI]) and motor-cognitive training (multimodal intervention [MMI]) on resting-state FC (rs-FC) in 12 GL and 20 HC, randomly assigned to UMI (5 GL, 11 HC) and MMI (7 GL, 9 HC). Rs-fMRI was acquired before and after 3-months intervention. Whole-brain FC were extracted with bilateral seeds at Broadman areas 1, 4, 9, 17, 18, 41, and 42. Rs-FC was modeled using a mixed-23 factorial design (Group, Intervention, Time; FWE-corrected).

Results: Before Intervention, GL and HC showed significant differences in rs-FC between auditory and lateral occipital cortex ($p < 0.05$). Post-intervention, we did not observe significant differences in UMI's effect on GL and HC ($p < 0.05$). However, MMI showed significant differences in its effect on the groups ($p < 0.05$). GL who underwent MMI exhibited increased rs-FC of the auditory association cortex with the lateral occipital and precentral cortex ($p < 0.05$), counteracting the pre-training differences between GL and HC. In addition, MMI had a significant effect on rs-FC of GL in the dorsolateral-prefrontal cortex, inferior frontal gyrus, and the frontal pole ($p < 0.05$). These effects were not observed after UMI ($p < 0.05$). Within the HC group, MMI showed a significantly larger effect on rs-FC than UMI ($p < 0.05$), specifically in the FC between the precentral cortex, insula, and the orbitofrontal cortex. HC that underwent MMI showed increased rs-FC between the primary visual cortex, secondary visual cortex, and the middle temporal gyrus ($p < 0.05$), i.e. along the ventral visual stream.

Conclusions: Our study highlights the improvement of audio-visual rs-FC in GL, and improvement of rs-FC in the frontal cortex in both HC and GL, after MMI and a lack of similar effects after UMI. Overall, our data indicate differential effects of UMI und MMI on rs-FC in GL and HC, but further studies with higher sample sizes are needed.

337

ASSESSMENT TOOL FOR OCCUPATIONAL PERFORMANCE AND MOBILITY - MULTISENSORY APPROACH (ATOMM)

Lisa Lombardi[1], Lauren Moussallem[1], Maria Kolic[1], Lauren Ayton[1, 2], Jessica Timmons[1, 3], Michelle Sharples[1, 3], Dean Johnson[1, 4], Myra McGuinness[1, 5], Carla Abbott[1, 5], Penelope Allen[1, 5, 6]

[1]Centre for Eye Research Australia, East Melbourne, Australia; [2]Department of Optometry and Vision Sciences, [5]Department of Surgery (Ophthalmology), The University of Melbourne, Carlton, Australia; [3]I Can Explore, Melbourne, Australia; [4]Specialised Orientation and Mobility, Birregurra, Australia; [6]Vitreoretinal Unit, Royal Victorian Eye and Ear Hospital, East Melbourne, Australia

Purpose: Documenting functional performance in people with a vision impairment can help determine if new technologies or medical interventions have real-world impacts. We have developed a tool to capture the performance and multisensory strategies used to complete activities of daily living (ADLs) in people with a vision impairment. We aimed to determine whether the tool is reliable and valid for acquiring this data for clinical trials and orientation and mobility training programs.

Methods: A pilot study involving six participants with profound vision loss, previously involved in bionic eye trials, were recruited to participate in this study. The tool contains 3 domains involving 15 pre-determined tasks, each designed to encompass common ADLs. Domain 1 includes ADLs in the home, 2 outdoor navigation and 3 involved social interaction. A maximum score of 30 points/domain was achievable, on a 7-point Likert scale (0-6). We used intraclass correlation coefficients (ICC) to quantify the interrater agreement between four assessors and test-retest reliability over the three domains that were common to all participants.

Results: Interrater agreement was high for domain 1 (4 assessors, 9 trials, ICC 0.872, 95% CI 0.695, 0.965), domain 2 (4 assessors, 8 trials, ICC 0.959, 95% CI 0.862, 0.991), domain 3 (4 assessors, 9 trials) ICC 0.963, 95% CI 0.889, 0.991 and for the overall score (ICC 0.958, 95% CI 0.867, 0.990). Test-retest reliability was lower for domain 1 (27 trials, ICC 0.189, 95% CI -0.212, 0.530) than for domain 2 (24 trials, ICC 0.961, 95% CI 0.907,0.983) and domain 3 (27 trials, ICC 0.925, 95% CI 0.843, 0.965). Despite the difference in Domain 1 performance between sessions for some participants, the test-retest reliability remained high for the overall score (ICC 0.925, 95% CI 0.843,0.965).

Conclusions: The ATOMM pilot study showed high inter-rater agreement and high inter-test agreement when documenting the multisensory functional performance of participants with profound vision loss. Future work is required to assess tool properties among people with differing levels of visual ability.

310

NEURODEVELOPMENTAL THERAPY IN AN INTERDISCIPLINARY RESIDENTIAL CARE PATH FOR CHILDREN WITH VISUAL IMPAIRMENT: THE EXPERIENCE OF THE ROBERT HOLLMAN FOUNDATION

Serena Vaglio[1], Elisa Da Riva[1], Viviana Baiardi[1], Elena Mercuriali[1]
[1]Robert Hollman Foundation, Cannero Riviera, Italy

Purpose: Describe how neurodevelopmental therapy, which supports global development and promotes neurovisual functions in children with visual impairment, is implemented in an interdisciplinary residential care path at the Robert Hollman Foundation. At the Cannero Riviera centre, the care path for children aged 0-4 years includes two or more monitoring residential stays per year, during which families live at the Foundation for a week, sharing moments of daily life, alternating with moments of individual and group activities.

Methods: In this form of neurodevelopmental therapy, therapists have different opportunities and times to observe the child's abilities and relationship with their family group and peers. In addition to more structured and individual observations in the therapy room, therapists can make further observations during the residential stay in the context of group activities, in the outdoor environment, during the child's and family's daily routines and even in early daily living skills.

Results: This professional perspective, enriched thanks to the different observational contexts, allows therapists to gather many elements and information that, integrated in the work of the interdisciplinary team, lead to a complex and articulated image of the child and the family, closer to their daily reality. This then makes it possible to provide parents with guidance and support based on the child's neurovisual potential, but closely linked to their life rhythms and habits, facilitating alliance and compliance. The support is aimed at the family, at their local professional network and their school.

Conclusions: The residential stay allows therapists to have a long and dedicated time to observe the child in his best moments and in his difficulties, to collect information, to identify adaptations and to apply them concretely in the spaces and environments of everyday life dedicated to the families.

298

THE IMPACTS OF HEARING IMPAIRMENT ON VISION REHABILITATION OUTCOMES

Anas Obaideen[1], Judy Goldstein[1], Chris Bradley[1], Robert Massof[1], Kyoko Fujiwara[1], Pradeep Ramulu[1], Yingzi Xiong[1]

[1]Johns Hopkins University, Wilmer Eye Institute, Baltimore, Maryland, USA

Purpose: Hearing impairment (HI) affects over 40% of individuals with concurrent vision impairment across all age groups. The vision rehabilitation (VR) process includes many hearing-dependent tasks, such as using audiobooks or speech-based applications, which may be less effective for those with HI. This study examines the impact of HI on VR outcomes, providing insight into how VR can better address the needs of patients with dual sensory impairment (DSI).

Methods: A prospective cohort dataset was obtained from patients seeking outpatient low vision rehabilitation services at 28 clinical centers across the USA between April 2008 and May 2011. Only patients with available self-reported hearing status were included in this analysis. Other covariates included were age, gender, visual acuity, contrast sensitivity, psychological status, cognitive status, and physical health status. Person measures (individual visual abilities) and item measures (task difficulties of 50 VR goals) pre- and post-VR were assessed by the Activity Inventory (AI, a validated visual function questionnaire) using the method of successive dichotomizations. In a first analysis, we considered the improvement in visual ability as the VR outcome, comparing percentages of NH and HI patients reaching minimum clinically important differences (MCIDs). In a second analysis, we considered the reduction in task difficulty as the VR outcome, comparing sets of tasks reaching MCIDs in the NH and HI groups.

Results: Data from 358 normal-hearing (NH) and 253 HI patients were analyzed. ANOVA testing showed baseline visual ability was similar between groups, although a significantly lower percentage of HI patients achieved MCID in visual ability after VR (31% NH vs. 23% HI, $p = 0.033$ after accounting for covariates). Analysis on changes in task difficulties revealed that NH and HI patients achieved MCID in 19 and 17 VR goals, respectively, with only 7 overlapping goals improved for both groups.

Conclusions: Hearing impairment affects vision rehabilitation outcomes. Comparing to NH patients, fewer HI patients achieved MCID in their overall visual ability after vision rehabilitation, with improvements shown in a different subset of VR goals. Further research is needed to understand the reasons behind this disparity and identify potential solutions to better support individuals with DSI.

264

AWARENESS OF TELEREHABILITATION AS RELATED TO ITS IMPLEMENTATION AND BARRIERS AMONG INDIAN OPTOMETRISTS

Bhuvana Choday[1]

[1]*Department of Optometry, Sankar Foundation Eye Hospital and Institute, Visakhapatnam, India*

Purpose: The purpose of this study was to assess the awareness, practice experience, technical quality and perceived barriers to implementation of telerehabilitation into the current practice of Indian optometrists.

Methods: The study was conducted using the focused group discussion method in order to find out the different perspectives of individuals .Qualitative approach was considered for the collection and analysis of data. Focused group discussion was conducted in department of optometry SRIHER.A focused group discussion guide was prepared in order to address necessary questions to the participants and was completely based on research questions of the study. Questionnaire made as per focused group discussion was sent to experts in the field and as per their recommendations final questionnaire was made The participants included in the study were selected based on inclusion criteria and officially contacted through mail id's. They were then segregated into two groups based on their awareness in providing telerehabilitation.. SPSS version 16 was used to do data analysis. An online survey was conducted among PAN India optometric practitioners using Google forms. 196 respondents provided information regarding their interest in telerehabilitation for low vision patients.

Results: Of the 196 participants 54.3% were females and the rest 45.7% were males, and 85.2% were less than thirty years of age. 79.2% of the participants were optometry practitioners of which 11.2% of them had greater than ten years of experience in the field of low vision care. Awareness about telerehabilitation was noted among 70.9% (n = 139) of the participants however only 87.9% of them have practiced telerehabilitation. 98.5% of these practitioners felt that more awareness has to created.21.9%still project unperceived blocks in providing telerehabilitation.

Conclusion: This study states that practitioners possess adequate knowledge about telerehabilitation in low vision however lack of technical assistance, man power, and proper infrastructure restricts them from practicing it routinely. These results highlight the necessity to improve technical knowledge, legal rules to implement telerehabilitation in to the practice for low vision.

Keywords: Awareness, Low vision, Rehabilitation, Technical knowledge, Telerehabilitation

253

THE INFLUENCE OF BRAILLE DISPLAY LINE LENGTH AND DIMENSION ON BRAILLE READING PERFORMANCE IN ADULTHOOD: DEVELOPING EVIDENCE-INFORMED INDICATORS TO GUIDE DEVICE SELECTION IN VISION REHABILITATION

Natalina Martiniello[1, 2,3], Walter Wittich[1, 2,3], Martin Bergevin[2], Sylvie Cantin[3], Marie-Claire Lemire[3]

[1]Université de Montréal, École d'Optométrie, Montreal, Canada; [2]Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal / Centre de réadaptation Lethbridge-Layton -Mackay du CIUSSS du Centre-Ouest-de-l'Île-de-Montréal, Montreal, Canada; [3]Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal / Institut Nazareth et Louis-Braille du CISSS de la Montérégie-Centre, Montreal, Canada

Purpose: Traditional braille displays provide access to a single line of text (in lengths ranging from 14 to 80 cells). Emerging braille technologies have been introduced in recent years including multiple-line displays, which are especially beneficial for reading non-linear content that relies on spatial orientation (e.g. tables and equations). Despite these innovations, little remains known about the influence of braille display design on reading performance or the factors to consider when selecting the best device to meet diverse client profiles and reading needs. This study examines how braille device line length and dimension (single versus multi-line display) influence reading speed during linear and non-linear reading tasks.

Methods: Participants who were at least 18 years of age, who self-identified as blind or low vision, and who had at least 5 years of braille reading experience completed a demographic questionnaire, the Legge "Dot" assessment for tactile acuity, and both linear and non-linear reading tasks presented in a randomized order. For linear reading, passages from the International Reading Speed Test (IReST) were read orally and silently on single-line displays (14, 20, 40, 80 cells) and a 40-cell multi-line display. The non-linear reading task involved reading and locating specific information from tables on 40-cell single-line and multi-line displays.

Results: Preliminary findings from five participants (ages 51-72; 2 men, 3 women) showed tactile acuity ranging from 1.246mm-1.661mm. Silent reading was faster (M = 4.37 characters/second (cps), SD = 0.81) than oral reading (M = 3.80 cps, SD = 0.77). Most participants read slowest on the 14-cell display (M = 3.59 cps, SD = 0.84) and fastest on the 40-cell display (M = 4.39 cps, SD = 0.86). Bimanual readers achieved highest speeds on multi-line displays for linear passages. Similarly, those who divided reading tasks between both hands performed best when answering comparative questions during the non-linear table reading conditions.

Conclusions: This study is part of a broader ongoing investigation to co-develop evidence-informed indicators to guide braille device selection. Preliminary evidence suggests braille display characteristics influence reading efficiency, and that both reading strategies and the nature of the task should be considered during device selection to meet diverse client and reading needs. Implications for future research, policy and practice will be discussed.

210

A LOOK INTO SOCIAL UNDERSTANDING ABILITIES OF CHILDREN WITH CVI

Lucia Schiatti[1, 2], Marta Guarischi[1, 3], Guido Catalano[4, 5], Roberta Nicotra[4, 5], Sabrina Signorini[4], Monica Gori[1]

[1]Unit for Visually Impaired People (UVIP), [2]Pattern Analysis and Computer Vision (PAVIS), Istituto Italiano di Tecnologia (IIT), Genoa, Italy; [3]Department of Informatics Bioengineering Robotics and Systems Engineering, University of Genoa, Genoa, Italy; [4]Developmental Neuro-Ophthalmology Unit, IRCCS Mondino Foundation, Pavia, Italy; [5]Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy

Purpose: The aim of this study was to investigate the stage of development of social understanding in children with cerebral visual impairments (CVI) compared to typically developing children (Control). Specifically, we assessed their ability to recognize social interactions among virtual agents performing goal-oriented actions.

Methods: A group of 6 children with CVI (11.7 ± 3.8 years old), and a control group of 6 typically developing children (11.5 ± 1.2 years old), both with normal visual acuity, participated in this pilot study. Children were presented with videos of two agents performing goal-oriented actions (carrying one object to one location), and social interactions (help, hinder and no interaction). The responses were analysed in terms of classification accuracy of social interactions (SI) and agents' physical goals (AG1, AG2), and total response time (RT).

Results: While Control children were significantly better in classifying actions than social interactions (SI = 0.86 ± 0.1, AG1 = 0.96 ± 0.07, AG2 = 0.94 ± 0.06), children with CVI performed similarly in both tasks. Their accuracy was lower than for Control, especially regarding AG (SI = 0.79 ± 0.11, AG1 = 0.83 ± 0.12, AG2 = 0.85 ± 0.11). This may suggest that social understanding of interactions is not impaired for CVI, and that the lower performance could be related to difficulties in visual exploration, i.e. impaired smooth pursuit and saccades. Such an hypothesis is further supported by the observation of a SI improvement with age for both groups. The RT was higher for CVI (RT = 25.43 ± 9.7) than Control (RT = 19.28 ± 9.05). We observed a decrease of RT with age for Control. This trend emerges also for CVI, even though with a lower slope. Further investigation is needed to disambiguate if a higher RT is linked to an impaired visual search or to an atypical development of higher order functions (reasoning, memory).

Conclusions: CVI could affect the development of visual processing and higher order functions, such as social perception and understanding, even with normal visual acuity. In this pilot study we presented and evaluated a novel experimental protocol to quantify the effect of CVI on the stage of development of social understanding, in the context of social interactions during goal-oriented actions.

LOW VISION AIDS

547

CATEGORIZING USAGE OF VISUAL ASSISTIVE TECHNOLOGY FOR DAILY TASKS IN SENIORS WITH LOW VISION

Bethany Arabic[1], Ava Bittner[2], Micaela Gobeille[1], Cecilia Idman-Rait[1], Alexis Malkin[1], Jeffrey Ho1, Max Estabrook[2], Nicole Ross[1]

[1]New England College of Optometry, Boston, USA; [2]University of California Los Angeles (UCLA), Los Angeles, USA

Purpose: This study explores usage patterns of three visual assistive smartphone apps versus traditional low vision devices (LVDs) in adults aged 55+ with visual impairment, using the Activity Inventory (AI) questionnaire to guide the assessment.

Methods: Older adults (mean age 72.4 years, SD 10.5), naive to the study apps, with a Modified Telephone Interview of Cognitive Status score ≥20 and mean binocular visual acuity of 0.73 logMAR (SD 0.39), were randomized to one of three visual assistive apps (SuperVision+, Seeing AI, and Aira) for a 6-month intervention period, followed by a 3-month period whereby they had access to all study apps. Participants received individual training and were dispensed a loaner iPhone SE, 11 or 12. The AI was administered at baseline, 6, and 9 months. For each AI item or task, participants were asked if they used a device (LVD or study app) to assist with that item. Usage patterns of LVDs and apps for each item of the AI were examined at 6 and 9-month post-intervention. Frequencies of LVD versus app use for each AI task across functional domains were explored.

Results: Reading was the most frequently reported task for which an app or LVD was used, at both 6-months (n = 102; 79.30% with apps, 82.80% with LVDs) and 9-months (n = 70; 81.00% with apps, 82.59% with LVDs). In contrast, mobility had the lowest reported usage (at 6 months: 0.84% of items with LVD, 0.89% with apps; at 9 months: 0.39% of items with LVD, 0.71% with apps). The most common reading task performed with a traditional LVD — reading medication instructions — closely mirrored the most frequent task accomplished using smartphone apps — reading price tags. Traditional LVDs were used more often than apps for tasks at both time points (6 months: 52.90% of all AI tasks; 9 months: 51.86% of all AI tasks).

Conclusions: Traditional LVDs continued to be used more frequently overall across all items in the AI compared to apps. Both LVDs and apps were used predominantly for tasks in the reading domain.

512

ACCESSIBILITY AT THE BLINK OF AI: HOW WEARABLE TECHNOLOGY AFFECTS INDEPENDENCE FOR THE VISUALLY-IMPAIRED COMMUNITY

Swati Modi[1], Jennifer Tasca[1], Cassandra Greene[1]

[1]Center for Sight Enhancement, University of Houston College of Optometry, Houston, USA

Purpose: Low vision and blindness, or vision loss not correctable by refractive correction or medical intervention, affect 2.2 billion individuals globally. Devices have been designed to help these individuals access information at distance and near. While optical devices have existed for many decades, the first head-mounted display device designed to improve the visual experience was introduced in 1994. Since that time, technology has evolved considerably to improve comfort, weight, and cosmetic appearance of head mounted devices. In addition, more sophisticated features have been developed, such as augmented reality, virtual reality, text-to-speech, and blind spot remapping. Some newer devices also include a component of artificial intelligence (AI). Ray-Ban Meta AI glasses, originally designed and intended for the general population, have been embraced by several in the blind community. The AI features of the Ray-Ban Meta glasses not only allow summarization of text, they also provide descriptions of a user's environment and create the potential for increased accessibility through compatibility with other applications.

Methods: This pilot study investigates the accessibility features of the Ray-Ban Meta AI glasses for visually impaired and blind individuals, aiming to evaluate their effectiveness in enhancing everyday navigation, communication, and independence. The study consists of a sample of 10 participants with varying degrees of visual impairment, who test the glasses in real-world environments. Qualitative data was collected using individual interviews and a standardized script with open ended questions in order to gain an understanding of user perceptions, including impact on participants' mobility, social interactions, and independence.

Results: Preliminary findings from current Ray-Ban Meta AI users or from previous evaluations in a low vision clinical setting suggest that while the glasses offer promising benefits in terms of hands-free functionality and situational awareness, challenges may include battery life, ease of use, and the accuracy of visual assistance features.

Conclusions: This study provides foundational insights into the potential of wearable technology in improving accessibility for blind and visually impaired individuals and suggests areas for refinement in future iterations of the device as well as areas for further study.

489

VIBROTACTILE VISION: TACTILE FEEDBACK FOR SENSORY SUBSTITUTION FOR VISUAL IMPAIRMENT

Árni Kristjánsson[1], Ivan Makarov[1], Nashmin Yehaneh[2], Hafliði Ásgeirsson[2], Runar Unnthorsson[2]

[1]Icelandic Vision Laboratory, [2]Faculty of Industrial Engineering, University of Iceland, Reykjavík, Iceland

Purpose: We will describe our recent research into vibrotactile perception where the ultimate aim is the development of sensory substitution devices for people with low vision or blindness. Our research is based on the Sound of Vision (SOV) sensory substitution device, where visual information is acquired via a 3D camera system and conveyed to people with visual impairments through touch and audition. We focus mainly on the properties of haptic stimulation used in the SOV system and summarize the results of recent research into the best way of conveying haptic stimulation to maximize information transmission to the visually impaired users.

Methods: We have developed a number of custom-built devices for presenting vibrotactile information on the forearm and the lower back using arrays of Lofelt L5 tactile actuators that allow the independent manipulation of frequency and amplitude.

Results: Our findings raise important design issues for producing functionally relevant sensory substitution, such as i) the role of training on the accuracy of vibrotactile perception, which is vital for externalization and navigation with sensory substitution system ii) the importance of temporal factors, such as the trade-off between interstimulus intervals between components of patterns of vibrotactile stimuli and accuracy, iii) the optimal frequency range of vibrotactile stimulation, and iv) the importance of which body part is chosen for stimulation.

Conclusions: All-in-all, the SOV system is a highly promising candidate for successful sensory substitution and is innovative in its simultaneous use of both haptic and auditory information as an assistive device for people with vision impairments. In addition, our current results provide further information about the optimal use of vibrotactile feedback for sensory substitution for low vision.

379

VISION-RELATED QUALITY OF LIFE, PHOTOAVERSION, AND OPTICAL REHABILITATION IN ACHROMATOPSIA

Mette Kjøbæk Gundestrup Andersen[1], Joaquim Torner Jordana[1], Hanne Nielsen[1], Svend Gundestrup[2], Line Kessel[1]

[1]Department of Ophthalmology, Copenhagen University Hospital Rigshospitalet-Glostrup, Glostrup, Denmark; [2]Department of Multidisease, Copenhagen University Hospital, North Zealand, Hillerød, Denmark

Purpose: Photoaversion (PA) is a symptom of achromatopsia that has a high impact on activities of daily living (ADL) and vision related quality of life (QoL), and alleviating this symptom is a priority both in treatment trials and in optical rehabilitation. However, the QoL outside of clinical trials and the preferred light attenuating filter has, to our knowledge, not been systematically documented. This descriptive cohort study aimed to investigate QoL, the impact of PA on daily living, and the best optical rehabilitation in a cohort of achromatopsia patients not enrolled in a clinical trial, including testing the existing hypothesis that red light attenuating filters are generally preferred by patients.

Methods: Patients with genetically verified achromatopsia were invited to participate in the study. Investigations included the 25-item visual function questionnaire (VFQ-25) including supplementary questions regarding PA. Patients were evaluated by a low vision optometrist, and this included the choice between two specially designed red and grey filters, both with 6 % light transmission under indoor and outdoor lighting conditions based on subjective comfort. Best corrected visual acuity and contrast sensitivity was measured without filters and with the two trial filters. Analysis of results was performed using the VFQ-25 scoring manual and Wilcoxon signed rank test.

Results: Twenty-seven patients participated. Median VFQ-25 composite score was 73, with the lowest median score in the subscale near vision (58) and the highest in ocular pain (100). Majority of patients (88%) reported that light caused them discomfort, 92% used aid(s) to reduce light, and 56%, reported that light sensitivity affected their ability to perform their ADLs. Ninety-six percent (26/27) preferred the grey filter over the red indoors, and 74% (20/27) outdoors. Contrast sensitivity was significantly better with the grey filter compared to no filter ($p = 0.003$) and the red filter ($p = 0.002$).

Conclusions: Patients with achromatopsia have a relatively high vision related QoL compared to other inherited retinal diseases, but PA has a large impact on visual function. Despite from what could be expected from a theoretical point of view, red filters are not generally preferred.

376

EVALUATING THE IMPACT OF LED SPECTRAL VARIATIONS ON COLOR DISCRIMINATION IN LOW VISION

Irie Yu[1], Katemake Pichayada[2], Eric Dinet[3]

[1]Department of Computer Science and Engineering, Neural Information Dynamics Laboratory - Toyohashi University of Technology, Toyohashi, Japan; [2]Department of Imaging and Printing Technology, Faculty of Science - Chulalongkorn University, Bangkok, Thailand; [3]Image Science and Computer Vision, Hubert Curien Laboratory - Jean Monnet University, Saint-Etienne, France

Purpose: LED lighting systems exhibit peak wavelength deviations over time due to manufacturing differences and environmental factors such as temperature fluctuations. Additionally, functional white light composed of multiple colored LEDs may present wavelength variations for the same perceived color across different productions. Understanding how these variations influence color perception of low vision people is essential for developing smart white LED sources tailored to their visual needs. This study investigates whether small shifts in the spectral power distribution (SPD) significantly impact color perception of low vision people..

Methods: A psychophysical experiment was conducted in which participants without color arranged 15 Munsell color samples under 13 different narrow-band lighting conditions. The lighting systems used - LEDcube-I14 (Thouslite), Dittosizer Light Player (Telelumen) and LED Flood Lights (L&E) - covered peak wavelengths from 468 nm to 663 nm providing narrow-band illumination in the blue, green and red ranges. The experiment involved two groups of 16 participants wearing low vision simulation goggles (central scotoma, 20/200 visual acuity) and a control group of 16 participants with normal or corrected-to-normal vision. Color discrimination scores were calculated using a modified Farnsworth-Munsell 100-Hue test. Statistical analysis was performed using the Shapiro-Wilk test and a nonparametric permutation test with Bonferroni correction ($p < 0.05$).

Results: Red-light channels (622 nm–663 nm) yielded the highest error scores but showed more homogenous distributions. The control group performed better for the blue and green channels (468 nm-477 nm and 515 nm-529 nm) whereas participants with simulated low vision experienced more difficulties with these wavelengths. However, statistical analysis using permutation tests revealed no significant differences across lighting conditions and color patches.

Conclusions: Statistical analysis of experimental data suggests that small SPD shifts do not significantly affect color perception of individuals with simulated central scotoma. These results are highly encouraging as they suggest that the small differences and instabilities over time of the LED lighting systems do not introduce biases into psychophysical experiments aimed at studying how light affects color discrimination in a low vision context. Future studies should extend this analysis to other visual impairments, such as blurred or tunnel vision, to assess broader implications for lighting design and accessibility.

346

CENTRAL FIELD LOSS PATIENTS' ABILITY TO SELECT TARGETS WITH HEAD-POINTING USING VIRTUAL REALITY: AND EXPLORATORY PSYCHOPHYSICAL STUDY

Camille Bordeau[1], Celia Passerel[1], Carlos Aguilar[2], Iliana Huyet[3], Caroline Topart[3], François Devin[3], Frederic Matonti[3], Pierre Kornprobst[4], Eric Castet[1]

[1]Aix Marseille Univ, CNRS, CRPN, Marseille, France; [2]2Clubdes3, Nice, France; [3]Centre Monticelli Paradis d'Ophtalmologie, Marseille, France; [4]Université Côte d'Azur, Inria, Sophia Antipolis, France

Purpose: Central Field Loss (CFL) individuals have difficulty to get an accurate representation of objects within their peripheral visual field notably due to the increase of spatial uncertainty with eccentricity. This difficulty was investigated by assessing the ability of CFL individuals to select target objects by pointing at them in a virtual reality (VR) environment. A two-step head-pointing selection process specifically designed for CFL persons was used and its efficiency was psychophysically studied.

Methods: Experiments were implemented with the open-source PTVR toolbox (https://ptvr.inria.fr/) in a VR headset (HTC Vive Pro). The two steps of the selection process were (1) pre-selection: participants moved their head until a head-contingent reticle surrounded the target thus inducing a flicker of the target; (2) selection step: if pre-selection was maintained (i.e. if head position was sufficiently stable) for a non-interrupted period of 1500 ms, then selection was validated which ended the trial. Pre-selection difficulty was increased by decreasing the diameter (from 8° to 0.5°) of the Pointer Activation Zone (PAZ), an invisible circular tolerance area centered on the reticle's center. CFL patients and age-matched controls were tested with monocular viewing (worse- and best-eye viewing respectively for patients and controls). In each trial, participants had to select a 2° diameter dot by pointing at it with the head-contingent pointer (6° diameter reticle displayed in the middle of the headset viewport). Selection time (ST) was defined as the interval between object's appearance and trial end minus 1500 ms.

Results: Preliminary results (24 CFL patients, 19 controls) show that ST was longer for patients (Mean = 4545 ms) than for controls (Mean = 2749). ST decreased as a function of the PAZ's diameter following an asymptotic regression curve. The estimated asymptotic ST was 1379 ms and 1359 ms respectively for patients and controls, and the associated estimated critical PAZ's diameter was larger for patients (4.56°) than controls (1.92°).

Conclusions: Selection tools are a key requirement to be autonomous in VR environments for instance by selecting items in a menu. Our work provides methodological guidelines to create new selection tools within VR visual aids designed for low vision individuals.

209

USE OF A LIGHT LAB FOR THE EVALUATION OF NOVEL AUGMENTED REALITY NIGHT VISION GLASSES

Karst Max Pieter Hoogsteen[1], Thijs te Velde[1], Frank Hoeben[2], Gerard de Wit[2]
[1]Angstone, Arnhem, The Netherlands; [2]Bartiméus, Zeist, The Netherlands

Purpose: Night blindness significantly impairs orientation and mobility in low-light conditions. For over five decades, researchers have explored the use of night vision devices to assist individuals with night blindness. However, there is considerable variation in how these devices are evaluated. Many study designs offer only indirect insights into their impact on vision, are challenging to replicate, or require substantial time and effort to conduct. To address these limitations, we propose the use of a 2D light lab. The goal of this study is to assess the effectiveness of the 2D light lab in evaluating night vision devices, and at the same time, apply this tool to evaluate a novel optical see-through night vision device.

Methods: The 2D light lab consists of an image of a scene that is projected onto a screen in a dark room, in which the projector is the only light source. Participants are asked to detect and identify objects in the scene at various light levels, which are increased stepwise using neutral density filters. This procedure is performed both with and without the night vision device. The study involves 24 visually impaired participants with self-reported night blindness and six normally sighted controls.

Results: The findings demonstrate that the 2D light lab allows for effective measurement of differences in visual function across a range of eye diseases and light levels. It also facilitates comparisons between data from visually impaired participants and those from normally sighted individuals. The use of the night vision device significantly enhances the detection and identification of objects for visually impaired participants, with the greatest improvements observed in those with Retinitis Pigmentosa and Usher Syndrome.

Conclusions: The 2D light lab proves to be a valuable tool for evaluating night vision devices. It provides more direct insights into the impact on vision, it is reproducible and time-efficient to conduct. Additionally, the novel night vision device evaluated in this study showes promising potential in enhancing visual function, providing near normal night vision during the experiment for individuals with night blindness.

204

AT-HOME TRIAL OF FOUR DIFFERENT HEAD-MOUNTED DISPLAYS ON VISUAL REHABILITATION OF PEOPLE WITH STARGARDT DISEASE

Diana Schmidt[1], Christine Kjølholm[1], Joaquim Torner Jordana[1], Vibeke Spange[1], Pernille Højstrup[2], Bo Larsen[2], Line Kessel[1]

[1]Department of Ophthalmology, Copenhagen University Hospital Rigshospitalet-Glostrup, Glostrup, Denmark; [2]Institute for the Blind and Visually Impaired, Hellerup, Denmark

Purpose: To examine the potential of different head-mounted displays in the rehabilitation of individuals with visual impairment.

Methods: This prospective explorative study conducted between September 2019 and August 2020 included participants with Stargardt disease with moderate to severe visual impairment and a relatively preserved peripheral visual field. AceSight, eSight 3, IrisVision Live, and Jordy were tested. After instruction and training, participants chose two head-mounted displays for home use for two weeks per device. The Canadian Occupational Performance Measure was used for evaluation.

Results: Twelve participants (aged 16–53 years) tested all head-mounted displays in the clinic. Distance visual acuity and reading distance improved with all head-mounted displays and eSight and Irisvision improved near visual acuity. Six participants decided not to test the head-mounted display at home due to lack of time or energy, dizziness and discomfort, double vision and peripheral visual field limitation, or aesthetics. After home use, the participants reported improved visual function at a distance with IrisVision, AceSight, and e-Sight, whereas only AceSight improved vision during near tasks. IrisVision and eSight improved reading ability, and none of the devices improved vision during tasks involving computers. Five participants used the devices sparingly, and five avoided public use owing to aesthetics.

Conclusions: We found an improvement in distance visual acuity and increased reading distance for all tested head-mounted displays. Additionally, IrisVision and eSight improved visual function at near and eSight also improved contrast vision at distance. Despite the possibility of improving vision, social stigma and device aesthetics kept the participants from using head-mounted displays in public and limited their use at home.

QUALITY OF LIFE, DRIVING AND READING

491

PATIENT SATISFACTION AND ACCEPTABILITY OF AN INNOVATIVE, BEHAVIORAL HEALTH INTERVENTION TO IMPROVE GLAUCOMA MEDICATION MANAGEMENT AMONG AFRICAN AMERICANS

Molly Whitney[1], Christopher Girkin[2], Brooke Bailey[3], Payton Rackley[4], Laura Griggs[1], Laura Dreer[1]

[1]University of Alabama at Birmingham, Ophthalmology & Visual Sciences, Birmingham, USA; [2]University of California in San Diego, Shiley Eye Institute, San Diego, USA; [3]University of Alabama, Department of Social Work, Tuscaloosa, USA; [4]Samford University, Department of Psychology, Birmingham, USA

Purpose: To evaluate patient satisfaction and acceptability of a telehealth-based, behavioral health intervention to improve glaucoma medication adherence among African Americans.

Methods: N = 69 African Americans diagnosed with glaucoma and prescribed eyedrops by their eye care provider completed the Satisfaction with Study Intervention Form after participating in a 6-week, behavioral health intervention with a health coach (GOAL: Glaucoma Management Optimism for African Americans Living with Glaucoma). Satisfaction and acceptability were assessed using Likert-type ratings, along with qualitative data to understand rationale for ratings.

Results: Participant satisfaction was high for the intervention as evidenced by the following ratings: the quality of the health education calls you received (79.7% "excellent"; 18.8% "good"; 1.4% "fair"); getting the kind of information you wanted with regards to your eye health goals (87.0% "yes, definitely"; 11.6% "yes, generally"; 1.4% "did not go into intervention wanting specific information"); the amount of help you received during the weekly calls (94.2% "very satisfied"; 4.3% "mostly satisfied"; only 1.4% "indifferent or mildly dissatisfied"); the health education calls helped you deal more effectively with your glaucoma medication management (72.5% "yes, they helped a great deal"; 23.2% "yes, they helped somewhat"; and only 4.3% "no, they really didn't help"); the health education calls helped you deal more effectively with other important problems in everyday living (75.4% "yes, they helped a great deal"; 21.7% "yes, they helped somewhat"; and only 2.9% "no, they really didn't help"). Acceptability was also supported for the length of the program ("79.7% "just about right"; 14.5% "too long"; only 5.8% "too short"), and all endorsed they would recommend the program to a friend if they had glaucoma (95.7% "yes, definitely"; 4.3% "yes, generally"; 0% "no"). Finally, the majority of participants endorsed that they would recommend eye care providers refer patients to this program (91.3% "yes, definitely"; 7.2% "yes, generally"; only 1.4% "no, not really").

Conclusions: Patient satisfaction and acceptability for this intervention was high among African Americans living with glaucoma. This particular intervention may serve as a beneficial supplement to improve glaucoma medication management. This presentation will also discuss findings from qualitative data regarding the rationale for patient ratings.

445

EVALUATING THE 'MACULAR DEGENERATION: WHAT HAPPENS NEXT?' QUESTION PROMPT LIST: ENHANCING COMMUNICATION IN OPHTHALMOLOGY CONSULTATIONS

Mariska Scheffer[1, 2], Juliane Menting[1], Ruth van Nispen[3, 4], Sandra van Dulmen[1, 2, 5]

[1]Nivel (The Netherlands Institute for Health Services Research), Utrecht, The Netherlands; [2]Radboud University Medical Center, Radboud Institute for Health Sciences, Nijmegen, The Netherlands; [3]Amsterdam UMC, Amsterdam, The Netherlands; [4]Amsterdam Public Health, Quality of Care, Amsterdam, The Netherlands; [5]Faculty of Caring Science, Work Life and Social Welfare, University of Borås, Borås, Sweden

Purpose: Effective communication is essential in healthcare, as it fosters trust between patients and providers, enhances comprehension of diagnoses and treatment plans, and mitigates patient anxiety and stress levels. Age-related Macular Degeneration (AMD) is a complex condition where effective communication between patients and healthcare providers (HCPs) plays a vital role. This study evaluates the communication tool 'Macular Degeneration: What Happens Next?', a Question Prompt List (QPL) designed to help patients formulate questions and assist HCPs in guiding conversations.

Methods: The development process included a literature review and surveys to gather insights into patients' experiences, needs, and preferences. These findings guided focus group discussions with patients, informal caregivers, and HCPs to shape the communication tool. The QPL was further refined through cognitive interviews. The tool's impact is being evaluated using video recordings of consultations between patients and ophthalmologists (n = 51). Post-consultation surveys assess patients' experiences with communication, information provision, and shared decision-making, and the effectiveness of the QPL.

Results: Study findings indicate that the QPL is both acceptable and potentially impactful. Three out of four patients expressed willingness to use the tool, and all would recommend it to others with AMD. The QPL received positive ratings, with an average score of 7.6 out of 10. Patients using the QPL asked more questions and introduced new topics compared to the control group. This suggests that the tool not only aids in question formulation but also empowers patients to raise additional issues. Furthermore, the use of the QPL enhanced patients' sense of trust and control during consultations while reducing anxiety.

Conclusions: The QPL shows promise in improving communication between patients and providers in AMD consultations. Its success may serve as a foundation for creating similar tools to improve patient-provider interactions in other ophthalmic conditions.

395

SURVEY ON VISION-RELATED QUALITY OF LIFE FOR VISUAL IMPAIRMENT STUDENTS: QUANZHOU SPECIAL EDUCATION SCHOOL RESEARCH

Ting Chen[1, 2], Mingjia Wang[1, 2], Zhikang Liao[1, 2], Jianmin Hu[1, 2]

[1]The Second Affiliated Hospital of Fujian Medical University, Quanzhou, China; [2]Engineering Research Centre of Assistive Technology for Visual Impairment, Fujian Province University, Quanzhou, China

Purpose: To investigate the relationship between visual function and quality of life (QoL) in visually impaired students, and analyze the impact of visual impairment severity and educational settings on QoL, aiming to optimize rehabilitation strategies.

Methods: This cross-sectional study involved 88 legally blind students (distance best-corrected visual acuity, DBCVA≥0.02) from Quanzhou Special Education School underwent comprehensive visual assessments including distance/near acuity and contrast sensitivity measurements. QoL was evaluated using the validated Chinese-version Low Vision Quality of Life Questionnaire (CLVQOL), encompassing four domains: mobility and lighting, psychological adjustment, reading and fine work, activities of daily living. Participants were stratified by visual impairment severity (WHO grades) and educational setting. Statistical analysis employed ANOVA to compare visual function indices and QoL scores across different levels of visual impairment severity; independent t-tests to compare visual function indices and QoL scores between educational settings, and Pearson correlations to assess the relationships between visual function indices and QoL scores.

Results: Visual severity stratification revealed progressive QoL deterioration across impairment grades (grade 2 blindness > grade 1 low vision > grade 2 low vision), particularly affecting mobility and lighting ($p < 0.05$), psychological adjustment ($p < 0.001$), and reading/fine work ($p < 0.05$), however, the scores of activities of daily living were similar ($p > 0.05$). In terms of educational settings, overall QoL showed no significant inter-group difference ($p > 0.05$), but grade 2 blindness students in low-vision classes exhibited significantly better psychological adjustment scores compared to their peers in blind classes ($p < 0.05$). Strong correlations emerged between reading/fine work and DBCVA ($p < 0.05$). Total CLVQOL scores correlated negatively with distance and near acuity) and positively with contrast sensitivity (all $p < 0.05$).

Conclusions: Severe visual impairment significantly impacts mobility and lighting, psychological adjustment, and reading/fine work, with QoL deteriorating as impairment severity increases. Tailored rehabilitation strategies, such as assistive devices, are essential to maximize residual vision. Importantly, enrolling grade 2 blindness students in low-vision classes enhances psychological resilience, demonstrating that educational setting adjustments can provides learning support, highlighting the benefits of educational setting adjustments for this subgroup.

369

SEEING HAZARDS WITH LOW VISION: DETECTION, RECOGNITION, AND BOUNDARY PERCEPTION

Qingying Gao[1, 2], Rama Chellappa[3, 4], Cheng Peng[5], Gordon Legge[6], Roberto Manduchi[7], Yingzi Xiong[1]

[1]Lions Vision Research & Rehab Center, Johns Hopkins Hospital, Wilmer Eye Institute, Baltimore, USA; [2]Computer Science, [3]Department of Electrical and Computer Engineering, [4]Department of Biomedical Engineering, [5]Mathematical Institute of Data Sciences, Johns Hopkins University, Baltimore, USA; [6]Department of Psychology, University of Minnesota, Minneapolis, USA; [7]UDepartment of Computer Science and Engineering, niversity of California Santa Cruz, Santa Cruz, USA

Purpose: Hazards with low visibility create safety concerns for individuals with low vision. Existing approaches evaluating hazard visibility usually focus on object detection and identification. We propose that accurate boundary detection is essential for hazard avoidance, as correct object recognition does not guarantee awareness of all hazardous features, such as legs of a chair or corners of a table. Through a novel paradigm that enables observers to trace the boundaries of potential hazards in indoor environments, we demonstrate the necessity of incorporating boundary perception in hazard visibility assessment.

Methods: Photorealistic 3D indoor scenes each containing 15–25 common objects at varying distances and heights were presented on a 16' touchscreen 28 cm away. Eight participants each observed two scenes with normal lighting, two scenes with low lighting, under normal vision (-0.13 logMAR, 1.97 logCS) and simulated low vision using blur goggles (0.91 logMAR, 0.26 logCS). Participants were asked to trace the boundaries of visible objects in each scene on the touchscreen with their index finger as precisely as possible. After tracing, participants rated object detectability and identifiability with confidence from 0-5 and provided a name if recognized. Tracing precision was computed as the average offset of traced boundaries from ground truth boundaries (in viewing angle, deg).

Results: Under the normal-vision-normal-lighting condition, participants had a high detection rate (79.6%, confidence = 5), high recognition accuracy for detected objects (94.2%, confidence = 4.97), and small tracing deviations averaging 0.44 degrees. With simulated low vision, the detection (50%) and recognition (40.8%) rates were significantly lower, and dropped further when combined with low lighting (19.3% and 14.3%, ps < 0.001). Even for correctly identified objects, the boundary deviations increased with low vision, averaging 0.84 degrees for normal lighting and 1.11 degrees for low lighting.

Conclusions: The accuracy and confidence in object detection and recognition reduced as lighting and vision deteriorated. Even with correct object recognition, low vision can result in large deviations in perceived object boundaries from the actual boundaries, which may cause unintentional collisions with the potential hazards during navigation. Our novel boundary tracing paradigm may be a useful tool for understanding boundary perception with low vision.

336

A NOVEL HEAD-SCANNING TRAINING PROGRAM IMPROVES BLIND-SIDE SCANNING AND DETECTION IN DRIVERS WITH HEMIANOPIA

Alex Bowers[1, 2], Yi Ni Toh[1, 2], Patrick Baker[1, 2], Jing Xu[1, 2]

[1]Schepens Eye Research Institute, Boston, USA; [2]Harvard Medical School Department of Ophthalmology, Boston, USA

Purpose: People with hemianopia are permitted to drive in some jurisdictions. However, they may fail to scan adequately to their blind side compromising hazard detection, especially at intersections where large scans using head movement are needed to see all of the cross street on the blind side. We conducted an open-label evaluation of a novel intervention which uses auditory reminder cues to train proactive blind-side scanning on approach to intersections.

Methods: Fourteen participants with hemianopia (median 51 years; 7 left-sided field loss) completed three training sessions in a high-fidelity simulator. They drove along city routes with many intersections and other traffic. If they failed to make a large blind-side scan with head movement when approaching an intersection, a beep sounded from a loudspeaker on that side to remind them to scan. The goal was to scan early and avoid reminder beeps. To quantify training effects, head scanning behaviors and hazard detection were compared for driving simulator evaluations before training, 1-week, and 1-month after training. Evaluation drives included hazardous motorcycle events at intersections but did not provide reminder beeps. Detection tasks were not included in the training.

Results: Training significantly improved blind-side head scanning behaviors. Pre-training, participants made an early large blind-side head scan at only 22% of intersections, increasing significantly to 90% at 1-week post-training and 80% 1-month later. The median number of blind-side head scans increased from 0.7 per intersection pre-training to 1.5 at 1-week and 1.3 at 1-month, with median scan magnitudes increasing substantially by 10.6° at 1-week and 10.9° at 1-month (ps < 0.001). Detection of blind-side motorcycle hazards improved from 57% pre-training to 84% at 1-week and 81% at 1-month post-training (ps < 0.001). Training had no adverse effects on seeing-side scanning or detection performance (>92% pre- and post-training).

Conclusions: Reminder-cue training successfully promoted a more proactive style of blind-side scanning, characterized by more numerous and larger head scans before reaching an intersection, with improved detection of blind-side hazards persisting to at least 1 month. Next, we will evaluate whether reminder-cue training in the simulator improves scanning in real-world, daily driving.

265

QUALITY OF LIFE AND PARTICIPATION AFTER CORNEAL TRANSPLANTATION AND POTENTIAL PREDICTORS: A MULTICENTER PROSPECTIVE STUDY

Ellen Elsman[1], Date Van der Meij[1], Hilde Van Der Aa[1], Nathalie Santana[1], M. Bartels[2], M. Zaal[3], Y. Cheng[4], Rudy Nuijts[5], Ger Van Rens[1], Ruth van Nispen[1]

[1]Ophthalmology, Amsterdam UMC, Amsterdam, The Netherlands; [2]Deventer Hospital, Deventer, The Netherlands; [3]OMC Zaandam, Zaandam, The Netherlands; [4]Leiden University Medical Center, Leiden, The Netherlands; [5]Maastricht University Medical Center+, Maastricht, The Netherlands

Purpose: To evaluate the long-term effect of corneal transplantation on health- and vision-related quality of life, visual functioning, and societal participation, and to assess potential predictors of these outcomes.

Methods: We conducted a multicenter prospective cohort study with 11 (academic) hospitals and eye clinics in The Netherlands. Patients awaiting corneal transplantation (n = 238) completed the Low Vision Quality of Life (LVQOL) questionnaire, the Catquest-9SF, the Utrecht Scale for Evaluation of Rehabilitation-Participation (USER-P), and the EuroQol-5 Dimensions (EQ-5D) one month prior and 3, 6, 12 and 24 months after corneal transplantation. Potential predictors included sociodemographic and clinical characteristics. Linear mixed models were used to analyze and predict vision-related quality of life, visual functioning, and societal participation over time. Generalized estimating equations analyses were used as EQ-5D data were dichotomized into perfect versus suboptimal health-related quality of life.

Results: LVQOL subscale scores improved significantly from baseline to 24 months, with large effect sizes (mean scores Basic aspects: 44.5 vs. 24.7, $p < 0.001$; Mobility: 36.0 vs. 18.7, $p < 0.001$; Adjustment: 24.1 vs. 9.5, $p < 0.001$; Reading & Fine work: 28.0 vs. 12.2, $p < 0.001$), as did scores on the Catquest (mean score 57.6 vs. 79.8, $p < 0.001$). Scores on the Restrictions and Satisfaction subscales of the USER-P also improved significantly from baseline to 24-months (mean scores Restrictions: 83.6 vs. 88.0, $p < 0.001$; Satisfaction: 68.2 vs. 73.9, $p < 0.001$), but scores on the Frequency subscale deteriorated (mean score 32.7 vs. 29.4, $p < 0.001$). These effect sizes were all small. The percentage participants with a perfect score on the EQ-5D significantly increased between baseline and 24 months (47.7% vs. 56.5%, $p = 0.04$). Male sex, having work, and Fuchs' dystrophy were important predictors of better outcomes, whereas visual impairment and (dry) eye complaints were important predictors of worse outcomes.

Conclusions: Health- and vision-related quality of life, visual functioning, and societal participation are positively impacted by corneal transplantation, and important predictors for better and worse outcomes were identified. The results of this study can be used by ophthalmologists to inform patients about realistic expectations of corneal transplantation.

127

THE EFFECTS OF CHARACTER SIZE ON RAPID SERIAL VISUAL PRESENTATION READING SPEED AND VISUAL-SPAN PROFILES IN JAPANESE

Miu Kitana[1], Yefei Liang1, Haizeng Fan[1], Atsuhiro Toda[1], Mai Imazu[2], Kazuhito Ujima[1]

[1]Hiroshima University, Graduate School of Humanities and Social Sciences, Higashihiroshima, Hiroshima Prefecture, Japan; [2]Tokyo Metropolitan Katsushika School for the Blind, elementary department, Katsushika-ku, Tokyo, Japan

Purpose: The visual span is the number of horizontally aligned letters recognized at once, and the visual-span hypothesis states its reduction limits the RSVP (Rapid Serial Visual Presentation) reading speed (Legge et al., 2007). English studies showed reading speed reduction when character size exceeds 2.0° in drift reading (Legge et al., 1985) and visual span reduction between 1.0° and 4.0° (Legge et al., 2007). This study investigated these effects in Japanese.

Methods: Fourteen students (19-25 years) with normal vision participated. RSVP reading speed and visual-span profiles (VSP) were measured at seven-character sizes (0.125°, 0.25°, 0.5°, 1.0°, 2.0°, 4.0°, and 6.0°). Reading speed was calculated from the RSVP frame exposure duration yielding 80% correct. VSP was calculated using the "trigram method" (Legge et al., 2001). We used 26 HIRAGANA letters that Imazu (2024) selected to match the chance level (1/26) with alphabet studies. VSP was measured with 100-ms trigram exposures at positions from -7 to +7 (15 positions), with 10 trials per position.

Results: For RSVP measurements, we used only descending series data due to substantial differences between ascending and descending series, likely because failures occurred in the ascending series. Maximum RSVP reading speed and VSP were obtained at character size 0.5°. VSP remained stable between 0.25° and 1.0° ($p>.05$), consistent with Legge et al. (2007). VSP decreased for both small character sizes of 0.25° and large character sizes of 2.0° or more. By adding the 2.0° condition, VSP significantly decreased between 2.0° and 6.0°.

Conclusions: The similar patterns of VSP and RSVP reading speed, reaching maximum values at 0.5°, support the visual-span hypothesis in Japanese. Similar VSP patterns between graphemes of comparable perimetric complexity (hiragana M = 124.9, alphabet M = 100) suggest that character size effects reflect fundamental visual processing constraints applicable across graphemes. By adding the 2.0° condition absent from Legge's study, we identified where visual span reduction begins, revealing a plateau range (0.25°-1.0°) where visual span remains maximized and reading speed is optimal. This study clarified character size effects on visual span and reading speed in Japanese, providing foundational knowledge for optimizing reading environments based on visual characteristics.

OTHERS

324

MODIFICATIONS IN LIGHTING REQUIREMENTS FOR VISUALLY IMPAIRED PATIENTS THROUGH THE IMPLEMENTATION OF ADVANCED SCREEN TECHNOLOGIES

Kazim Hilmi Or[1]

[1]*Private Office of Ophthalmology, Hamburg, Germany*

Purpose: The primary goal of this review is to explore the modifications in lighting requirements for visually impaired patients facilitated by the implementation of advanced screen technologies. Traditional Low Vision Aids (LVAs) often rely on magnification, which typically demands increased ambient lighting. Recent advancements in screen-based technologies, including digital scanning, virtual reality (VR), and augmented reality (AR), have the potential to transform the rehabilitation of visually impaired individuals by reducing their dependence on ambient light while enhancing visual accessibility.

Methods: A systematic review of current literature was conducted to assess how advanced screen technologies—such as OLED displays, VR, AR, and digital image processing—impact lighting needs for visually impaired patients. Studies analyzing the effects of these technologies on visual perception and their ability to optimize the viewing environment without requiring significant changes to surrounding illumination were included. Special attention was given to research involving screen size and customization options that allow for more flexible lighting conditions.

Results: The findings suggest that advanced screen technologies can significantly reduce the lighting requirements for visually impaired individuals. For instance, digital displays can be optimized to adjust contrast, brightness, and color settings dynamically, thus enhancing visibility without altering ambient lighting. VR and AR devices provide further benefits by offering customizable visual enhancements, such as adjusting contrast, altering color schemes, or augmenting the real-world environment with additional visual cues, all of which require minimal to no additional lighting. Moreover, the compact size and portability of these technologies, ranging from wearable displays to large 8K screens, allow for greater flexibility in managing lighting conditions based on the user's needs.

Conclusions: The integration of advanced screen technologies offers significant promise for improving the visual experience of individuals with low vision by reducing their reliance on traditional lighting setups. These technologies not only enhance visual clarity but also provide more energy-efficient and adaptive solutions that do not necessitate environmental changes. As these innovations continue to evolve, further research is needed to refine their application in clinical settings and ensure their accessibility for a broader range of visually impaired patients.

486

VISUAL EVOCATED POTENTIAL BEFORE AND AFTER MICROPERIMETRY REHABILITATION

Anna D'Ambrosio[1], Matteo Dicembrino[1], Mariantonietta Di Brina[1], Antonia Delli Calici[1], Roberto Volpe[2]

[1]Ophthalmology UOC, Head-Neck Department, San Giovanni Rotondo, Italy; [2]Ophthalmology UOC, San Donato Hospital, Arezzo, Italy

Purpose: Low vision patients often struggle to perceive the improvements achieved through rehabilitation. While gains in letters on the Best Visual Acuity Chart (BVCA) and contrast sensitivity are measurable, other aspects of visual function may not show similar enhancements. To investigate this, we aimed to measure Visual Evoked Potentials (VEP) before and after rehabilitation using microperimetry, in order to assess any modifications in visual function.

Methods: A total of 15 patients, aged between 57 and 72 years (8 males and 7 females), diagnosed with senile maculopathy, underwent rehabilitation with the Nidek MP3 microperimeter. VEPs were assessed using a pattern reversal stimulus (60) before and after the rehabilitation process, utilizing the Retimax CSO device.

Results: Not all patients exhibited improvements in VEP amplitude (ranging from a minimum of 0.5 μV to a maximum of 1.46 μV) or latency (with improvements between 10 ms and 15 ms). However, the results were statistically significant.

Conclusions: Despite the subjective perception of low vision patients sometimes not reflecting changes in visual function post-rehabilitation, our findings indicate that these changes are quantifiable. Improvements can be measured not only through BVCA and contrast sensitivity but also through VEP assessments, highlighting the multifaceted nature of visual rehabilitation outcomes.

302

THE EFFECT OF MESENCHYMAL EXOSOME TREATMENT ON VISUAL FUNCTIONS IN CHILDREN WITH CVI

Semrin Timlioglu Iper[1], Enes Kesim[2],Ibrahim Kamer[3], Burak Tatli[3]

[1]Istanbul Okan University, Ophthalmology, Istanbul, Turkey; [2]university Of Kocaeli, Ophthalmology, Kocaeli, Turkey; [3]Zatay Health, Pediatric Neurology, Istanbul, Turkey

Purpose: The term CVI 'cortical visual impairment' is a phrase used to describe paediatric visual impairment resulting from non-ocular causes and its putative association with damage to visual cortical processing areas. It describes a clinical picture that often results from perinatal trauma (perinatal asphyxia, prematurity, neonatal hypoglycaemia, hypoxia) causing damage to the visual pathways and centres in the brain that process vision. Studies show that despite congenital damage to vision in cerebral (i.e. retro-geniculate) areas, the brain reorganises and neuroplasticity enables reorganisation and reconstruction. Despite this, individuals with CVI exhibit a wide range of visual and cognitive deficits. Seventeen per cent of the babies born require neonatal intensive care unit. Improved standards of care, increased infant survival rates and the increasing frequency of neurological problems such as CVI or CP have led to the use of new reparative therapies. Stem cell therapies and molecular therapies are increasingly used to prevent or correct neurological system pathologies.

Methods: Our study included 21 children with CVI who were treated with exosome between the ages of 2 and 8 years between 2023-2024. Intranasal exosome (5million/dose) was administered to these patients and the treatment was repeated 4-6 times at monthly intervals. In addition to routine eye examinations, visual function index and visual acuity were monitored with preferential gaze tests (LEA and Cardiff). In addition, children's visual field utilisation and symptoms of ventral stream dysfunction in CVI such as delayed gaze, complexity avoidance and dorsal stream dysfunction such as visually orientated motor movements were also monitored. Statistical evaluation was made with IBM SPSS 25.0 (IBM Corp., Armonk, NY, USA) package program

Results: Visual acuity and use of all visual fields improved after the 3rd exosome treatment in all children included in the study. When treatment was continued, only after the 6th exosome administration, some of the children developed complexity avoidance and visually orientated motor movements. Improvements were persistent even after discontinuation of treatment.

Conclusions: Intranasal exosome administration may accelerate visual development and visual perceptional skills.

255

ROLE OF PARENTS IN EMPLOYABILITY PREPARATIONS FOR CHILDREN AND YOUNG PEOPLE WITH BLINDNESS OR LOW VISION IN AUSTRALIA

Natalie Kaine[1, 2], Anne Honey[1], Chris Chapparo[1], Julianne Challita[1]

[1]The University of Sydney, Faculty of Medicine and Health, Camperdown, Australia; [2]Vision Australia, Client Services: NSW/ACT Children and Young People Team, Epping, Australia

Purpose: Only 29% of young Australians (15-24years) with blindness or low vision (BLV) are employed (Australian Institute of Health and Welfare, 2024b). A doctoral research project, conducted through The University of Sydney, investigated employability preparations for children and young people with BLV. The role parents played to support their child to prepare for future employment emerged as a central theme. This paper outlines the qualitative findings, describing the breadth and importance of their role.

Methods: This research project comprised two studies. Study One investigated perspectives of young people with BLV (n = 9), parents (n = 10) and vision support teachers (n = 11) regarding pathways or barriers to future employment in the latter years of high school. Study One findings were used to inform Study Two which involved the evaluation of a home program, designed by the research student for families of children with BLV which deliberately targeted age-appropriate career development. Ten families of children with BLV (5-11years) participated in Study Two. Both studies utilised a qualitative descriptive research design. Data were collected via interviews. Inductive content analyses of interview transcripts, using NVivo, were conducted.

Results: Study One participants identified 'life-wide' examples of what parents must do to support employability preparations. Many were universally necessary, however parents of young people with BLV have 'extras', due to complexities created by vision impairment. Participants described how parents' behaviours, emotions and aspirations were influenced by underlying attitudes and beliefs, particularly their perceptions about potential to work as an employee with BLV. Findings from Study Two indicated that accessing a bespoke home program could make positive changes to parents' knowledge, expectations, attitudes and behaviours about how to support their child's future employability, even from a young age. For example, most parent participants predicted their behavioural changes, attributed to completing the home program, would continue beyond the study, such as deliberately building their child's career awareness.

Conclusions: Parents play a crucial role in preparations for future employment. With appropriate resources, principles and strategies for mitigating the impacts of BLV, parents can take chief responsibility for building their child's future employability from a young age.

235

MAKING RESEARCH ON VISION AND STROKE RELEVANT: A NORWEGIAN PRIORITY SETTING PARTNERSHIP INITATIVE

Torgeir Mathisen[1], Helle Falkenberg[1]

[1]Department of Optometry, Institute for Optometry, Radiography and Lighting Design, Kongsberg, Norway

Purpose: As many as 65% of stroke survivors experience visual problems, which have various negative consequences for their rehabilitation and life after stroke. Research on how to best mitigate these negative consequences is urgently needed. Health research must be relevant to end users such as patients, caregivers, and clinicians. Often, researchers set the agenda based on their interests, which may not align with actual needs. Recently, there has been a shift driven by stakeholder groups and research funders to move from researcher-driven to more patient- and practice-driven research agendas. A Priority Setting Partnership (PSP) is a collaborative approach designed to bring together stakeholders to identify and prioritize research agendas. The main goal of this PSP is to identify unanswered questions related to vision and stroke that matter most to stroke survivors, caregivers, and clinicians.

Methods: We used the James Lind Alliance procedure for conducting a PSP with representation from relevant stakeholders. A questionnaire was distributed to organizations and interest groups across various platforms, both digitally and physically (meetings and conferences). Patients, caregivers, and clinicians were invited to submit up to three questions or topics they want research to address. All responses will be categorized, compared to existing research, and then prioritized in a top 10 list based on a Delphi process.

Results: A total of 263 individuals from the Nordic countries responded, proposing 487 research topics. The respondents included clinicians (147), stroke survivors (78), and caregivers (16). Suggested topics included vision rehabilitation and medical interventions, consequences for life after stroke, fatigue and vision problems, vision care delivery, interdisciplinary collaboration, stroke-related visual symptoms, and balance and vision.

Conclusions: Stakeholders have identified new questions that needs to be answered by research to ease the burden of living with vision problems after stroke. This has the potential to make future research relevant for stroke survivors as well as clinicians.

195

A PILOT EDUCATIONAL PROGRAMME ON LOW VISION FOR OPHTHALMOLOGY RESIDENTS IN SINGAPORE

Danial Bohan[1]

[1]*National University Hospital, Singapore, Singapore*

Purpose: The National University Hospital offers a 5-year ophthalmology residency programme. Residents will graduate as general ophthalmologists at the end of this programme. There is a general lack of awareness and knowledge on low vision among the residents. This study aimed to develop, deliver and evaluate a pilot educational programme on low vision for the residents.

Methods: A continuing medical education format was designed with curriculum adopted from the International Council of Ophthalmology, the American Academy of Ophthalmology and the International Agency for the Prevention of Blindness. The 3-hour programme included didactic lectures, practical and experiential learning, and case study interactive discussions. The Kirkpatrick Model of Evaluation was used to measure effectiveness through a pre- and post-learning survey. A total of 105 residents participated in this programme.

Results: After attending the programme, the residents understanding of low vision improved significantly in 5 knowledge domains: definition of low vision ($p < 0.05$), impacts of low vision ($p < 0.05$), role of ophthalmology in low vision ($p < 0.05$), low vision interventions ($p < 0.05$), evaluation of patients' psychosocial status ($p < 0.05$) and goals of low vision rehabilitation. All the residents (105/105) rated they were strongly satisfied with the programme and that they will apply the knowledge learned in clinical practice.

Conclusions: The pilot educational programme was feasible, well-received and improved the residents' understanding of low vision in clinical practice. The results support the inclusion of a low vision curriculum in ophthalmology residency programmes.

38

AGEING AT HOME WITH IMPAIRED VISION: COGNITIVE DECLINE AS THE TIPPING POINT?

Tiina Pesonen[1], Heidi Siira[1], Johanna Edgren[2], Satu Elo[1, 3]

[1]University of Oulu, Research Unit of Health Sciences and Technology, Oulu, Finland; [2]Finnish Institute for Health and Welfare, Helsinki, Finland; [3]Oulu University of Applied Sciences, Oulu, Finland

Purpose: In Finland, as well as across Europe, the care policy for older adults emphasizes the concept of "ageing in place". Thus, home care is considered the primary option for home-dwelling older adults who require regular support or care. Both impaired vision and cognitive decline (may) increase the need for support resulting in the require for home care. However, there is limited information on how well older adults with both impaired vision and cognitive decline are coping at home.

Methods: We used data from the Finnish Resident Assessment Instrument (RAI) register. The study sample consists of 37,692 home care clients aged 65 years or older. Home care clients/recipients were categorized into six groups based on their vision and cognition: 1) normal vision and cognition, 2) mildly impaired vision with normal cognition, 3) moderately/severely impaired vision with normal cognition, 4) normal vision with declined cognition, 5) mildly impaired vision with declined cognition, and 6) moderately/severely impaired vision with declined cognition. Vision and cognition were assessed using RAI. The ability to live at home supported with home care was examined with the RAI question: "Does the person or their relative feel that the person would be better off living elsewhere?"

Results: One third of home care clients had impaired vision, while cognitive decline was present in half of the clients. Nearly one fifth of the clients had both impaired vision and cognitive decline, and approximately 30% of these clients (or their relatives) felt that the person would be better off living elsewhere. In comparison, only 10% of those with only impaired vision felt the same.

Conclusions: Older adults with impaired vision can live at home with the support of home care, even with severely impaired vision, as long as their cognition is normal. However, impaired vision combined with cognitive decline, may become a tipping point for ageing in place. Regular monitoring and comprehensive assessment (such as RAI) are keys to support older adults living at home and adjusting person-centered care to their individual needs. In addition, vision impairment should always be addressed, ensuring access to eye health care and rehabilitation services.

LOW VISION ORGANIZATION AND ARTIFICIAL INTELLIGENCE

570

BUILDING BRIDGES IN VISION REHABILITATION: A MODEL FOR GLOBAL COLLABORATION

Beth Barstow[1], Jason Vice, Belinda Leibowitz[2]
[1]USA, [2]South Africa

This symposium will explore the evolution of a collaborative international relationship and its reciprocal influence on vision rehabilitation. Vision rehabilitation professionals from South Africa and the USA have been collaborating for over three years. Presenters will describe how this collaboration developed, specific initiatives and outcomes and share essential determinants of successful international partnerships. An important outcome of this relationship is the development of a structured taxonomy for low vision occupational therapy and the impact of interdisciplinary training on clinical competency and service delivery. The Occupational Therapy Association of South Africa has led efforts to establish a culturally relevant low vision taxonomy, providing a structured pathway for occupational therapists to advance from generalist to specialist. Developed collaboratively, this taxonomy integrates South African-specific criteria with expert international review, ensuring its applicability in both local and global contexts.

This collaboration led to the Low Vision Matters Conference, a four-day multidisciplinary training event in Johannesburg. The conference engaged over 60 professionals, including occupational therapists, optometrists, physiotherapists, and orientation and mobility specialists, from South Africa, Namibia, and the UAE. Through interactive workshops, case discussions, and hands-on training, participants gained expertise in low vision screening, assessment tools, adaptive technology, environmental modifications, and occupation-based interventions.

Survey results indicated strong positive feedback, with participants reporting increased competence in low vision screening and intervention and a better understanding of the complementary roles of different disciplines in low vision care. Attendees emphasized the value of interdisciplinary training and recommended future sessions include expanded profession-specific content, mental health considerations, and sensory processing strategies. Additionally, participants expressed a need for more in depth education that was accessible and affordable. In response, presenters will describe a culturally relevant vision rehabilitation educational program that is being developed to provide affordable, sustainable professional development.

154

SETTING UP VISION REHABILITATION SERVICES IN NIGERIA

Adedayo Adio[1, 2]

[1]Dept of Ophthalmology, University of Portharcourt Teaching Hospital, Port Harcourt, Nigeria;
[2]Center for Sight, The Lens Rehabilitation Center for the blind, Portharcourt, Nigeria

Purpose: Blind individuals constitute approximately 0.6% of Nigeria's population, with vision loss linked to higher mortality and decreased productivity. Currently, rehabilitation services for this group are lacking. Comprehensive programs are essential to break the cycle of poverty and high mortality rates by enabling blind individuals to achieve independence. The Lens Rehabilitation Center for the Blind in Port Harcourt, Nigeria, has developed a program to empower those living with blindness.

Methods: Data were analyzed from records of patients with very poor vision (as per WHO definitions) in both eyes, referred to TLEC rehab Nigeria between January 2015 and January 2021.

Results: Of 148 respondents, 50 accepted rehabilitation, with a male-to-female ratio of 2:1. Social media advertisements referred 62% (n=31) of participants. A quarter had previous white-collar jobs before blindness. Two-thirds (60%) lost vision due to glaucoma, while 10% had congenital cataract sequelae. Over three-quarters were homebound for nearly 10 years, and only 10% had completed tertiary education. Approximately one in five were suicidal or depressed. The center provided services such as assistive devices, mobility skills, Braille literacy, and daily living efficiency, emphasizing education completion. Many went on to either complete their education or set up viable businesses afterwards.

Conclusions: Blindness severely impacts developing countries due to poor disability law enforcement and insufficient funding. Quality rehabilitation is vital. This report outlines activities of a regional center in Port Harcourt, Nigeria, implementing a comprehensive vision program to ensure independent, productive living for the blind and severely visually impaired.

402

GIVING STUDENTS A VOICE: SELF-ADVOCACY TRAINING FOR STUDENTS WITH VISUAL IMPAIRMENTS TO INCREASE CONFIDENCE, INDEPENDENCE, AND SELF-DETERMINATION

Stephanie Jones[1], Mindy Koehne[1], Ruth Childs[2], Kelly Lusk[1]

[1]Clovernook Center for the Blind & Visually Impaired, Cincinnati, OH, USA; [2]SUNY Brockport, Brockport, NY, USA

Purpose: Students with visual impairments must learn many skills through explicit instruction as much of what other children learn is acquired through incidental visual observation. These skills are addressed through the Expanded Core Curriculum (ECC) for Students with Visual Impairments. One of the ECC areas is Self-Determination and includes setting goals, making decisions, and advocating for oneself. For students with visual impairments, being able to successfully self-advocate for their needs and wants is a necessary skill, at home, school, and within the broader community. When presented with obstacles to successful advocacy, students must learn why and how they can navigate around negative perceptions and the ignorance of others, and create pathways for themselves to achieve success.

Methods: Using methodologies developed by Childs and Converse, a self-advocacy curriculum has been employed over the last 3 years at both summer camps and through a series of self-advocacy weekend intensives to help students with visual impairments learn how to advocate for themselves based on personalized goals and needs related to education, assistive technology, safety, and other topics. Students are guided through a series of steps to identify, address, and execute a plan of self-advocacy, including using roleplay to present and further refine their action plan.

Results: Results show that these students can successfully self-advocate for their needs after participating in these sessions and activities, and both students and parents report an increase in confidence and independence.

Conclusions: Increasing confidence, independence, and self-determination skills through self-advocacy instruction is one way to help students with visual impairments become empowered, successful adults.

275

EVALUATION OF VISION LANGUAGE MODEL FOR WAY FINDING TASKS

Gang Luo[1], Junxian He[2], Shrinivas Pundlik[1]
[1]Harvard Medical School, Boston, USA; [2]Chongqng University, Chongqing, China

Purpose: Micro-navigation, also known as the last 10-meter problem, poses challenges for blind and visually impaired individuals. We investigated the potential of a vision language model, ChatGPT4o, for providing navigation directions.

Methods: A testing dataset is created, which includes 113 real-world micro-navigation scenario images and corresponding human-generated scene descriptions. Scenarios were broadly categorized into 4 categories: outdoor (mostly city streets), indoor (mall, office, supermarket, etc.), transit stations (bus and subway), and plaza. The dataset also includes 407 human-generated wayfinding queries (e.g. how do I get to Starbucks) and their expected responses were used for evaluation (245 answerable and 162 not answerable based on the scenes). "I do not know" or similar response are expected for the negative cases. Sensitivity based on answerable queries and specificity based on unanswerable queries for navigation directions output by ChatGPT4o was evaluated under different input conditions – a scene image; or scene description generated by ChatGPT4o; or human written scene description.

Results: With scene images as inputs, ChatGPT4o achieved a sensitivity of 64% and a specificity of 76%, respectively. Three finetuned prompts on how to respond to unanswerable and answerable questions did not affect sensitivity, but increased specificity by 14 %. Sensitivity and specificity both decreased by about 13% and 7%, respectively, when GPT4o generated scene descriptions were used as inputs. When human written scene descriptions were provided as input, sensitivity and specificity improved by about 17% and 16%, respectively.

Conclusions: Since GPT generated description was worse than direct image input, it suggests that some spatial information needed for micro-navigation was probably lost in generative scene descriptions. This problem can be mitigated by providing image directly to vision language models. General-purpose ChatGPT4o with fine-tuned prompts still appeared to be inferior to human in scene understanding. Vision language models that are custom trained on navigation scenarios may help improve performance.

261

ACCESSIBILITY IN CLINIC DESIGN: LESSONS FROM VISUALLY IMPAIRED PATIENTS

Hannah Holzer[1], Kimberly Papp[1], Matthew Holzer[1], Marvi Cheema[1]
[1]University of Alberta, Edmonton, Canada

Purpose: Eye care providers have a duty to accommodate patients with visual impairment; however, few studies have explored accessibility of eye clinics. It is critical to involve stakeholders in these discussions to design eye care services with thoughtfulness and intentionality. This study aimed to identify challenges and practical solutions for accessibility of eye clinic design.

Methods: This was an observational, qualitative study. Participants with visual impairment and blindness were recruited for interviews through "Get Together with Technology", an initiative through the Canadian Council of the Blind which brings together people with vision impairment to use technology more efficiently. Participants completed 45-minute semi-structured interviews using video conferencing to record experiences and insights about accessibility in eye clinics. Audio recordings from the interviews were transcribed, de-identified, coded, and analyzed for themes.

Results: Twenty adult participants were interviewed, with a balanced geographic distribution across Canada. Eleven of the participants had a self-reported visual acuity of counting fingers or less, and all had a visual acuity of 20/70 or less. Participants had a wide variety of self-reported primary diagnoses; the most common being retinitis pigmentosa (5/20) and glaucoma (3/20). Three major themes were constructed: perceived intentionality of accommodations, sense of confidence, and specific design features. Several participants endorsed the sentiment that there is insufficient consideration for visual impairment in clinic designs, whereas others endorsed a sense of personal responsibility to cope and adapt. As a general pattern, participants with early-onset vision loss reported greater confidence when accessing eye care services. Participants with late-onset vision loss endorsed barriers with adapting to new skills and technologies. Participants identified challenges and practical solutions for specific clinic features, including paperwork, staff interactions, signage, obstructions, lighting, flooring, and transportation.

Conclusions: This study highlighted the diverse needs and lived experiences of patients with visual impairment and blindness who access eye care services with respect to accessibility in clinic design. Through a solutions-focused worldview, this study identifies practical suggestions and modifications for health services to meaningfully accommodate patients with visual impairment.

248

CLIENT-CENTRED OUTCOME MEASUREMENT OF ORIENTATION AND MOBILITY, VISION REHABILITATION AND LOW VISION SERVICES

Ashley Shaw[1], Jennifer Urosevic[2]

[1]Quality Performance and Standards, Vision Loss Rehabilitation Canada, Kitchener, Canada; [2]Vision Loss Rehabilitation Canada, Kitchener, Canada

Purpose: To identify activities clients wish to work on during vision rehabilitation, assess changes in their perceived ability post-intervention, and understand the broader outcomes of vision rehabilitation services.

Methods: The Canadian Occupational Performance Measure (COPM) is an evidence-based, client-centred outcome measure used pre and post-intervention. It assesses clients' perceived ability to perform activities of daily living (ADLs) and their satisfaction with performance. At Vision Loss Rehabilitation Canada, COPM is used in orientation and mobility, independent living, and low vision interventions. Clients identify activities they want, need, or are expected to do but cannot accomplish. They rate their current ability, satisfaction, and the importance of each activity on a 10-point scale. Post-intervention, clients re-rate their performance and satisfaction. A 2-point increase indicates a clinically significant change.

Results: All specialists at Vision Loss Rehabilitation Canada are trained in COPM, adapted for vision rehabilitation. ADLs are categorized into personal care, functional mobility, community management, work, household management, school/play, quiet recreation, active recreation, or socialization. This session explores commonly identified ADLs and the level of change experienced by clients in various interventions.

Conclusions: The COPM facilitates discussions between staff and clients about needs for service and client progress, and helps quantify the impact of vision rehabilitation services on activities most important to clients.

239

BENEFITS AND LIMITATIONS OF A SCANNER AND READER WITH ARTIFICIAL INTELLIGENCE (AI) ENABLED SPECTACLE ASSISTIVE DEVICE FOR INDIVIDUALS WITH LOW VISION

Sneha Aggarwal[1, 2, 3], Radhika Tandon Tandon[1], Suraj SIngh Senjam[1], Praveen Vashist[1]

[1]Dr R. P. Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, Delhi, India; [2]National Institute of Medical Sciences, Jaipur, India; [3]British Contact Lens Association, Manchestor, United Kingdom

Purpose: To assess the usability, comfort, and effectiveness of an AI-enabled spectacle assistive scanner & reader in individuals with severe to ultra-low vision

Methods: Individuals with severe (VA ≤ 20/200 to 20/400, VF ≤ 20 degree)) to ultra-low vision (VA≤ 200/500 to Light Perception, VF ≤ 10 degree) were assessed at a low vision aids clinic of a tertiary eye care centre and were allowed to use AI-enabled glasses for about 45 to 60 minutes. A pre-designed proforma was used to record demographic information, including clinical diagnosis, history, education, previous low vision device details, care-giver details, distance and near vision, and the product's usability, comfort, and feature comprehension on a Likert scale of very easy, easy, average, difficult, to very difficult.

Results: 50 visually impaired educated patients (M-40; F-10) with a mean age of 29.68 years (SD ±11.95) were given a trial of AI enabled assistive glasses. 18 individuals had severe low vision, while 32 patients had ultra-low vision. In terms of aetiology, 35 patients had acquired visual impairment (VI), while 15 has congenital VI. Diagnostically, 21 subjects had retinal diseases, 11 had globe anomalies and 18 had optic nerve disorders. Given mobility and activities of daily living, 31 participants needed mobility and external support from caregivers, while 19 were self-sufficient. Specific task-based performance results were noted as follows (1) Object detection - 86% comfort and 84% comprehension, (2) Reading - 78% comfort and 66% comprehension, (3) Mobility assistance - 62% comfort and 52%, and (4) Face recognition - 82% comfort and 76% comprehension.76% of participants felt comfortable and 72% found the device easy to use. Key areas for improvements identified were the need for wireless connectivity (28%), reduced weight (26%), affordability concerns (16%), and difficulties related to speech clarity, walking aids, and reading functionality (30%).

Conclusions: To support the WHO aim of inclusivity, AI-enabled glasses show significant potential in independent living and accessibility for individuals with visual impairments. Key benefits include identifying surroundings, recognizing faces, and navigating safely. However, usability challenges such as device weight, affordability, and walking aid efficiency need to be addressed.

VISUAL REHABILITATION AND PROTHESIS

564

TELEREHABILITATION: CREATING ACCESS FOR UNDERSERVED LOW VISION COMMUNITIES

Rebecca Kammer[1], Nilima Tanna[1]
USA

Course Description: Access to low vision rehabilitation remains a significant challenge for individuals with vision impairment, particularly those in remote areas or with socioeconomic barriers that limit their ability to travel for care. Telerehabilitation has emerged as a promising solution to bridge this gap, offering specialized vision rehabilitation services through virtual platforms. This panel will explore the role of telerehabilitation in expanding access to care, featuring presentations on innovative programs and firsthand patient experiences. Presenters will showcase examples of telerehabilitation initiatives that provide essential services such as functional vision assessments, adaptive training, and assistive technology support. These programs enable patients to receive expert guidance without the burden of long-distance travel, making rehabilitation more accessible and sustainable. Additionally, patient perspectives will highlight thebenefits and challenges of receiving care remotely, emphasizing the convenience, continuity, and effectiveness of virtual interventions. While telerehabilitation is not intended to replace in-person clinical or homebased services, it serves as a valuable complement, particularly for those who might otherwise go without care. This discussion will address best practices for implementation, considerations for improving patient engagement, and the potential for future advancements in virtual rehabilitation. By leveraging technology to meet patients where they are, telerehabilitation represents a critical step toward reducing disparities and improving quality of life for individuals with low vision.

484

VISUO-MOTOR PROCESSING TRAINING IN INDIVIDUALS WITH ACQUIRED BRAIN INJURY

Valeria Silvestri[1], Margherita Guidobaldi[1], Paola Piscopo[1], Marco Sulfaro[1], Francesca de Rossi[1], Simona Turco[1], Filippo Amore[1]

[1]National Centre of Service and Research for the Prevention of Blindness and Vision Rehabilitation of the Visually impaired- IAPB ETS, Fondazione Policlinico Universitario A. Gemelli, IRCCS, Rome, Italy

Purpose: Vision impairments are common after acquired brain injury (ABI) and to date poor evidence exists to assist patients with effective interventions for visuo-motor skills. To describe the results of compensating vision rehabilitation intervention currently provided for individuals with ABI referral to our low vision rehabilitation centre.

Methods: Six patients (4 females and 2 males, aged from 22 to 65 years old) with ABI after 6 months from the event were evaluated. The ophthalmological assessment consisted of best corrected visual acuity (BCVA), reading acuity (RA), maximum reading speed, contrast sensitivity (CS), visual field exam, microperimetry and oculomotor/pursuit testing. A vision rehabilitation plan that included compensating outpatient-based vision processing training were performed for a total of 15 rehabilitative sessions of 45 minutes each, for 2 days a week. Vision training was based on the use of Light trainer (Light Trainer Visuo-Motor Equipments Company) including exercises for location and discrimination task, visual attention and visuospatial memory. For each excercise, time (fastest and slowest) and accuracy (corrected and errors) indexes in the detection of the stimuli were registered.

Results: Visual field exam and microperimetry revealed (evidenced) a homonymous hemianopia for subjects enrolled. Prism correction was prescribed, and double vision was eliminated in patients with diplopia, before starting with vision training. BCVA was 0.2 (±0.48) LogMAR and remained unchanged after vision training. After completing the vision rehabilitation path, CS improved significantly from 1.4 LogC to 1.65 ($p < 0.01$). Spatial location indexes improved significantly after vision training ($p < 0.05$). According to attention task, only the number of errors in responses not improved significantly (mean [IQR], 34.5 [6.7-105.9] vs 24.5 [15.3-33.9]; $p > 0.05$). Both fastest time and corrected responses in reproducing light sequences increased significantly after training (mean [IQR], 0.4 [0.3-0.5] vs 0.25 [0.20-0.3]; $p < 0.05$ and mean [IQR], 17.8 [12.5-23.1] vs 30.3 [19.5-41.1]; $p < 0.05$).

Conclusions: These findings suggest that vision rehabilitation, for both visual field defect and dysfunction of oculo-motor control, may have benefit through compensation mechanisms. Future studies should be designed to determine optimal timing, intensity, and patient selection for early vision rehabilitation.

423

EXPLORING THE ADHERENCE AND EFFECTIVENESS OF THE TELEREHABILITATION PROGRAM IN SCHOOL-AGED CHILDREN WITH VISION IMPAIRMENTS

Margherita Guidobaldi[1], Valeria Silvestri[1], Marco Sulfaro[1], Paola Piscopo[1], Simona Turco[1], Francesca de Rossi[1], Filippo Amore[1]

[1]National Centre of Service and Research for the Prevention of Blindness and Vision Rehabilitation of the Visually Impaired, Rome, Italy

Purpose: Vision impairments can have a significant impact on the ability of young patients to access educational content and participate in school activities. Typically, rehabilitation programs include visual exercise therapy at Centers. The study aims to evaluate the effect of the telerehabilitation program on the functional vision of school-age children with visual impairment. And to explore the adherence of students to home treatment.

Methods: Fifteen visually impaired young subjects of various etiologies, 7 males and 8 females, mean age 14,2 years (range = 10-18 years), were treated with the home telerehabilitation pathway using the EyeFitness software (Nidek Technologies) for 3 days a week, for a total of 10 weeks. The EyeFitness software was individually configured for each patient according to the residual perceptive abilities (visual acuity and contrast sensitivity) and the orthoptic evaluation. The pathway included four exercises that worked on smooth pursuit eye movements and saccadic movements, oculo-manual coordination control and control of the retinal fixation point location. Best corrected visual acuity (BCVA), reading acuity (RA), contrast sensitivity (CS), reading speed (RS), fixation stability (BCEA) were compared before and after training. Moreover, adherence to the telerehabilitation was investigated.

Results: Child and teen patients had good adherence to the EyeFitness telerehabilitation program, only three had poor participation and their data were excluded from the analysis. The overall average completion rate for the 12 patients included in the analysis was 92.5% (SD = 7.9), indicating that the average patient completed the prescribed exercises three days per week during their enrolment in the program. Mean RS increased significantly from 79.1 (± 18.7) to 102.6 (± 18.2) wpm ($p < 0.05$). BCEA 68.2% values were significantly smaller for both eyes ($p < 0.05$).

Conclusions: These results suggest that a software-based telerehabilitation program may be a viable rehabilitation method also in visually impaired school-aged children and that the proposed training improves fine visuomotor skills, which can help in school learning.

363

PREFERRED RETINAL LOCUS REHABILITATION IN PATIENTS WITH ACQUIRED MACULAR DISEASES

Nádia Fernandes[1], Marta Castro Araujo[2], Tiago Carvalho[3], Ana Catarina Almeida[4], Carla Rita dos Santos Costa Lança[5]

[1]Low Vision Rehabilitation, Clínica Topcare Oeiras,Oeiras, Portugal; [2]Ophtalmology, Visiomédica, Oeiras, Portugal; [3]Ophtalmology, Hospital dos Lusíadas de Lisboa, Lisboa, Portugal; [4]Ophtalmology, Unidade Local de Saúde de Loures/Odivelas, E.P.E., Lisboa, Portugal; [5]Escola Nacional de Saúde Pública, Universidade Nova de Lisboa, Comprehensive Health Research Centre, Lisboa, Portugal

Purpose: This study aimed to characterize the profile of patients with acquired macular diseases that underwent low vision rehabilitation (LVR) and their outcomes after rehabilitation.

Methods: This was a cross-sectional and retrospective study, that included a convenience sample of patients with acquired maculopathies under rehabilitation at Topcare Clinic in Oeiras, Portugal. LVR assessment was performed by measuring distance and near best corrected visual acuity (BCVA), Contrast Sensitivity (CS), Central Visual Field (CVF) and Preferred Retinal Locus (PRL) performance. Patients with unstable PRL underwent orthoptic re-education of eccentric vision (EV) and image relocation (IR) with prisms to stabilize fixation. Subsequently, low vision aids were tested and prescribed, and the results were measured after visual rehabilitation.

Results: Twenty-nine patients with a mean age of 79.86 ± 12.36 years were included. Sixty-nine percent of the patients were female. Age-related macular degeneration was the most frequent acquired maculopathy (75.86%). Near reading was the most common goal (93.1%). BCVA for near (2.38M) and CS (18.9%) of the better eye were better than in binocular conditions. Distance BCVA of the better-seeing eye (0.50 LogMar) differed significantly from the distance BCVA from both eyes (0.30) ($p < 0.001$). Fifteen patients (51.7%) presented an unstable PRL and were submitted to orthoptic re-education of the EV and 11 patients received combined intervention of EV and training with IR prisms. After 2 months of LVR, there was improvement in face recognition in all patients with previously unstable PRL. The most prescribed low vision aid for near was + 5.00D magnifying glasses and for distance the Galilean telescope 2.2x. Reading speed (Initial RS, 32.04 ± 13.95 wpm) improved significantly (final RS, 53.15 ± 17.92 wpm: $p < 0.001$). Contrast sensitivity improved in all the degrees of visual loss after the rehabilitation. After rehabilitation, all patients reported subjective improvement.

Conclusions: There was an improvement in all evaluated parameters after visual rehabilitation, especially in RS, demonstrating that it is possible to obtain better visual performance in patients with acquired maculopathies after LVR.

163

WHICH TYPE OF AUGMENTED REALITY DEVICE HELPS INDIVIDUALS WITH LOW VISION FOR VARIOUS VISUAL TASKS?

Sarika Gopalakrishnan[1, 2], Arathy Kartha[3], Ronald Schuchard[4], Donald Fletcher[5]

[1]Low vision, Envision Research Institute, Wichita, USA; [2]Low vision, University of Montreal, Montreal, Canada; [3]SUNY, College of Optometry, New York, USA; [4]Biotechnical companies, Wichita, USA; [5]Envision Vision Rehabilitation Center, Wichita, USA

Purpose: Worldwide, 246 million people have low vision and have difficulty with everyday activities. However, there has been little research on which types of augmented reality (AR) devices can assist with various visual tasks. We conducted a study to evaluate how three different types of AR devices help in performing real-world activities.

Methods: Three models of AR devices were used in this study - Ziru, IrisVision and NuEyes Pro 3. Twenty seven individuals with low vision (worse than 20/60 (0.5 logMAR)) were recruited. The participants were asked to report the difficulty level while performing 30 visual tasks in the Veterans Affairs Low Vision Visual Functioning Questionnaire (VALVVFQ) using the three AR devices in a real-world environment. Item measures (task difficulty) were estimated using the Method of Successive Dichotomizations (MSD). Their perceptions and ratings of the devices were documented using a head-mounted display (HMD) user evaluation form.

Results: Out of 27 participants, 17 were female. The mean age was 66.7 (18.2), ranging from 25 to 92 years of age. The item measures ranged from -0.92 to 0.88 without AR device, -0.86 to 0.47 with Ziru, -0.73 to 1.33 with IrisVision and -0.76 to 1.75 with NuEyes. Out of the 30 visual tasks, task difficulty improved for 23 (76.6%), 15 (50%) and 11 (36.6%) items with Ziru, IrisVision and NuEyes respectively, as noted by a negative shift in item measures. The easiest item was 'keep your place while reading' without AR device and while using NuEyes, 'watch TV' with Ziru, 'read mail' with IrisVision. The most difficult item was 'groom yourself' without AR device, IrisVision and NuEyes, 'sign your name' with Ziru. The overall rating was very good for Ziru (n = 15), followed by IrisVision (n = 9) for performing majority of the visual tasks, however, majority of the participants rated NuEyes as very poor (n = 16).

Conclusions: We found an improvement in performance while using different AR devices as measured during a short-term assessment in this study. Participant ratings varied for different devices, with Ziru being rated the highest overall followed by IrisVision.

70

EXPERIENCES AND MEANINGS OF THE USE OF NON-MIMETIC OCULAR PROSTHESES FOR OCULAR TRAUMA SURVIVORS OF THE SOCIAL PROTESTS IN CHILE (2019-2020): A QUALITATIVE PHENOMENOLOGICAL STUDY

Patricio Bustamante Veas[1, 2], Eric Tapia Escobar[1, 3], Angela Cura Mendez[4], Sebastián Córdova González[5], Paula Coñoepan[4]

[1]Medical Technology, [4]Visual Arts, [5]Oral Rehabilitation, Universidad de Chile, Santiago de Chile, Chile; [2]Hospital Clínico de la Universidad de Chile, Unidad de Baja visión, Santiago de Chile, Chile; [3]Universidad Central, Faculty of Medicine and Health Sciences, Santiago de Chile, Chile

Purpose: This study explores the meaning and experience of the use of non-mimetic ocular prostheses in survivors of ocular trauma during the social protests in Chile (2019-2020). It aims to understand how these devices impact the identity, personal expression, and historical memory of the survivors.

Methods: A qualitative approach with phenomenological methodology was used, conducting semi-structured interviews with 7 participants who used custom-designed ocular prostheses instead of traditional mimetic prostheses. Content analysis allowed us to identify patterns in the narratives about the experience of use, the emotional and social impact, and the re-signification of trauma.

Results: The findings suggest that non-mimetic ocular prostheses transcend their aesthetic function and become tools for the reconstruction of identity and political resistance. The participants emphasized that the use of these prostheses makes the violence that was suffered become visible, reaffirming personal agency and re-signifying the modified body. In addition, a dynamic relationship was identified between the acceptance of the prosthesis and the interaction with different social environments, which influences self-esteem and quality of life.

Conclusions: This study evidences the need to expand the treatment options in prosthetic rehabilitation, integrating emotional, social, and political dimensions in the design and access to ocular prostheses. The research also suggests rethinking prosthetic rehabilitation not only from aesthetic normalization but also from the patient's autonomy and right to meaningful bodily expression in contexts of political violence.

23

BIONESS INTEGRATED THERAPY SYSTEM (BITS) NORMATIVE DATA FOR HEALTHY ADULTS: VISUAL SCANNING

Lulwah Almulhim[1], Scott Snyder[2], Jason Vice[3], Elizabeth Barstow[3]

[1]University of Alabama at Birmingham, Birmingham, USA; [2]Human Studies, [3]Occupational Therapy, University of Alabama at Birmingham, Birmingham, USA

Purpose: To provide normative data for the Bioness Integrated Therapy System (BITS) for visual scanning in adults aged 19-29.

Methods: We conducted this descriptive study to develop normative data for healthy adults aged 19 to 29 for the BITS using two visual scanning programs: user paced, and time paced. We compeleted the study at the University of Alabama at Birmingham (UAB) Callahan Eye Foundation Hospital, UAB Center for Low Vision Rehabilitation. We obrained institutional IRB approval. The main outcome measures were reaction time, accuracy, and number of targets hits. We applied convenience and snowball sampling to recruit 40 adults aged 19 to 29. Participants provided their demographic data and consent by filling out a Qualtrics survey. During the session, we first collected participants' height, wingspan, and viewing distance. Afterwards, participants were randomly assigned to one of two groups based on visual scanning programs. Each participant performed the following randomly:

- User paced without central fixation (3 familiarization trails x 30 sec. and one trial for 60 sec.)
- User paced with central fixation (3 familiarization trails x 30 sec. and one trial for 60 sec.)
- Time paced without central fixation (3 familiarization trails x 30 sec. and one trial for 60 sec.)
- Time paced with central fixation (3 familiarization trails x 30 sec. and one trial for 60 sec.)

Results: A repeated measure test was performed to analyze the reaction time of 40 young adult participants. Results showed that there is a significant main effect for program/mode ($F = 7.55$, $p = .009$, eta2 = .162), for central fixation ($F = 213.671$, $p < .001$, eta2 = .846), and for the interaction between program/mode and central fixation ($F = 4.377$, $p = .043$, eta2 = .101). We also found that reaction time was significantly lower for the time paced program and not for the time paced program with central fixation. The interaction effect was due to a greater decrease in recreation time for central fixation between user paced and time paced.

Conclusions: The normative data of visual scanning provided in this study can be used in occupational therapy practice and vision rehabilitation, to screen, train and assess progress of individuals with visual scanning deficits.

FIVE TOP-RATED PRESENTATIONS

389

ANALYSIS OF INFLUENCING FACTORS ON THE HEALTH UTILITY VALUES EVALUATION OF VISUALLY IMPAIRED ADOLESCENTS

Bingbing Li[1, 2, 3], Ting Chen[1, 2], Jian bo Yao[1, 2], Jianmin Hu[1, 2]

[1]The Second Affiliated Hospital of Fujian Medical University, Quanzhou, China; [2]Engineering Research Centre of Assistive Technology for Visual Impairment, Fujian Province University, Quanzhou, China; [3]Jinjiang Municipal Hospital, Quanzhou, China

Purpose: This study aimed to assess health utility values and their influencing factors among visually impaired adolescents, providing a scientific basis for targeted rehabilitation strategies.

Methods: The telephone follow-up survey was conducted with 165 eligible visually impaired adolescents. Health utility values were measured using the Time Trade-Off (TTO) method. The Mann-Whitney U test and Kruskal-Wallis test were utilized to compare intergroup differences in health utility values among visually impaired adolescents across various stratifications, including gender, age, type of educational institution, use of visual aids, etiology of visual impairment, and degree of visual impairment. Multivariate linear regression analysis was conducted to identify the independent determinants of health utility values in visually impaired adolescents.

Results: The TTO health utility value of visually impaired adolescents was statistically significant differences in different types of educational institution, use of visual aids, and degree of visual impairment, and the differences were statistically significant (all $p < 0.05$), but there were no statistically significant differences among different genders, ages, and etiologies of visual impairment (all $p > 0.05$). Multiple linear regression found that the age, use of visual aids, and degree of visual impairment were independent influencing factors of the TTO health utility value of visually impaired adolescents (all $p < 0.05$), and the gender, types of educational institution and etiology of visual impairment had no effect on the TTO health utility value (all $p > 0.05$).

Conclusions: As one of the scientific basis for rehabilitation of visually impaired adolescents, TTO health utility value effectiveness are influenced by age, use of visual aids, and degree of visual impairment.

341

THE RELATION BETWEEN OBSERVED PARENTING BEHAVIOUR AND DEVELOPMENTAL OUTCOMES IN TODDLERS WITH VISION IMPAIRMENT

Carlijn Veldhorst[1], Sabina Kef[2]

[1]Radboud University, Nijmegen, The Netherlands; [2]University of Amsterdam, Amsterdam, The Netherlands

Purpose: Effective parenting can support the development of children with vision impairment (VI), yet research on specific parenting behaviours influencing developmental outcomes remains limited. This study examined the relationship between parenting behaviours and developmental outcomes—specifically in language, cognition, social adaptation, and exploration—among young children with VI. It was guided by the question: What is the association between observed parenting behaviour and developmental outcomes in toddlers with VI? This question arose from a recognized gap in understanding parenting's role in their development. Given the challenges children with VI face, supportive parenting may help mitigate difficulties. By exploring these associations, this study aims to provide insights for intervention programs, targeting parenting behaviours as modifiable factors to enhance children's development.

Methods: 22 dyads of toddlers with VI without additional impairments and their parents, living in The Netherlands, participated in 15 minutes of play that was video recorded. The observed parenting behaviour was assessed using the Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO). Parenting behaviour was categorized as affection, responsiveness, encouragement and teaching. Developmental outcomes were measured using the Reynell Zinkin developmental Scales (RZS).

Results: To address the research question, analyses were conducted in three stages. First, we identified only negative correlations between the subscales of teaching and social adaptation, as well as responsiveness and expressive language, vocabulary, and content. Second, bilingual children scored lower on social adaptation, response to sound, and verbal comprehension. Finally, in the third stage, teaching, responsiveness, and bilingualism were included as predictors, but a significant full model was found only for social adaptation.

Conclusions: The association between parenting behaviour and developmental outcomes in children with VI differs from previous research involving other groups of children. Parents achieved high scores on parenting behaviour, which can be attributed to high educational levels or the quality of care for children with VI. Children exhibited high developmental outcomes, which may prompt the need for revising the RZS. Encouragement and teaching exhibited the greatest degree of variation, thereby presenting a noteworthy area for further investigation and meriting special attention in early intervention services.

164

IMPROVED GAIT IN 100 PEDIATRIC BLIND AND LOW VISION PATIENTS ONCE WEARING A PEDIATRIC BELT CANE

Paul Chong[1], Ishani Bakshi[2], Robert Enzenauer[3], Grace Ambrose-Zaken[4]

[1]Walter Reed Army Medical Center, Bethesda, USA; [2]Safe Toddles, Fishkill, USA; [3]Children's Hospital of Colorado, Aurora, USA; [4]City University of New York, New York, USA

Purpose: Walking is the currency of childhood development and blind toddlers lack sufficient vision needed to attain their milestones. Studies of children with/without handheld assistive safety devices documented the unhealthy walking outcomes associated with congenital blindness or low vision that causes children to trip over obstacles, fall down drop-offs, demonstrate inefficient gait, poor posture, and poor overall physical activity. We compared gait outcomes in 100 blind and low vision children aged 8 to 156 months (m = 38.6 mos, SD = 23.92) before and once wearing an assistive safety device, the Safe Toddles Pediatric Belt Cane (PBC).

Methods: Gait mechanics were analyzed using the open-source body-tracking machine-learning, MediaPipe on videos of 100 patients with a visual impairment under two PBC conditions, notably at initial evaluation (week 0", before the PBC) and later (ex. 8 weeks into treatment wearing the PBC). The right and left feet were selected as body landmarks of interest in tracking patients' walking and gait and metrics were identified and defined for gait analysis. Subsequent analyses calculated metrics for foot mobility, step speed, frequency, and length.

Results: Paired sample t-test showed a significant difference in step frequency ($t = -9.30$, $df = 99$, $p < .001$) and foot mobility ($t = -4.94$, $df = 99$, $p < .001$). A subset of subjects had no physical motor impairment ($n = 87$, $m = 38.7$mos, $SD = 24.8$), showed significant improvement across all four measures foot mobility ($t = -11.19$, $df = 86$, $p < .001$); step speed ($t = -12.38$, $df = 86$, $p < .001$); frequency ($t = 8.83$, $df = 84$, $p < .001$) and length ($t = -3.21$, $df = 82$, $p < .001$). Subjects' percent improvement in mobility (66.5%, $p < .001$), in step speed (62.8%, $p < .001$), length (53.1%, $p < .001$) and frequency (2.87%, $p < .001$) when walking.

Conclusions: Wearing the PBC reduced direct bodily collisions, thereby improved safety of early blind walking. The cane frame also provided consistent information about objects, surface changes, and drop-offs in the path ahead. The combined improvement in protection and path information made possible through wearing the rectangular cane frame with omni wheel tips resulted in better walking outcomes across all subjects. The smaller group of subjects who were motor delayed, but not physically motorically impaired, not only increased the frequency of steps, but took more, longer, and faster steps compared to when they walked without the PBC.

122

A 10 YEAR AUDIT OF THE NEURO-OPHTHALMIC VISUAL IMPAIRMENT CLINIC

Moyra Mcclure[1], Pamela Anketell[2], Sonia George[2], Andrew Jonathan Jackson[2]
[1]Optometry, Belfast Trust, Belfast, United Kingdom; [2]Belfast Trust, Belfast, United Kingdom

Purpose: Cerebral visual impairment (CVI) is the commonest childhood cause of low vision in the Western World. Methods of assessing eyesight can be conventional preferential looking or methods such as assessing reaction to pictures/facial features. Enhancing eyesight in this brain based visual impairment include strategies such as; uncluttered environment, optimum lighting, clear bright visual targets. Within Northern Ireland, 51% of children registered as sight/severely sight impaired in 2023 had cerebral visual impairment. This audit portrays the visual profile of attendees to a specialist CVI assessment clinic.

Methods: Retrospective data was assessed from 2015 to 2025. Information gleaned was visual function, eye movements, refractive error, ophthalmic diagnosis and certification/registration as sight/severely sight impaired.

Results: Of 206 attendees, 92% of data, (n = 189), was available. Children had a mean age of 5.8+4 (SD) years, (Range 1-17 years), with 51% male. A diagnosis of CVI was made in 89% of children. Mean visual acuity was 1.1 logMAR with 56% of children having visual acuity worse than 1.0 logMAR. Light perception was noted in 17% of children. Visual field restriction was observed in 65% of the cohort. Strabismus was present in 79% and nystagmus in 39% of children. Spectacles were worn by 55% of attendees on presentation and recommended for 62% after clinic. Only 25% of children had an ocular condition and of these, the most commonly presenting was optic atrophy, (60%). Of the 69% of children, (n = 130), certified and registered, 59% were severely sight impaired and 41% were sight impaired.

Conclusions: This large cohort of children being assessed for CVI showed a significant range of visual dysfunction with the majority of attendees commonly presenting with reduced visual acuity, restricted visual fields, strabismus, nystagmus, clinically significant refractive error, and less commonly, an ocular condition. This evidence for visual findings in children with complex needs highlights the clinical need for this specialised CVI assessment clinic.

65

AUDIO-LUMINOUS BIOFEEDBACK TRAINING FOR IMPROVING VISUAL FUNCTIONS AND QUALITY OF LIFE IN CHILDREN WITH INFANTILE NYSTAGMUS: A LONG-AND-SHORT TERM ANALYSIS

Monica Nido[1, 2, 3], Ghaliah Nsour[4], Mariana Misawa[1], Max Goldsmith[4], Michelle Markowitz[5], Samuel Markowitz[4]

[1]Ophthalmology, University of Toronto, Toronto, Canada; [2]Ophthalmology and Vision Sciences, Toronto Western Hospital, Toronto, Canada; [3]Ophthalmology, Krembil Research Institute, Toronto, Canada; [4]Ophthalmology and Vision Sciences, [5]Occupational Therapy, University of Toronto,Toronto, Canada

Purpose: Microperimetric Biofeedback Training (BT) is used in vision rehabilitation. We adapted it, improving the foveation time and binocular best corrected visual acuity (BBCVA) for distance, near, contrast sensitivity, reading speed, fixation stability and parental quality of life questionnaire (QoL) scores in pediatric nystagmus .

Methods: 4 weekly sessions of 20 minutes were delivered on the MAIA microperimeter (Centervue, Italy) using audio-luminous stimuli to teach oculomotor control. Patients were followed for short (1 week) and long (> 3 months) terms. 25 cases (9.3 ± 2.3 y/o) with idiopathic infantile nystagmus and 7 (8.5 ± 2.3 y/o) with associated other conditions were enrolled.

Results: BBCVA improved from 0.38 ± 0.18 to 0.29 ± 0.18 on short, 0.26 ± 0.18 logMAR on long term ($F(2,66) = 36.54$, $p < 0.001$). Near vision from 0.09 ± 0.15 to 0.004 ± 0.1 on short, 0.008 ± 0.07 logMAR long term ($F(2,66)=10.07$, $p = 0.002$). Contrast 0.15 ± 0.16 to 0.04 ± 0.1 on short and 0.02 ± 0.08 log on long term ($F(2,63 = 18.99$, $p < 001$). Reading speed 84.7 ± 42.6 to 108.8 ± 43.9 on short and 109 ± 44.2 wpm on long ($F2,45 = 11.09$, $p < 0.001$). Questionnaire from 25.9 ± 2.9 to 27.32 ± 2.7 on short and 27.3 ± 2.7 on long term ($F(2,42) = 9.68$, $p < 0.001$). The short/long term were significantly better than baseline for those variables Fixation stability improved from 41.1 ± 18.6 to 56.9 ± 20.6% (P1), $p = 0.03$ when measurable . Stereopsis did not improve. There were no side effects.

Conclusions: BT benefited children with nystagmus, showing potential to be a non-invasive therapeutic alternative.

POSTER SESSIONS

POSTER SESSION 1A-1B

252 - P01

ARTIFICIAL INTELLIGENCE-ASSISTED QUANTIFICATION OF HYPERREFLECTIVE FOCI AS PREDICTIVE BIOMARKERS IN RETINAL VEIN OCCLUSION: A COMPARATIVE STUDY OF INTRAVITREAL ANTI-VEGF AND DEXAMETHASONE THERAPIES

Giovanna Carnovale Scalzo[1], Domenico Chisari[1], Raffaella Gioia[1], Adriano Carnevali[1]
[1]Department of Ophthalmology, Magna Graecia University, Catanzaro, Italy

Purpose: This study aims to quantify, using Artificial Intelligence, the variation in the number of Hyperreflective Foci (HRF) in patients with Retinal Vein Occlusion (RVO) undergoing treatment with anti-VEGF therapy or intravitreal Dexamethasone. The objective is to identify a correlation between inflammatory OCT biomarkers and therapeutic response, and to predict the patient's long-term functional recovery.

Methods: This retrospective study utilized an innovative AI tool (Ophthal) that enabled the automated quantification of various retinal biomarkers in patients with RVO. Treatment-naïve patients with RVO, with a minimum follow-up of one year post-diagnosis, were enrolled. Patients received either anti-VEGF therapy under a Treat-and-Extend regimen or intravitreal Dexamethasone. Structural OCT images were analyzed using the software at three different time points:

- t = 0: Before initiating the intravitreal treatment cycle;
- t = 1: One month after completing the anti-VEGF loading dose or following the Dexamethasone injection;
- t = 2: Twelve months post-diagnosis.

Results: A total of 40 patients who met the inclusion criteria were enrolled. A statistically significant correlation was found between HRF variation and best-corrected visual acuity (BCVA) from t0 to t1 ($p < 0.0001$) and from t0 to t2 ($p < 0.0001$) in both treatment groups. Additionally, the Dexamethasone group demonstrated a greater statistically significant variation in three inflammatory retinal biomarkers between t0 and t1 compared to the anti-VEGF group (HRF: $p = 0.0003$ vs $p = 0.006$; IRF: $p = 0.0016$ vs $p = 0.016$; SND: $p = 0.035$ vs $p = 0.042$).

Conclusions: The Artificial Intelligence tool employed enabled the automated quantification of inflammatory retinal biomarkers, providing rapid results free from human error. The findings of this study highlight that early variation in HRF significantly correlates with long-term functional improvement in RVO patients treated with intravitreal anti-VEGF or Dexamethasone. This suggests a potential predictive role for HRF in evaluating the efficacy of intravitreal therapy. Moreover, the greater reduction of inflammatory biomarkers observed in the Dexamethasone group compared to the anti-VEGF group supports its superior efficacy in managing the inflammatory forms of RVO.

271 - P03

D4BLISS: DIGITAL FOR BLIND AUTONOMOUS SKIING

Mirco Fava[1], Giovanni Perona[2], Marco Allegretti[2], Isabella Bordi[3], Chiara Mastantuono[1], Daniele Sabatini[2]

[1]Fondazione Officina dei Sensi, ETS, Ascoli Piceno, Italy; [2]CSP Innovazione nelle ICT, Turin, Italy; [3]Maga Ricerche s.r.l., Asti, Italy

Purpose: The D4BLISS project is an innovative initiative that aims to revolutionize the accessibility of skiing for blind and visually impaired people, guaranteeing them the possibility of practicing this sport autonomously and safely, without the need for a physical guide. The project's approach is based on the integration between advanced sensors and the most modern Artificial Intelligence technologies, exploiting high-performance hardware platforms such as Jetson and NVIDIA AI. The proposed system will be able to analyze the surrounding environment in real time, providing the athlete with immediate support through tactile and vocal feedback, so as to allow quick and precise decisions on the path to follow.

Methods: The project is divided into different phases. The first phase will be dedicated to the detailed definition of the necessary technical specifications, identifying the most suitable hardware and software components to guarantee reliability and high performance. The systems integration and sensor fusion phases will follow, which will allow data from different sources to be combined for a more accurate perception of obstacles and the conformation of the track. Subsequently, a complete prototype will be implemented, which will be subjected to intensive testing in a real environment to evaluate its safety, effectiveness and reactivity

Results: The distinctive element of the system is the artificial vision module, designed to detect and interpret the characteristics of the terrain and any obstacles along the route in real time. The technological heart of the solution is an AI Edge unit, capable of processing advanced telemetry without the need for external connections, ensuring smooth operation even in mountain contexts. Real-time data processing will make it possible to provide precise and intuitive information to skiers, through tactile and vocal signals, significantly improving their orientation ability. From a social point of view, the D4BLISS project represents a significant step towards the full inclusion of athletes with visual impairments in winter sports.

Conclusions: Thanks to technological innovation and the use of solutions based on Artificial Intelligence, the project aims to redefine the boundaries of accessibility in sport, allowing blind skiers to tackle the slopes with an unprecedented level of safety and independence.

323 - P04

ENHANCING REHABILITATION FOR LOW VISION WITH DIGITAL TWINS

Kazim Hilmi Or[1]
[1]*Ophthalmology, Private Office of Ophthalmology, Hamburg, Germany*

Purpose: The potential of Digital Twins (DTs) in enhancing rehabilitation strategies for individuals with low vision is explored. As assistive technologies evolve, DTs provide a promising avenue for personalized eye care, offering predictive capabilities and virtual simulations for tailored rehabilitation programs.

Methods: A comprehensive review of recent advancements in the use of DTs in ophthalmology and low vision rehabilitation is conducted. Key sources included studies on the integration of digital twins with systems medicine, predictive models in ophthalmic care, and personalized navigation algorithms. Data from clinical trials, experimental studies, and theoretical models were analyzed to assess the impact of DTs on low vision management.

Results: Digital twins offer significant improvements in the simulation of real-world environments, aiding the development of navigation systems and assistive tools for low vision patients. Through personalized modeling, DTs facilitate the optimization of rehabilitation techniques, such as contrast sensitivity training and mobility assistance, resulting in enhanced independence and quality of life for users. Additionally, the integration of machine learning with DTs has shown potential in improving diagnostic accuracy and streamlining rehabilitation processes. Despite challenges in data integration and privacy concerns, the practical applications of DTs in vision rehabilitation have proven promising, with early results indicating improved patient outcomes.

Conclusions: The integration of Digital Twins into low vision rehabilitation represents a transformative shift in personalized care. By simulating dynamic environments and providing data-driven insights, DTs can optimize rehabilitation strategies, reduce the burden of data collection, and ultimately improve the quality of life for individuals with low vision. Continued research into the refinement of these technologies, along with addressing ethical and privacy concerns, is crucial for maximizing their clinical potential.

61 - P05

UTILIZING AN ARTIFICIAL INTELLIGENCE CHATBOT IN LOW VISION CLINIC

Truyet Tran[1, 2]

[1]LightHouse for the Blind and Visually Impaired, San Francisco, USA; [2]Ophthalmology, University of California San Francisco, San Francisco, USA

Purpose: Low vision exams provide patients with much-needed education and access to rehabilitative services and resources. However, patients often do not understand the purpose of a low vision exam, have unrealistic expectations, and are overwhelmed by an abundance of new information and recommendations discussed at a low vision exam. Additionally, low vision practices utilize valuable time and resources obtaining patient history prior to an exam (often in the form of lengthy paper questionnaires). Practitioners also run short on exam time discussing patient history and educating patients. We created a Low Vision ChatBot to explore the benefits of utilizing artificial intelligence (AI) to help educate low vision patients ahead of their exam, while also gathering patient history to allow patients and practitioners to optimize their clinic visit.

Methods: We utilized SmartBot360 software to create a chatbot targeted at patients referred for a low vision exam. Users could interact with the software to ask up to 48 questions related to office contact info, insurance, scheduling an appointment, and information on resources such as paratransit and audiobooks. We also asked patients history questions regarding ocular diagnosis, activities of daily living, and visual goals. This information was summarized in a report sent to both the patient and provider ahead of the scheduled appointment.

Results: To date, the chatbot has been tested by 10 users with normal vision. Their interactions with the system averaged a total of 3.98 minutes. The next phase of development will test actual low vision patients using the chatbot prior to a low vision exam. We will analyze the time spent/saved and compare patient and provider perceived outcomes for patients using the chatbot versus those not using the chatbot.

Conclusions: Future development includes building a more robust low vision clinic dialogue capable of supplementing a low vision exam discussion, improving accessibility for patients with visual impairments, testing compatibility with screen readers, and minimizing barriers for seniors who may be technologically adverse. A chatbot could provide valuable information ahead of a patient's low vision appointment to minimize the administrative burden and allow patients to optimize their time with the low vision practitioner.

527 - P06

CAUSES OF VISUAL IMPAIRMENT AND BLINDNESS IN YOUTH AND EARLY ADULTHOOD IN PATIENTS ATTENDED AT THE LOW VISION SERVICE OF THE CONDE DE VALENCIANA INSTITUTE OF OPHTALMOLOGY BETWEEN 2017 AND 2021

Alexis Altamirano[1]
[1]*Instituto Nacional de Oftalmología, Lima, Peru*

Purpose: Epidemiological studies that address the causes of visual impairment and blindness tend to focus on childhood (due to its significance) and late adulthood (due to its prevalence). However, there is insufficient information regarding the most frequent causes of these visual problems in the age groups between youth and early adulthood. Therefore, the aim of this study is to determine the most frequent causes of visual impairment and blindness in youth and early adulthood in patients seen at the Low Vision Service of an ophthalmologic center in Mexico City.

Methods: This is a retrospective and descriptive study focused on the review of clinical records from 2017 to 2021. Sociodemographic and clinical variables of the study groups were evaluated.

Results: A total of 626 patients were included in two groups: young (56.07%) and early adulthood (43.93%). The average age in the young group was 20.3 years, and in the early adulthood group, it was 38.86 years. The onset of ocular disease occurred in childhood for the young group and in youth for the early adulthood group. The most frequent occupation in the young group was “student” (60.11%), while in early adulthood, it was “other non-permanent activities” (23.65%). In young people, the main causes of visual impairment were retinal dystrophy (20.26%), ametropia (17.65%), and optic nerve pathologies (10.46%). The causes of blindness in young people were retinal dystrophy (22.22%), optic nerve pathologies (20.0%), and ocular trauma (6.67%). In early adulthood, the main causes of visual impairment were retinal dystrophy (22.47%), ametropia (20.26%), and diabetic retinopathy (14.10%).The causes of blindness in early adulthood were retinal dystrophy (37.50%), optic nerve pathologies (16.67%), and diabetic retinopathy (10.42%).

Conclusions: Retinal dystrophy was the main cause of visual impairment and blindness in both the young and early adulthood groups. The two main causes of visual impairment and blindness were similar in both study groups.

355 - P07

EMPLOYMENT STATUS AND SUPPORT NEEDS OF PEOPLE WITH VISUAL IMPAIRMENT IN JAPAN: AN ANALYSIS BASED ON A NATIONWIDE SURVEY

Yasushi Nakano[1], Toyoharu Yoshiizumi[2], Hisae Miyauchi[3], Shiori Yamamoto[4], Konomi Fukuda[4], Yusaku Katada[4], Ari Shinojima[4], Toshihide Kurihara[4]

[1]Keio University, Department of Economics, Yokohama, Japan; [2]Japan Federation of the Visually Impaired, Information Division, Tokyo, Japan; [3]University of Tsukuba, Human Sciences, Tsukuba, Japan; [4]Keio University School of Medicine, Department of Ophthalmology, Tokyo, Japan

Purpose: People with visual impairment often face psychological distress and uncertainty about their future, emphasising the need for early intervention. In Japan, while SmartSight™ services are available, outreach by rehabilitation workers in hospitals is limited. As a result, many people with visual impairment struggle to find appropriate support. Despite these challenges, comprehensive quantitative research on their employment status and support needs remains limited. This study aims to investigate these issues through a nationwide survey.

Methods: A questionnaire was conducted among 1,500 members of Japan's largest organisation for people with visual impairment, sampled regionally. The survey covered demographic information, degree of impairment, employment status, and perceived support needs. To ensure accessibility, the questionnaire was distributed, and responses were collected in Braille, large print, electronic files, and web forms. This study was funded by AMED (JP23dk0310124) and approved by the Keio University Research Ethics Committee (24-008).

Results: A total of 515 valid responses were obtained. The mean age of respondents was 62.3 years, and the mean age at impairment onset was 29.9 years. Among them, 36.9% had congenital visual impairment, while 52.2% had acquired impairment. Employment experience was reported by 41.6% of respondents, of whom 57.0% became visually impaired while working, and 43.0% experienced worsening impairment during employment. Following vision loss or its progression, 41.6% stayed employed, 16.4% changed jobs, and 38.8% left work. Regarding support needs, 90.7% identified ADL assistance as necessary, followed by employment support (84.5%) and psychological support (79.0%). Additionally, key information and support needs included assistive devices and daily living aids (81.2%), disability pension (79.2%), mobility assistance (77.3%), CVI (76.1%), information on eye diseases and prognosis (74.4%), ICT accessibility (74.0%), independent living and mobility training (69.3%), reading and writing assistance (68.5%), and home help services (65.2%). Furthermore, 92.0% expressed a need for consultation support within hospitals.

Conclusions: This study offers quantitative insights into the employment and support needs of people with visual impairment in Japan, where such data is limited. Strengthening links between medical, rehabilitation, and welfare services can improve support access and employment transitions. These findings inform policies to enhance job opportunities and inclusion.

41 - P09

HEART HEALTH IN OUR VISUALLY IMPAIRED PATIENTS: DO VISUALLY IMPAIRED INDIVIDUALS HAVE MORE CARDIAC SYMPTOMS THAN NORMALLY SIGHTED INDIVIDUALS?

Karen Squier[1]

[1]*Low Vision Service, Southern College of Optometry, Memphis, USA*

Purpose: Patients with visual impairments may present to low vision clinics with complicated medical histories. Often times, patients with visual impairments present with complicated systemic medical history that may impact physical fitness. As our patients age, increased health concerns may present that impede one's ability to participate in sustained physical activities which may compound cardiovascular health. This study evaluated cardiac health using a symptom survey from the American Heart Association to assess differences in heart-related symptoms between normally sighted and visually impaired individuals

Methods: A survey with questions on risk for cardiac health (atrial fibrillation, for example) was conducted with 135 adult patients recruited from primary care and a low vision clinic. The primary aim of this analysis was to compare Primary Care vs. visually impaired samples with respect to risk for atrial fibrillation related symptoms. Secondarily, other patient level associations with cardiac health were examined

Results: Respondents were 32.3% male, 18.5% white, and 68.4% age 50 or older. Forty percent lived in a zip code with a poverty rate exceeding 25%. There was a statistically significant difference between Primary Care normally sighted individuals and visually impaired subjects with respect to number of cardiac symptoms. The Low Vision sample reporting 0.7 more symptoms than their Primary Care counterparts, on average ($P = 0.02$). However, when considering the high severity category (defined as frequent symptoms with functional impairment), differences between Primary Care and Low Vision sample were non-significant. Females were also statistically more likely to report cardiac symptoms ($p = 0.025$).

Conclusions: Given the differences in cardiac symptoms, health promotion and physical fitness for visually impaired and blind individuals may need further consideration for cardiac health. A collaboration between low vision practitioners and rehabilitation professionals, primary care doctors and cardiologists to further assess modifiable factors would be an ideal approach to ensure visually impaired patients continue to participate in activities that improve their overall health.

465 - P10

IMPACT OF LOW VISION AND BLINDNESS ON ACADEMIC AND PROFESSIONAL LIVE: INSIGHTS FROM THE VISUAL EDUCATION AND REHABILITATION CENTRE AT POLICLINICO DI BARI (2023-24)

Marina Piepoli[1], Valentina Pastore[1], Margherita Capobianco[1], Annalisa Palmisano[1], Andrea Ferrara[1], Giovanni Alessio[1]

[1]Policlinico di Bari Eye Clinic, DiBrain, Bari, Italy

Purpose: This study aims to assess the impact of low vision and blindness on the academic and professional lives of patients referred to the Visual Education and Rehabilitation Centre at Policlinico di Bari between 2023 and 2024.

Methods: A total of 145 work-aged patients (ages 20 to 65) were selected for this study. Interviews were conducted to evaluate legal recognition of disability, financial compensation, the impact of functional impairment on academic and work-related issues, current employment status, and awareness of protected working categories.

Results: The study population consisted of 77 women and 69 men, with 78 patients (53.42%) diagnosed with early-onset hereditary diseases and 68 (46.57%) with late-onset degenerative diseases. Legal recognition of disability was absent for 22.60% of patients, while 8.21% were still pending classification. Of the respondents, 34.24% were classified as having civil disability and 34.93% as having visual disability. The Italian National Institute of Social Security (INPS) provided financial contributions to 75 patients (51.36%). Regarding the influence of disability on educational choices, 96 subjects (65.75%) reported no impact (rating of 0 on a scale of 0 to 10), while 48 (32.87%) indicated significant influence (ratings of 7 to 10). This was corroborated by 92 patients (63.44%) who completed high school or university. In terms of employment status, 45.51% were unemployed, 15.17% were either retired or students, and 38.35% were employed, with 26.78% working in protected categories. Notably, only 25 of the 145 patients (17.24%) were unaware of the **existence of protected working categories.**

Conclusions: The sample demonstrated a balanced representation in terms of gender and type of pathology (early versus late onset). A minority of patients lacked legal recognition of disability, and INPS provided support to over half of the participants. Unexpectedly, only 32.87% reported that their visual impairment influenced their educational or career choices. This finding is supported by the fact that a similar percentage completed their compulsory education or graduated. Given that three-quarters of the sample were aware of protected employment categories, it can be inferred that barriers to accessing the job market may stem from systemic issues rather than a lack of awareness.

537 - P11

INITIAL STUDY ON THE DEMOGRAPHICS AND CLINICAL CHARACTERISTICS OF VISUALLY IMPAIRED ATHLETES IN THE PHILIPPINES

Sheila Santos-Jimenez[1], Katrina Feliciano[1], Angelo Jud Cruz[1]
[1]St. Lukes Medical Center, Quezon City, Philippines

Purpose: Visual impairment is a global issue that requires greater attention, as it carries a social stigma that profoundly impacts the daily lives of affected individuals. Despite the challenges posed towards athletes with visual impairment, sports play a crucial role in fostering inclusivity, development and empowerment. However, there remains a lack of awareness and comprehensive data on the demographics of visually-impaired athletes at both local and international levels. This study aims to address this gap by examining the demographics and clinical characteristics of visually-impaired athletes in the Philippines, including age, sex, sport, diagnoses, visual acuity, visual field defects, refractive error, and International Blind Sports Federation (IBSA) classification.

Methods: Using a cross-sectional descriptive study design, data was collected among 100 athletes in the Philippines who competed in the 2024 Philippine Paralympics via the Philippine Sports Association for the Differently Abled (PHILSPADA). Interviews were conducted following the Medical Diagnostic Form for Athletes with Visual Impairment in order to assign classifications for the competition.

Results: Results showed that among visually-impaired athletes in the Philippines, most (35%) are currently classified under IBSA B2 for visual impairment. The most common diagnosis is amblyopia (15.9%) followed by cataract (14.2%). 33% and 36% of patients had no light perception on the right and left eye respectively. 84% and 87% had an uncorrected visual acuity of LogMar 1.0 or worse on the right and left eye respectively, while it was 29% and 25% respectively for corrected visual acuity. Among the 29 patients with an error of refraction, most had compound myopic astigmatism. Among the patients with available visual field testing, 19% had advanced field loss on the right eye and on the left eye.

Conclusions: This study then highlights the burden of amblyopia and lens-related disorders on the lives of athletes with visual impairment, and the need for continuing ophthalmologic care including refractive correction. However, the study is mainly limited by the sample size as well as incomplete collection of data on the given diagnostic forms. Future studies can explore the association between diagnosis, visual acuity, visual fields with functional classification.

420 - P12

MEDICAL AND LEGAL POINT OF VIEW FOR LOW-VISION PATIENTS

Sonia Palmieri[1], Gian Piero Covelli[2], Pietro Alberto Cusimano[3], Francesco Famá[4], Luciana Vlachos[5]

[1]Istituti Ospedalieri Bergamaschi Zinginia, Bergamo, Italy; [2]Università Sapienza, Ospedale Sant'Andrea, Rome, Italy; [3]Phisiomedica, Palermo, Italy; [4]Studio oculistico Famá Francesco, Messina, Italy; [5]Studio Oculistico Vlachos Luciana, Turin, Italy

Purpose: Low vision significantly impacts patients' daily lives, limiting their autonomy and quality of life. Addressing low vision requires a multidisciplinary approach that integrates medical, rehabilitative, and legal perspectives. This presentation aims to explore the intersection between medical advancements in low-vision care and the legal framework that ensures patients' rights and access to necessary services. It will provide an in-depth analysis of the medical management and rehabilitation strategies for low-vision patients while outlining the legal protections and social benefits available to them.

Methods: A comprehensive review of recent medical advancements in low-vision rehabilitation, including assistive technologies, optical and non-optical aids, and AI-driven solutions. Additionally, an analysis of legal policies, disability certifications, and workplace accommodations will be presented, highlighting disparities and areas for improvement in different legal systems

Results: Medical interventions, including visual training, assistive technologies, and emerging AI-based solutions, have improved functional outcomes for low-vision patients. However, legal barriers and lack of standardized policies often limit access to these innovations. Understanding the legal aspects, including social security benefits, workplace inclusion, and disability rights, is essential for ensuring equitable patient care.

Conclusions: A holistic approach combining medical innovation with legal advocacy is necessary to enhance the quality of life for low-vision patients. Greater collaboration between ophthalmologists, rehabilitation specialists, and legal professionals can bridge the gap between available treatments and accessible services, ultimately promoting social inclusion and patient empowerment.

88 - P13

PATIENTS WITH A VISUAL DISABILITY CERTIFICATE TREATED IN A UNIVERSITY HOSPITAL IN THE METROPOLITAN AREA OF BUENOS AIRES, ARGENTINA: CHARACTERISTICS AND ASSOCIATED DIAGNOSES

Betty Arteaga[1, 2], Natalia Mascheroni[1]

[1]Hospital Italiano de Buenos Aires, Low Vision an Visual Rehabilitation Service, Buenos Aires, Argentina; [2]Universidad Hospital Italiano de Buenos Aires, Buenos Aires, Argentina

Purpose: Visual impairment significantly impacts the quality of life of affected patients. The Visual Disability Certificate (CUD for its acronym in Spanish) is a voluntary and free public document in Argentina that certifies a person's disability and enables individuals with disabilities to exercise their rights and receive all the benefits established by national laws, as well as comprehensive healthcare and social support. The processing of the certificate requires that an interdisciplinary evaluation board of the government determine from a biopsychosocial approach whether or not it is appropriate to obtain it. This evaluation is carried out by applying the Disability Evaluation and Certification Protocol. This study aims to characterize patients with visual disabilities who attended our hospital through data recorded in their CUD and to analyze the most common associated diagnoses.

Methods: A descriptive observational study was conducted on patients with a CUD who were treated at the Low Vision and Visual Rehabilitation Service of the hospital between 2020 and 2024. Data were obtained from a continuous patient registry comprising individuals who voluntarily applied for the CUD in different jurisdictions of the country.

Results: 325 patients were analyzed. Gender distribution: 65.8% female, 34.2% male. Average age: Females: 75 years, Males: 72 years. Most frequent diagnoses documented in the CUD: 75% macular degeneration and posterior pole degeneration, 80% subnormal vision in both eyes, 25% visual field defects, 10% glaucoma. Disability classification: 80% visual disability only, 20% visual + other disabilities, 100% of the CUD were issued with a caregiver or companion. Economic reasons were the primary motivation for applying for the disability certificate.

Conclusions: The CUD is the only valid public document in Argentina to certify disability and access comprehensive healthcare coverage and legal benefits for visually impaired individuals. Current disability legislation is extensive and fully operational, ensuring equal rights and access to services. Our Low Vision and Visual Rehabilitation Service informs and assists patients who require such a certificate.

244 - P14

PREVALENCE OF LOW VISION AND ITS PREVENTABLE CAUSES:A HOSPITAL BASED STUDY

Ashma Manandhar[1]
[1]*Biratnagar Eye Hospital, Biratnagar*

Purpose: To determine the prevalence of low vision patients visiting low vision department at Biratnagar eye hospital,Biratnagar,Nepal.

Methods: Retrospective descriptive cross sectional study, data was be collected from low vision department from 1st Jan 2023 to 31st Dec 2024. All Patients more than 7 years of age who visited low vision clinic and received low vision services were included in the study.

Results: We had 1020 cases of low vision who met with the inclusion criteria during the study period out of which 37% had low vision with preventable causes. Male gender accounted for 65% (667). Patients less than 40 years accounted for 39.61% (404) of the total cases . Most common cause of low vision was retinitis pigmantosa,but the most common cause of preventable blindness was corneal disorders including corneal ulcer.Out of the low vision patients 27.9% (285) were skilled workers who got unemployed after they had low vision

Conclusions: Patients with possible low vision if identified and treated early,cases of low vision can be decreased which not only decreases economical but also social and medical burden to a society and country.

160 - P15

PREVALENCE OF VISUAL IMPAIRMENT AND REFRACTIVE ERRORS IN NEPALESE STUDENTS WITH DISABILITY

Hari Thapa[1]

[1]*Lumbini Eye Institute and Research Center, Low Vision, Bhairahawa, Nepal*

Purpose: This study aimed to evaluate the prevalence of visual impairment and refractive errors among students with disabilities in Rupandehi district, Nepal, by conducting thorough eye screenings in an outreach setting.

Methods: A total of 301 students with disabilities other than visual impairment from eight schools in Rupandehi district were examined during school-based health camps held between June and August 2024. The ophthalmic assessments included collecting medical histories, measuring visual acuity, performing cycloplegic refraction, testing binocular vision, assessing color vision, and examining both the anterior and posterior segments of the eyes.

Results: Of the 301 students screened, with a mean age of 14.04 ± 5.38 years, 29% (88 students) had refractive errors. Other eye conditions identified included strabismus in 3.4% (10 students) and unoperated cataracts in 1.3% (4 students). Visual impairment was found in 21% (64 students) of the participants, with 94% of those with significant refractive errors lacking distance spectacles. Severe visual impairment or blindness was detected in 14.6% of the students. Additional ocular issues noted included nystagmus, conjunctivitis, corneal scars, blepharitis, and chalazion.

Conclusions: Students with disabilities face a higher risk of visual impairment, which significantly affects their ability to carry out daily tasks. Comprehensive eye assessments are essential for early detection and intervention. The high prevalence of visual impairment in this study emphasizes the need for well-organized programs to address the vision needs of children with disabilities.

403 - P16

TAILORING LOW VISION SERVICES TO INDIVIDUALS WITH A DIFFERENT CULTURAL BACKGROUND

Evelien Hollestelle[1], Monica Kostveloren[2]
[1]Bartiméus, Rotterdam, The Netherlands; 2Koninklijke Visio, Apeldoorn, The Netherlands

Purpose: As The Netherlands faces an aging population and an increasing prevalence of myopia among children, the need to address visual impairment is growing. In addition, the country's population is becoming increasingly diverse, with around 30% of residents in its three most densely populated cities coming from a non-Dutch cultural background (Vluchtelingenwerk.nl). This demographic shift highlights the necessity of raising awareness about the challenges faced by individuals with visual impairments from diverse cultural backgrounds.

Methods: In response to this need, Kennis over Zien has established the Expertise Group on Language and Cultural Diversity). This is a collaboration between expertise organizations Bartiméus, Koninklijke Visio and the Robert Coppes Stichting and patient advocacy agencies Oogvereniging and MaculaVereniging. The goal of the expertise group is to ensure that individuals with visual impairment from non-Dutch backgrounds receive the proper support and guidance, enabling them to lead fulfilling lives and participate fully in society. We focus on multiple levels within our organizations, including policy development, gathering and sharing relevant resources, and conducting workshops on culturally sensitive approaches. An essential aspect of our work is raising awareness about the importance of learning Dutch to help these individuals integrate and avoid isolation. However, many language schools are not equipped to accommodate the unique needs of people with visual impairments, making it difficult for them to access proper language training. This gap in services often leads to further social exclusion.

Results: To highlight our efforts, we will use a poster presentation to inform attendees about the ways we raise awareness and support individuals from non-Dutch backgrounds.

Conclusions: The rising demographic challenges, particularly the increasing number of elderly migrants and individuals with visual impairment, underscore the urgency of our mission. By offering tailored guidance, we aim to ensure these individuals can fully engage in society and live independent, meaningful lives.

413 - P17

THE 10-YEAR DEMOGRAPHIC AND CLINICAL PROFILES OF LOW VISION PATIENTS IN THE NATIONAL SPECIALTY CENTER FOR EYE CARE IN THE PHILIPPINES

Rafael Fontanilla[1], Sheila Santos-Jimenez[1]

[1]East Avenue Medical Center - Department of Health Eye Center, Low Vision, Metro Manila, Philippines

Purpose: In the setting of developing countries like the Philippines, low vision remains a critical public health issue. This study analyzed demographic and clinical profiles of low vision patients from the National Specialty Center for Eye Care in the Philippines from 2014 to 2024.

Methods: This is a single-center retrospective chart review that analyzed 442 patient records from the Low Vision Clinic of the National Specialty Center for Eye Care in the Philippines focusing on the demographic and clinical data.

Results: Low vision was more prevalent in the middle-aged group (40-59 years old). There was a slight male predominance (51.81%). The majority were from rural areas (74.43%), with a greater number belonging to the National Capital Region (NCR) (59.5%). Forty-four percent of the population was unemployed, with only 11.31% reaching tertiary education. Reading, glare sensitivity, and writing were the most commonly affected activities of daily living recognized by the patients. The most common comorbidities are Diabetes Mellitus, Neurologic diagnosis, and Pulmonary Tuberculosis. The leading pathologies of low vision were attributed to retinal conditions (199 cases), followed by neuro-ophthalmologic and glaucomatous etiology. The leading diagnosis associated with low vision are Retinitis Pigmentosa (11.53%), Ethambutol Toxic Optic Neuropathy (7.01%), and Absolute Eye (6.33%). Prescribing spectacles was the most common management for these patients (44.79%). Low vision devices were prescribed in 156 patients with hand-held magnifiers (16.03%), stand magnifiers (14.74%), and tinted goggles (14.10%) being the most common. Seventy-four patients were referred to Resources of the Blind, while only 59 patients had official person with disability (PWD) certification.

Conclusions: This study identified key demographic and clinical features of patients with low vision. Low vision was more prevalent in the middle-aged population (40-59 years old). A larger portion had limited educational background and were unemployed. The most common etiology was retinal conditions, particularly retinitis pigmentosa. These findings underscored the importance of enhancing access to low vision services and developing screening and assistive programs, especially those that can provide them education and employment to improve further the quality of life of patients with low vision.

240 - P18

VISUAL IMPAIRMENT AND REFRACTIVE ERROR IN RURAL NEPALESE CHILDREN UNDER FIVE YEARS OF AGE

Mahesh Dev[1], Hari Thapa[2], Kabindra Bajracharya[2], Sirshendu Chaudhuri[2], Namrata Pandey[2], Saraswati Khadka[2], Katie Judson[3], Ken Bassett[3], Prakash Paudel[4]

[1]Biratnagar Eye Hospital, Eastern Regional Eye Care Programme, Biratnagar, Nepal; [2]Lumbini Eye Institute and Research Centre, Bhairahawa, Nepal; [3]Seva Canada, Vancouver, Canada; [4]School of Optometry and Vision Science, University of New South Wales, Sydey, Australia

Purpose: To determine the prevalence of visual impairment (VI) and refractive error in rural Nepalese children under five years of age, as well as to explore associations of refractive error types with age, gender, and ethnicity.

Methods: A cross-sectional study, using multistage random sampling, was conducted in the targeted children between 6-59 months old from rural communities of Rupandehi district, Nepal. Eye examinations [visual acuity (VA), binocular vision, cycloplegic refractions, and anterior and posterior segments] were performed at community health centres, following the enumeration of eligible participants at household visits. Based on the World Health Organization criteria, VI was defined as the presenting VA <6/18 in the better eye. Refractive errors, determined by cycloplegic retinoscopy, were recorded as spherical equivalent (SE) and their prevalence was categorized as myopia (SE ≤ -1.00D and SE ≤ -0.50D), hyperopia (SE ≥ +2.0D). Due to SE conversions, some cases with mixed astigmatism were falsely documented as emmetropia and these cases were reported as emmetropia with astigmatism. Moreover, associations of myopia and hyperopia with age, gender, and ethnicity were explored using multivariate logistic regressions.

Results: Of 2226 participating children, VA of 2080 children (93.4%) was clinically tested and among these, 5.9% had VI. The overall prevalence of refractive error was 6.0% (95% CI: 5.0-7.0), which included myopia (SE ≤ -1.00D), hyperopia and emmetropia with astigmatism of 2.4% (1.8-3.1), 2.7% (2.0-3.3) and 0.9% (0.5-1.3) respectively. Moreover, based on SE ≤ -0.50D, the prevalence of myopia was 10.8% (9.6-12.1), resulting to 14.4% as the prevalence of refractive error. Importantly, infants had significantly higher hyperopia compared to pre-schoolers [OR (95% CI: 4.9 (2.6-9.2)], while toddlers had higher likelihood of developing myopia [1.2 (0.9-1.5)], however, gender and ethnicity had no significant associations.

Conclusions: The prevalence of VI and refractive error, particularly myopia in rural Nepalese children under five years of age, was substantially high and needed correction. Importantly, the prevalence of myopia was the highest among toddlers, indicating the likelihood of developing and progressing myopia as they grow older. This suggests the early need for vision screening in preschool children to correct significant refractive errors.

72 - P19

VISUAL-FUNCTIONAL IMPACT OF PEOPLE AFFECTED BY SEVERE OCULAR TRAUMA DURING SOCIAL PROTESTS IN CHILE 2019

Patricio Bustamante Veas[1, 2], Joaquín Varas Reyes[2, 3], Eric Tapia Escobar[1, 4], Miguel Campos Garrido[1, 5], Jose Sanhueza[5], Claudia Salazar[1], Nicole Tapia[6], Gianinna Mantero[6], Nayadet Vergara[1]

[1]Medical Technology, [3]Occupational Therapy and Occupational Science, Universidad de Chile, Santiago de Chile, Chile; [2]Low vision Unit, Hospital Clínico de la Universidad de Chile, Santiago de Chile, Chile; [4]Faculty of Medicine and Health Sciences, Universidad Central, Santiago de Chile, Chile; [5]Ocular Trauma Unit, Hospital Del Salvador, Santiago de Chile, Chile; [6]Ministerio de Salud, PACTO, Santiago de Chile, Chile

Purpose: This study aims to determine the impact on the functionality associated with visual loss (VFIP) in people with severe ocular trauma (SOT) caused by kinetic impact projectiles used in police crowd control. A prioritization tool was used to evaluate patients admitted to a rehabilitation program in Santiago de Chile from December 02, 2019, to November 13, 2020.

Methods: A cross-sectional and descriptive study was conducted with SOT victims (N=85), average age 31.4 ± 11.9. The data were recorded through a new 9-item screening instrument for assessment and prioritization of rehabilitation created for this emergency scenario. Sociodemographic, clinical, and functional variables were analyzed, applying Student's t-tests and ANOVA to determine differences in VFIP according to different population characteristics.

Results: The impact of the use of kinetic weapons resulted in monocular blindness in the majority of those affected (n = 68; 80.0%). The highest VFIP observed was among young men from lower social strata. There were extreme difficulties in the performance of productive tasks (occupational and/or educational) (n=42; 49.4%) and the pursuit of hobbies and pastimes (n = 23; 27.1%), as well as a high difficulty in adapting to changes in brightness (n = 29; 34.1%) and handling objects accurately (n = 22; 25.9%).

Conclusions: The use of kinetic weapons for crowd control resulted in high and extreme VFIP and, in most cases, monocular blindness, causing major difficulties in work, study, and development of hobbies and pastimes in the affected population, highlighting the urgent need for effective rehabilitative care, which requires special attention in order to generate an adequate rehabilitation program. In addition, it is recommended to prohibit the use of these weapons in Chile and worldwide, as well as to review police protocols for crowd control in line with international objectives and strategies for the prevention of avoidable blindness established by the WHO and the International Agency for the Prevention of Blindness.

141 - P20

CACNA1F-RELATED OPTIC ATROPHY: A CASE REPORT

Anja Palmowski-Wolfe[1], Carlo Rivolta[1, 2, 3], Kaminska Karolina[1, 3], Georg Ansari[1], Mathieu Quinodoz[1, 2, 3]

[1]University of Basel, University Eye Hospital, Basel, Switzerland; [2]Department of Genetics and Genome Biology, University of Leicester, Leicester, United Kingdom; [3]Ophthalmic Genetics Group, Institute of Molecular and Clinical Ophthalmology Basel (IOB), Basel, Switzerland

Purpose: To present a patient with optic atrophy associated with a pathogenic variant in the CACNA1F gene.

Methods: Case report of a 31-year-old male presenting with complaints of night blindness progressing slightly over the last 2 years. He noted also reduced colour perception and increased glare sensitivity.

Results: The patient was referred for follow-up. His family history was negative for retinal or optic nerve diseases. On examination, best corrected Snellen acuity was 0.5 OD and 0.67 OS with a spherical equivalent of +0.5 OD, 0 OS. Pupils were normal. HHR Colour test showed a mild red-green deficiency. Ophthalmoscopy revealed bilateral optic atrophy with no other visible pathology. Autofluorescence and infrared imaging were normal. OCT showed bilateral thinning of the macula, retinal ganglion cell layer, and retinal nerve fiber layer, which remained stable compared to consultation reports from 2018 elsewhere. Goldmann visual fields revealed increased blind spots OU and a small relative deficit temporo-superiorly OD which was questionably progressive as compared to previous consultation reports. Genetic testing revealed a hemizygous stopgain in CACNA1F: NM_001256789.3:c.1840C>T, p.Arg614Ter.

Conclusions: Pathogenic variants in the CACNA1F gene, located on Xp11.23, are primarily associated with retinal dystrophies, in particular congenital stationary night blindness. However, a few previously reported cases suggest a non-progressive optic nerve involvement in this pathology. Our patient adds to the limited case reports of CACNA1F-associated optic atrophy but the slightly progressive symptoms of night blindness and glare sensitivity may be a connecting link to the retinal pathology associated with this gene defect, warranting further electrophysiological testing. Knowledge about the spectrum of phenotypic presentations improves patient counselling, while identification of the underlying genotype allows an improved access to emerging treatment options, low vision assessment, and contacting patient support groups.

380 - P21

IDENTIFICATION OF VISUAL CORTEX ABNORMALITIES WITH INNOVATIVE FMRI MICRO-PROBING

Michael Hoffmann[1], Khaldoon Al-Nosairy[1], Elisabeth Quanz[1], Joana Carvalho[2], Frans Cornelissen[3], Gokulraj Prabhakaran[1]

[1]Ophthalmology, Magdeburg University, Magdeburg, Germany; [2]Champalimaud Research, Lisbon, Portugal; [3]University Medical Center Groningen, Groningen, The Netherlands

Purpose: The integrity of visual function is based on the perfect match of retinal and post-retinal processing. Consequently, current initiatives to restore the retinal input to the human visual system require advanced functional imaging (fMRI) of the visual cortex. For this purpose, novel fMRI-based "micro-probing" [1] for detailing cortical population receptive fields (pRF) is of particular promise. We demonstrate the great potential of this method for an example of cortical representation abnormalities in the absence of the optic chiasm (achiasma) [2].

Methods: fMRI-based pRF-mapping of the visual cortex at 3 Tesla was performed in a participant with achiasma. Micro-probing-based pRF structures were visualized as back projections into the visual field, abnormalities were quantified and compared to controls.

Results: Micro-probing revealed abnormal, systematically fragmented pRFs that are mirror-symmetric along the vertical meridian [symmetry coefficient achiasma > controls (0.31 vs 0.03; $p < 0.001$)].

Conclusions: Visualizing fragmented pRFs in the example of achiasma highlights the potential of fMRI-based micro-probing to identify pathology-related representation abnormalities of the visual cortex. Clinical applications include fMRI-based detailing of the visual cortex before and after interventions for planning and out-come assessment of therapies in low vision patients.

References

1. Carvalho et al. Micro-probing enables fine-grained mapping of neuronal populations using fMRI. Neuroimage 2020; 209: 116423
2. Hoffmann et al. Plasticity and stability of the visual system in human achiasma. Neuron 2012; 75: 393-401

293 - P22

A MULTISENSORY APPROACH IN NEURODEVELOPMENTAL THERAPY OF THE CHILD WITH VISUAL IMPAIRMENT: THE EXPERIENCE OF ROBERT HOLLMAN FOUNDATION

Elisa Da Riva[1], Serena Vaglio[1], Viviana Baiardi[1], Valeria Biuso[1], Elena Mercuriali[1]

[1]*Robert Hollman Foundation, Cannero Riviera, Italy*

Purpose: We carried out a review of the literature to answer the need to investigate the different areas of application of the multisensory approach, starting by our clinical experience of using this tool with children with visual impairment.

Methods: A review was carried out of the scientific literature available on the subject using the main databases (Pubmed, Enbase, CINAHL, PsycInfo). The literature was then integrated with our clinical experience and, in particular, with the Snoezelen Multisensory Environment.

Results: Scientific evidence reports the use of the multisensory environment as an adaptive behavioural support and it is most commonly used in ASD, autism, mental delay, CP and preterm birth. There is no evidence that specifically reports the use of this approach in early intervention for the child with visual impairment. According to empirical observations, the multisensory environment, created in accordance with the Snoezelen approach, brings benefits in terms of relaxation and well-being, allows the child to experience their senses in their moments of availability and predisposes them to relate to others and their environment. In the context of early intervention for children with visual impairment, this approach enables them to use their visual potential in a spontaneous and rewarding way through a facilitating environment adapted to their clinical situation.

Conclusions: The integration of published studies with our clinical experience has allowed us to confirm and highlight the specificities and strengths of this approach, both for its characteristics related to well-being and relaxation, and as a facilitation and support for the integration of the visual channel. We have also experimented with the transferability of this approach to other contexts of the child's life, enabling active and satisfactory participation both in the family environment and in more complex environments such as school. More systematic work using the approach with a larger sample of children may highlight its specific potential in a neurovisual support context as well as its limitations, for example in the presence of photophobia or photosensitive epilepsy.

34 - P23

EXPLORING THE PROFESSIONAL CHARACTERISTICS OF HEALTHCARE AND EDUCATIONAL SPECIALISTS INVOLVED IN THE MANAGEMENT OF CEREBRAL VISUAL IMPAIRMENT IN SINGAPORE

Yi Ling Tan[1]

[1]*Orthoptics, Singapore National Eye Centre, Singapore, Singapore*

Purpose: Cerebral Visual Impairment (CVI) is underdiagnosed and poorly supported in Singapore. There are few studies on its prevalence and patients' needs in the Singapore healthcare and educational settings.

Methods: A needs analysis survey of CVI in Singapore was conducted during the month of September 2024. The survey was distributed to both healthcare and educational professionals. The purpose of the survey was to find out the gaps in diagnosing and managing patients with suspected CVI in Singapore.

Results: Seventy-two people responded to the survey, of which 22% are optometrists, 21% are teachers (inclusive of special education teachers, teachers of visually impaired and mainstream teachers), 14% are physiotherapists, 11% are orthoptists, 10% are occupational therapists, 10% are speech therapists and remaining 12% include ophthalmologists, orientation & motility trainers, paediatric neurologist, social worker and administrative staff. Forty-four percent of respondents do not have any CVI experience, while 44% have 5 years or less experience in CVI. Nineteen percent have never seen patients with CVI, 70% see them a few times a week or less and only 11% sees them everyday. Seven percent of respondents rated themselves "well" and "very well" in their knowledge of CVI, 12.5% rated "confident" and "very confident" in identifying patients with CVI, and 8.3% rated "confident" and "very confident" in managing patients with CVI. Of the 30 respondents who are unsure about referral for further eye review, 77% do not know how to refer, 67% do not know who to refer to and 77% do not know when to refer. Out of the 33 respondents who are unsure about referral for further rehabilitation and education support, 76% do not know how to refer, 85% do not know who to refer to and 64% do not know when to refer.

Conclusions: There is an increasing interest in CVI in healthcare and educational setting, but inadequate training is provided to these professionals to diagnose and manage patients with CVI in Singapore. A more structured referral protocol between healthcare and rehabilitation/educational professionals should be developed for prompt CVI assessment and support.

539 - P24

INTERDISCIPLINARITY AND INTERPROFESSIONALITY IN EARLY INTERVENTION: REPERCUSSIONS OF AN COURSE IN EYE HEALTH

Rita Montilha[1], Gabriela Cordeiro Correa do Nascimento[2], Ana Claudia Fernandes[3]

[1]University of Campinas, Campinas - São Paulo, Brazil; [2]Federal University of Paraná, Curitiba - Paraná, Brazil; [3]Health, interdisciplinarity and Reabilitation stritu sensu program, Campinas - São Paulo, Brazil

Purpose: The objective of the study was to identify the repercussions of an extension course in eye health care on the understanding of interdisciplinarity and on the performance of interprofessional care, from the perspective of professionals working in different early intervention services.

Methods: A mixed, descriptive-exploratory longitudinal study was conducted, with the application of questionnaires and a focus group. Statistical analysis was performed for quantitative data and content analysis for qualitative ones. After the course, there was a greater level of knowledge about interdisciplinarity, enabling professionals to perceive that actions previously identified as interprofessional in their daily practice were not classified in this way, reducing the perception of the frequency of performance.

Results: The data corroborate studies that point out conceptual, attitudinal and structural barriers in the implementation of interdisciplinary and interprofessional projects, placing training as a tool for change. There are still few studies on practices and possibilities for expanding interdisciplinary care in early intervention, considering its peculiarities.

Conclusions: However, training through extension action is a powerful tool for transforming paradigms and practices, highlighting conceptual and attitudinal issues that could be minimized if these aspects were considered throughout the training process. To this end, it is essential to expand, disseminate and enhance interdisciplinary and interprofessional educational actions and investigate their impact.

514 - P25

LONG-TERM FUNCTIONAL RESULTS AFTER CATARACT EXTRACTION WITHOUT INTRAOCULAR LENS IMPLANTATION IN CHILDREN UNDER ONE YEAR OF AGE

Eva Calpe[1], Gemma Julio[1], Alba Herrero[1], Andrea Pastor[1], Luz Maria Torres[1], Rafael I. Barraquer[1]

[1]Centro de Oftalmologia Barraquer, Barcelona, Spain

Purpose: Congenital cataracts are a significant cause of visual impairment in children, with an incidence of three per 10.000 newborns. Long-term outcomes in affected children depend on various factors. This study analyzes visual outcomes after cataract extraction before one year without intraocular lens (IOL) implantation.

Methods: A retrospective study of a series of 45 eyes from 45 children (17 unilateral and 28 bilateral congenital cataracts) at Centro de Oftalmología Barraquer was conducted. Inclusion criteria comprised a diagnosis of cataract and surgical extraction before one year, and at least one year follow-up (FU). The last FU was defined when secondary IOL was implanted or, if not applicable, at the most recent visit. Best-corrected visual acuity (BCVA) was assessed using the Teller test or Snellen optotype (converted to logMAR for analysis), depending on the child's age. Successful outcomes were defined as BCVA ≥ 0.32 decimal in bilateral eyes and ≥ 0.1 decimal in unilateral eyes.

Results: The 17 unilateral cases underwent cataract extraction at a mean age of 4.3 ± 3.4 months. Mean BCVA in aphakic eyes was 1.3 ± 0.5 logMAR (0.05 decimal) at the last FU (FU 1-4 years: 12 eyes; FU 5-17 years: 5 eyes), while contralateral eye achieved 0.34 ± 0.38 logMAR (0.46 decimal). Functional success was observed in 35% (6/17) of aphakic eyes (two with FU of 14 and 17 years). The 28 bilateral cases underwent cataract extraction at 3.75 ± 1.76 months, with mean BCVA in the better eye of 0.9 ± 0.5 logMAR (0.13 decimal), and 1.1 ± 0.4 logMAR (0.08 decimal) in the fellow eye (FU 1-4 years: 15 eyes; FU 5-15 years: 9 eyes). Functional success was 39% (11/28) in better eyes (5 with FU > 9 years) and in 11% (3/28) of fellow eyes.

Conclusions: Early cataract extraction without IOL implantation may lead to favorable long-term outcomes. This study aligns with literature showing that although age-normal visual acuity is not always achieved, functional success is observed in about 35% of unilateral and bilateral eyes in our children. Further research is needed to optimize surgical timing and visual rehabilitation strategies for congenital cataracts.

513 - P26

OPTIMIZING INITIAL CONTACT LENS POWER IN INFANTILE APHAKIA AFTER CATARACT SURGERY

Eva Calpe[1], Eloi Rodriguez[1], Gemma Julio[1], Luz Maria Torres[1], Andrea Pastor[1], Rafael I. Barraquer[1]

[1]Centro de Oftalmologia Barraquer, Barcelona, Spain

Purpose: This study aims to describe our approach of the initial contact lens (CL) power selection in children under one year following congenital cataract surgery and their follow-up. The high incidence of adverse events when considering intraocular lens (IOL) implantation at this age justifies a second management option treating residual aphakia with CLs and/ or glasses for visual rehabilitation. However, selecting the appropriate initial CL power remains challenging due to difficulties in obtaining accurate refraction immediately after surgery.

Methods: Children who underwent congenital cataract extraction before one year of age without IOL implantation were included in this retrospective study. The initial CL power selection was calculated by adjusting the skiascopic results for near vision with a 32D CL inserted in the children's eye. Three months later, the CL power was reevaluated. The CL in all cases was the SilSoft CL (Bausch & Lomb, NY), a widely accepted lens for pediatric aphakia due to its high oxygen permeability and ease of handling.

Results: Forty-five eyes from 45 children were included in the study. In bilateral cases (n = 28), the mean age at the time of cataract surgery was 3.75 ± 1.76 months and the refraction at corneal plane was 29.1 ± 4.3 diopters (D). Mean age at the time of cataract surgery in unilateral cases (n = 17) was 4.3 ± 3.4 months and refraction at the corneal plane was 29.45 ± 3.4 D. The CL power required a mean adjustment of 3.45 ± 3.6 D one-year after that, confirming the need for periodic modifications as the eye axial length (AL) grows. Regression analysis to select the initial CL power was performed with those eyes with preoperative AL available (n=16). It revealed that CL power = 54.8 -1.4 x AL (R2 = 0.31; p = 0.025).

Conclusions: This study highlights the challenges of selecting the initial CL power in infants after congenital cataract surgery without IOL implantation. Given the refractive changes due to AL growth, periodic adjustments are necessary. A regression formula is provided to estimate initial CL power using AL.

14 - P27

SEEING IS NOT THE THAT LOOKING. WORKING FOR HIS FUTURE

Maria Veronica Lopez Fernandez[1, 2]

[1]Novovision, Centro Plaza Vicente Lopez, Buenos Aires, Argentina; [2]Oftalmologia y Rehabilitacion Visual, Hospital Manuel Rocca, Buenos Aires, Argentina

Purpose: Importance of early visual stimulation and ophthalmological follow up aiming to reach best visual development in a paediatric patient with retinal dystrophies who is candidate for gene therapy. Impact of the use of specific visual aids during treatment. Paediatric clinical symptoms that promote early ophthalmologic evaluation.

Methods: Multidisciplinary approach of an infant of 6 month old with Leber Congenital Amaurosis including the use of visual aids, comparing results between using corrected glasses with and without therapeutic selective absorption filters during 2 years of follow up. Fixation and tracking, eye movements, distance of work, increasing complexity of tasks as well as visual stimulation with high and low contrast objects in different light controlled spaces, were evaluated during this period. Attitudinal changes and visual responses were recorded every 6 months for the first two years, as well as the VFQ-25 answered by parents during the same period.

Results: Significant changes in behaviour and visual development were observed with the incorporation of use of therapeutic filters indoors and outdoors.

Conclusions: The prescription of selective therapeutic filters together with multidisciplinary approach at early ages, improves visual performance during visual stimulation process. Improvement of visual functions with the maximum visual development possible is important when reaching the age of gene therapy treatment. Best corrected vision results at this point will enable better chances of overall vision and will have a significant impact on child's quality of life.

37 - P28

THE IMPACT OF EARLY INTERVENTION IN PEDIATRIC POPULATION

Linda Pang[1]
[1]*Optometry, Kaiser Permanente, Hesperia, USA*

Purpose: By intervening early, Ophthalmologists and Optometrists gives the child opportunities for reaching developmental milestones for daily life and school performance. Children with visual impairment learn how to use their remaining vision more efficiently while incorporating modified techniques to interact with their family, complete daily activities, engage in play with their peers, and participate in the classroom. It allows them to reach their potential and sets them up for success in the future.

Methods: Explore 2 pediatric low vision cases. Each case will feature low vision interventions, coordination of care, and outcomes achieved.

Results: By referring patients early for vision rehabilitation services, they get access to receiving techniques and strategies by trained professions on how to modify daily activities that allow child to visually engage with parents, family, and their environment. This poster will demonstrate how effective and timely care coordination improves child development and learning.

Conclusions: It is essential that pediatric low vision patients learn compensatory strategies at an early age in order to reach their potential in daily life and academics. Optometrists and Ophthalmologists who coordinate care with available services allow patients to maintain safe, independent, and productive lives. Optometrists and Ophthalmologists can deliver a holistic approach to caring for the entire person which sets patients up for success in daily life, academics, and future employment. Oftentimes parents are relieved when they discover there's an organization to help their child navigate daily life and learn what academic accommodations are available. Parents don't realize there's trained therapists and personnel who work with people with impaired vision. By connecting pediatric low vision patients to the breadth of services available, Optometrists and Ophthalmologists play a pivotal role in how infants, children, and young adults navigate daily life and access school learning materials while participating in the classroom with their peers. Care coordination can be seamless, effective, and efficient with careful planning during a standard low vision evaluation.

506 - P29

A MULTISENSORY APPROACH TO IMPROVE COLOR ASSOCIATION IN LOW VISION CHILDREN

Anna D'Ambrosio[1, 2], Maria Teresa Gatta[1], Alessandro Di Giorgio[1], Maria Pia Sabatino[1]

[1]Gli Angeli di Padre Pio Rehabilitation Center, Fondazione Centri Riabilitazione Motoria Padre Pio, San Giovanni Rotondo, Italy; [2]Ophthalmology UOC, Head Neck Department, IRCCS Ospedale Casa Sollievo della Sofferenza Hospital, San Giovanni Rotondo, Italy

Purpose: This study investigates the effectiveness of a visual rehabilitation program that employs a multisensory approach, combining plexiglass boards with Velcro strips, colored cups, balls, buttons, and geometric shapes, to improve color association in children with low vision.

Methods: A group of 10 children, aged between 4 and 9 years, participated in a 10-week intervention, with 45-minute sessions held twice a week, during which the materials were used with the support of a light box to enhance the visibility of colors and outlines. Each matherial was used to create color sequences with elements (geometric shapes, buttons), to match elements of the same color, to create geometric shape, ect.

Results: Pre- and post-intervention tests showed a significant improvement in the children's color recognition and association skills. Parent feedback confirmed that children were more motivated and engaged in daily activities requiring color discrimination, also showing improvements in coordination and sequencing.

Conclusions: The integration of plexiglass boards with Velcro strips, colored cups, balls, buttons, and plexiglass geometric shapes, supported by the light box, proved to be an effective method for enhancing color association in children with low vision. This multisensory approach makes the rehabilitation process not only effective but also engaging, improving visual skills and fine motor skills through playful and practical activities.

238 - P30

AMBLYOPIA REHABILITATION: A PRELIMINARY STUDY ON THE EFFICACY OF AN ALTERNATIVE THERAPEUTIC METHOD WITHIN ITALIAN PATIENTS

Giambattista Bari[1], Anna D'Ambrosio[1], Francesco Petrizzelli[1], Antonio Laborante[1]
[1]IRCCS Ospedale Casa Sollievo della Sofferenza, San Giovanni Rotondo, Italy

Purpose: The purpose of our work is to evaluate the efficiency of a different and faster method for amblyopia rehabilitation, useful even for patients out of the plastic age: specifically homebased binocular rehabilitation therapy through specific smartphone/tablet games combined with anagliphyc glasses. This method, due to its ease of use, high compliance and cheap cost, could reach a great number of patients that until now have the risk of being abandoned if they are not able, for different reason, to follow the others common therapies.

Methods: Fifty-five patients: mean age 8.98 ± 5.38, underwent ophthalmologic and orthoptic evaluations for amblyopia: BVCA with ETDRS logMAR, stereoacuity with Lang Stereotest I, ocular motility examination, fundus oculi and cycloplegic refraction examination. Eligible children had ≥ 0.2 (as applicable) logMAR interocular difference, or BVCA worse or equal to 0.2 LogMAR. Patients were rehabilitated with specific dichoptic treatment by digital videogames for 1 hour/day for 2 months. Children wore red–blue anaglyphic glasses to play the games (with low-contrast components visible to 1 eye and high-contrast components visible to the other eye) for 7 hours per week (1 hour per day) for 8 weeks, with 2 outcome examinations programmed by protocol at 4 and 8 weeks from baseline.

Results: After 8 weeks of treatment, amblyopic eye BCVA improved from 0.28 ± 0.13 logMAR at baseline to 0.10 ± 0.09 ($p < .05$) logMAR, with an improvement of 0.18 ± 0.09 logMAR.

Conclusions: Achieved results relating to visual acuity improvements using binocular rehabilitation by digital videogames were statistically significant and encouraging. It is important that research and experimentation does not cease at this stage. Larger sample sizes, extended rehabilitation treatment periods and longer follow-up must be undertaken, in order to obtain objective data relating to visual acuity maintenance and also to obtained visual acuity results linked to age.

205 - P31

ANALYSIS OF THE CAUSES OF VISUAL IMPAIRMENT AND REHABILITATION GOALS IN PATIENTS OF THE VISUAL REHABILITATION SERVICE OF GHENT UNIVERSITY HOSPITAL (2020-2024)

Julie Sambaer[1], Ann Vandesteene[1], Ellen Van de Ginste[1], Charlotte De Reu[1], Sophie Walraedt[1], Inge Joniau[1]

[1]Department of Ophtalmology, Ghent University and Ghent University Hospital, Ghent, Belgium

Purpose: The Visual Rehabilitation Service of Ghent University Hospital is the leading visual rehabilitation service in Belgium, providing support to over 600 patients annually. The growing demand for a better understanding of the low vision population has led to more comprehensive data collection. Since 2020, all diagnoses within the rehabilitation service have been systematically recorded using the International Classification of Diseases (ICD-10) coding system in patient records. Additionally, eight rehabilitation goals are documented. The aim of this study was to identify the primary causes of visual impairment and the main rehabilitation goals.

Methods: A retrospective chart review was conducted at the Visual Rehabilitation Service of Ghent University Hospital, Belgium, analysing patient data from January 1, 2020, to December 31, 2024. Demographic information, ICD-10 diagnoses, and rehabilitation goals were collected.

Results: Over this 5-year period, an average of 319 patients per year initiated or resumed visual rehabilitation. Among patients aged 18 and older, the most common diagnoses were retinal disorders (H35) in 53%, disorders of optic nerve or visual pathways (H47) in 17%, and glaucoma (H40) in 8% of cases. In patients under 18, the primary diagnoses were slightly different: disorders of optic nerve or visual pathways (H47) accounted for 42%, retinal disorders (H35) for 22%, and albinism (E70) for 11%. Overall, 45% of all patients had a visual impairment caused by a retinal disease. Regarding rehabilitation goals for adult patients, 42% of all sessions were focused on “learning digital skills and using electronic tools” (document perusal). The second and third most common goals were “activities of daily life” (21%) and “orientation & mobility” (15%). In younger patients (< 18 years), the rehabilitation goals were somewhat similar, with “document perusal” (27%), “optic adaptations & viewing strategies” (24%), and “activities of daily life” (21%) being the most frequent goals.

Conclusions: The number of individuals with visual impairment seeking rehabilitation is considerable. Retinal disorders and disorders of optic nerve or visual pathways are the leading causes of visual impairment. Furthermore, “document perusal” has emerged as the most significant rehabilitation goal across all patient groups.

405 - P32

AT-HOME TRAINING ON A DICHOPTIC READING APPLICATION TO IMPROVE VISION IN ADULTS WITH AMBLYOPIA

Nicole Dranitsaris[1, 2], Robert Hess[2], Alexandre Reynaud[1, 2]

[1]McGill University, Montreal, Canada; [2]Ophthalmology and Visual Sciences, Research Institute of the McGill University Health Centre, Montreal, Canada

Purpose: Recent research on treatments for amblyopia has shifted its focus from conventional patching, which is only applicable in childhood, to exploring dichoptic tasks. This study leveraged a new approach using an important daily task, reading, to improve amblyopic vision. Here, we assessed if training at-home on a dichoptic e-book application can be an alternative treatment for binocular vision in amblyopia.

Methods: The dichoptic e-book reading application (DEBRA) was uploaded onto tablets displaying text in red/green/black presentation, with each word of text being one of the three colours. By using anaglyph red/green glasses, different text could be shown to each eye simultaneously, forcing the individual to combine the input from both eyes. At an initial visit, adult amblyopic participants were given an ophthalmic assessment, then reading speed and eye movements patterns while reading were recorded while reading on DEBRA and a standardized reading tool. Next, participants brought the technology home and trained for one hour per day across two weeks. At the outcome visit they were reassessed on the tests from the initial visit and completed a visual comfort questionnaire.

Results: Results demonstrated significantly improved monocular visual acuity and faster average reading speeds, in both amblyopic and fellow eyes, following two weeks of dichoptic training. Amblyopic participants also demonstrated reading gaze patterns closer to those of controls following the training. Based on the visual comfort questionnaire responses, majority of participants did not experience visual discomfort while completing the dichoptic training for two weeks.

Conclusions: Overall, this study demonstrated that daily training on a dichoptic reading application at home for two weeks can improve amblyopic visual function and reading ability. More data will clarify if eye movement patterns and other altered ophthalmic factors in amblyopia can be treated by completing the training. Future steps are aimed at collecting data from more amblyopes and ameliorating the user-friendliness of the application.

519 - P33

BIOFEEDBACK AND PERCEPTUAL LEARNING AS INTENSIVE VISUAL REHABILITATION: A CASE REPORT

Margherita Guidobaldi[1], Marco Sulfaro[1], Valeria Silvestri[1], Simona Turco[1], Filippo Amore[1]

[1]National Centre of Service and Research for the Prevention of Blindness and Vision Rehabilitation of the Visually impaired - IAPB ETS, Rome, Italy

Purpose: The purpose of the study is to verify the effectiveness of an intensive treatment of Biofeedback and perceptual learning exercises in a patient with Pseumotumor cerebri.

Methods: A 27-year-old female patient with a diagnosis of Pseumotumor cerebri since 2023 with previous 4 peritoneal ventricular shunt surgeries, residual vision of hand movement in right eye and 1.20 Logmar in the left eye underwent visual assessment and intensive visual rehabilitation at the National low vision centre, in Rome. The evaluation, comprensive of best corrected visual acuity, reading acuity at MNRead, contrast sensitivity test performed by Pelli Robson charts, evaluation of reading speed, location and stability of fixation and retinal sensitivity evaluation using MP-1 Microperimeter (Nidek Technologies, Padua, Italy) was performed before and after the vision rehabilitation program. The rehabilitation treatment consisted of one session of both biofeedback with the MP-1 microperimeter and reading and oculo-motor exercises by EyeFitness (Nidek Technologies) software for a total of five days. The biofedback pattern was overlapped in correspondence of the preferred retinal locus (first rehabilitation session), identified by microperimetric examination and by the analysis of the fixation before each rehabilitation session. The first session with EyeFitness was customized according to the patient's residual resolution abilities, while the subsequent sessions were set according to experiences and results of the previous session.

Results: The patient completed the entire proposed rehabilitation program. Improvements were achieved in distance visual acuity (from 1.20 to 1.04 LogMAR), reading acuity (from 15 charter print to 12 charter print), reading speed (from 31word per minute (wpm) to 43 wpm) contrast sensitivity (from 0.75 to 1.05 LogC) retinal sensitivity (from 4.6 dB to 5.6 dB), fixation stability (Bivariate Contour Ellipse Area 99.6% from 16.01°2 to 2.4°2), fixation location (differential map for barycentres 7.1°).

Conclusions: Combining biofeedback stimulation with perceptual learning based on oculo-motor exercise seem to be a valid approach in visual rehabilitation. Intensifying rehabilitation sessions, in patients with good motivation, could bring benefits in visual residual awareness and improving overall vision.

108 - P34

COMPARISION OF VISUAL REHABILITATION WITH AND WITHOUT CELL THERAPY: CLINICAL AND STATISTICAL EVIDENCE

Ilaria Ciochetta[1]
[1]*Centro Studi Ipovisione, Milan, Italy*

Purpose: Visual rehabilitation is an established approach to improving visual function in patients with ocular diseases. Recently, cell therapy has emerged as an innovative option for retinal regeneration. This study compares the effectiveness of visual rehabilitation with and without cell therapy.

Methods: Five patients diagnosed with maculopathy, myopic choroidosis, Purtscher-like retinopathy, diabetic retinopathy, and opticopathy were analyzed. Distance and near visual acuity, as well as MAIA sensitivity, were assessed before and after treatment. Statistical analysis was performed using the paired t-test, considering p-values < 0.05 as significant

Results: Patients undergoing cell therapy showed greater improvements in near vision and MAIA sensitivity compared to those receiving only visual rehabilitation. In maculopathy patients, near vision improved from 8 to 6 pts ($p = 0.03$) and MAIA sensitivity increased from 9.2 to 9.69 dB ($p = 0.02$). In myopic choroidosis patients, MAIA sensitivity significantly increased from 14.63 to 15.73 dB ($p = 0.01$). In Purtscher-like retinopathy, distance vision improved from 0.1 to 0.15 ($p = 0.04$). No statistically significant improvement was observed in diabetic retinopathy.

Conclusions: The addition of cell therapy appears to offer superior benefits compared to visual rehabilitation alone, particularly in improving near vision and MAIA sensitivity. These findings suggest the potential role of cell therapy in treating degenerative ocular diseases. However, further studies with larger samples are needed to confirm these results.

123 - P35

COMPARISON BETWEEN NEURAL PHOTOSTIMULATION WITH PATTERN-MICROPERIMETRIC TECHNIQUE AND THE TECHNIQUE ENHANCHED BY STIMULATION WITH NEGATIVE IONS IN PATIENTS WITH AGE-RELATED MACULAR DEGENERATION

Marco De Dominicis[1]

[1]*Centro Studi Ipovisione, Milan, Italy*

Purpose: Negative ions are essential for our well-being. When they decrease due to stress, trauma, and pollutants, the body suffers. The negativity and vitality of cells are provided by negative ions, which our body can naturally absorb. Ion therapy is a natural therapeutic treatment that helps restore the body's bioenergetic balance by delivering beneficial negative ions directly to the cells, producing positive effects throughout the body. This pilot study aims to evaluate the effectiveness of delivering negative ions to the eyes, in addition to neural photostimulations.

Methods: The ionic stimulation was performed using Ioniflex for a period of 8 minutes, following the completion of the neural photostimulation (NPS) session. For the pilot study, 8 patients were selected without specific criteria regarding sex or age, all affected by Age-related Macular Degeneration (AMD). The selected patients had previously undergone an NPS cycle and had not undergone eye surgery between cycles. As reference data, distance visual acuity, near visual acuity, and retinal sensitivity obtained through MAIA microperimetry were considered.

Results: Data analysis revealed that 4 patients experienced an increase in retinal sensitivity, and 3 of them also showed an improvement in visual acuity. The remaining 4 patients, despite a decrease in retinal sensitivity, still achieved an improvement in visual acuity.

Conclusions: This pilot study provided an initial practical approach to the delivery of negative ions in patients with AMD, allowing us to highlight how these particles can bring benefits to a small group of patients. Further studies with a larger number of patients should be conducted to support the results obtained.

522 - P36

COST-EFFECTIVENESS OF BASIC VISION REHABILITATION SERVICE IN PORTUGAL - RANDOMIZED CONTROLLED TRIAL

Laura Hernández Moreno[1], Hugo Senra[2], Natacha Moreni[3], Ana Patricia Marques[4], Antonio Filipe Macedo[5]

[1]University of Minho, Braga, Portugal; [2]University of Aveiro, Aveiro, Portugal; [3]Hospital Santa Maria Maior E.P.E, Barcelos, Portugal; [4]International Centre for Eye Health, London School of Hygiene & AMP, Tropical Medicine, London, United Kingdom; [5]Linnaeus University, Kalmar, Sweden

Purpose: The aim of this study was (1) to investigate the clinical impact of vision rehabilitation in patients with vision impairment and (2) to investigate the cost-effectiveness of a basic vision rehabilitation service in Portugal.

Methods: Patients with age-related macular degeneration (AMD) and patients with diabetic retinopathy (DR) attending routine hospital appointments were recruited. Participants were randomized to one of the study arms consisting of immediate intervention and delayed intervention. The intervention included: new refractive correction, optical reading aids, in-office training and advice about modifications at home. Visual ability, health-related quality of life and costs were measured. The trial compared the outcomes 12 weeks after the start in both arms.

Results: Of the 46 participants, 34 (74%) were diagnosed with DR, 25 (54%) were female, and mean age was 70.08 years (SD = 8.74). In the immediate intervention arm visual ability increased a mean of 0.523 logits (SE = 0.11) ($p < 0.001$). Changes in the delayed intervention arm were not statistically significant ($p = 0.95$). Acuity in the better-seeing eye, near acuity and critical print size also improved after the intervention. The mean cost of the intervention was €118.79 (SD = 24.37). The incremental cost-effectiveness ratio using the EQ-5D-5L index was 30,421€/QALY and 1186 €/QALY when using near acuity.

Conclusions: The study gives evidence of positive clinical impact of a basic vision rehabilitation intervention and shows that a basic vision rehabilitation service is cost-effective.

36 - P37

DEVELOPING INTERPERSONAL SKILLS: INTERGENERATIONAL INTERACTIONS IN VOCATIONAL TRAINING IN SCHOOLS FOR THE BLIND

Erika Matsuda[1], Shuji Tsuda[2], Hisae Miyauchi[3]

[1]Department of Health, Faculty of Health Sciences, Tsukuba University of Technology, Ibaraki, Japan; [2]Tokyo Metropolitan Institute for Geriatrics and Gerontology, Tokyo, Japan; [3]University of Tsukuba, Ibaraki, Japan

Purpose: In schools for the blind in Japan, vocational training programs cater to both young adults with prior special education and individuals aged 40 years and older who have acquired visual impairment. This unique blend of students aims to acquire national qualifications in acupuncture and massage therapy, including not only these medical techniques but also the development of crucial communication skills (Donoyama & Munakata, 2009). This study examined whether frequent opportunities for intergenerational interactions among multigenerational students in vocational training programs at schools for the blind were associated with their communication skills.

Methods: We conducted a cross-sectional self-administered survey of 308 students from 36 programs, out of the 58 nationwide, that agreed to participate. Participants were 40.0 ± 13.3 years on average and 60.4% of them were men. The ENDCOREs scale was used to measure communication skills (Fujimoto & Daibo, 2007). This scale measures both the linguistic and interpersonal skills necessary for communication and is also used for people with visual impairment. It consists of six subscales. Participation in intergenerational interactions, defined as engaging with students differing in age by a decade or more, was categorized as high (90%+ in school life), medium (30-90%), or low (< 30%). The ENDCOREs values in the three groups were compared using ANCOVA. In the ANCOVA, personal attributes, such as age, gender, severity of visual impairment, academic years, and items related to participation in school activities were adjusted.

Results: The ENDCOREs scores in the three groups with high, medium, and low frequencies of intergenerational interactions were 90.0 ± 17.8, 82.2 ± 19.0, and 81.2 ± 15.0, respectively. In the ANCOVA, significant differences in the ENDCOREs scores were observed ($p = 0.033$); post hoc analysis showed significant differences between the low and high groups. Regarding the subscales, interpersonal skills, such as self-assertion and other acceptance, showed significant differences among the three groups after adjustment.

Conclusions: The finding that intergenerational interactions are positively associated with interpersonal skills aligns with the results of previous research (Kuehne & Melville, 2014), suggesting that frequent intergenerational interactions in vocational training programs in schools for the blind can enhance students' acquisition of interpersonal communication skills.

201 - P38

DEVELOPMENT OF GENERIC CARE MODULES FOR THE VISUAL COMPLAINTS OF PEOPLE WITH MULTIPLE SCLEROSIS - PROJECT UPDATE

Kim Hurst[1], Fleur Van Der Feen[1], Joost Heutink[1, 2]

[1]Clinical and Developmental Neuropsychology, University of Groningen, Groningen, The Netherlands; [2]Royal Dutch Visio, Centre of Expertise for Blind and Partially Sighted People, Huizen, The Netherlands

Purpose: Visual complaints are very common in people with multiple sclerosis (pwMS) and have a major negative impact on their daily functioning. Typically reported problems include unclear vision, reduced contrast, reduced depth perception,, needing more light, and/or being blinded by bright light Current rehabilitation offerings do not adequately match the wants, needs and capabilities of pwMS. In this project, new, generic interventions are being developed.

Methods: To create four intervention modules, a multidisciplinary team has been assembled. The team includes occupational therapists, neuropsychologists, social workers, an optometrist, a clinical physicist, a digital accessibility expert and most importantly, pwMS. This large team is divided into four smaller teams, each working on one topic. The modules will be created using a variety of designed centered thinking methods namely: brain writing, six thinking hats, low-fidelity prototyping, and high-fidelity prototyping. The modules will be delivered online via a telerehabilitation platform where interaction with healthcare providers is possible.

Results: The project will result in four generic care modules addressing psychoeducation, daily life, fatigue and energy balance, and lighting. The modules will support pwMS in independently managing visual complaints and integrating strategies, tips and adaptations to minimize the impact of these visual complaints on their daily lives. There will be homework assignments to ensure interaction with the care providers and to increase adherence from participants. The modules will reduce patient and healthcare burden while enhancing accessibility and engagement through interactive telerehabilitation. Expected outcomes include improved goal attainment scaling scores (GAS), increased participation in daily life, better management of visual complaints, and improved fatigue scores.

Conclusions: By creating these modules, this project aims to fill the gap in existing neurovisual rehabilitation for visual complaints in pwMS. The use of the modules will reduce the burden on the patient as well as on the healthcare system. The innovative use of a multidisciplinary team and design-centered methods promises to offer patient-centered solutions that are expected to improve the quality of life for pwMS.

98 - P39

EFFECTIVENESS OF VISION REHABILITATION IN A PATIENT WITH CENTRAL RETINITIS PIGMENTOSA: A CASE STUDY

Rajeev Prasad[1]

[1]*Visual Eyez Academy, Optometry, Noida, India*

Purpose: The primary form of retinitis pigmentosa is a progressive, degenerative disorder of the retina that leads to a loss of central visual acuity, which can significantly impact daily living activities. This case study evaluates the outcomes of a structured vision rehabilitation plan involving neuro-optometric therapy and syntonic phototherapy aimed at enhancing visual acuity, fixation stability, and retinal integrity in individuals with central retinitis pigmentosa.

Methods: A 42-year-old man diagnosed with rod-cone dystrophy in 2022 presented with blurred vision for both distance and near tasks, along with central visual field loss. His best spectacle-corrected vision was 2/60 in both eyes, and near vision was N60 at the initial assessment. Central field loss was substantial, more pronounced on the left side, as evidenced by Humphrey Visual Field tests. OCT revealed thinning of the macula in both eyes. The patient attended a 77-day vision rehabilitation program, which included one hour of in-office vision therapy each day, six days a week. He also received 20 minutes of syntonic phototherapy daily, utilizing Alpha-Delta and Mu-Delta filters. Monocular oculomotor therapy was conducted with the aid of the Sanet Vision Integrator, modified Hart Chart, Marsden Ball, and computerized vision therapy. Training for peripheral awareness was incorporated using peripheral charts and Marsden Ball exercises. After each rim activity, the target sizes were gradually reduced, and binocular eye movement training commenced, during which metronome-based activities were introduced to enhance automaticity.

Results: Following therapy, best-corrected visual acuity improved to 6/12 in the right eye and 6/60 in the left eye; near vision reached N6 and N18, respectively. The results from Humphrey Visual Field testing demonstrated increased field expansion in the right eye, and OCT indicated increased retinal thickness. Functional vision improved as the patient reported better night vision and fixation stability.

Conclusions: This case highlights the potential for vision rehabilitation in patients with central retinitis pigmentosa. Overall, the structured program facilitated functional and structural improvements for the patient, while emphasizing the role of neuro-optometric therapy in managing central vision loss. Further studies are needed to assess the long-term efficacy and broader applicability of vision rehabilitation for progressive retinal conditions.

167 - P40

EFFECTS OF NEURO-PHOTOSTIMULATION AND ION INDUCTION ON VISUAL ACUITY AND RETINAL SENSITIVITY IN PATIENTS WITH STARGARDT: A PILOT STUDY

Riccardo Di Corato[1]
[1]*Center for Low Vision Studies, Milan, Italy*

Purpose: This study aims to evaluate the effects of five sessions of neuro-photostimulation combined with ion induction on visual acuity (BCVA) and retinal sensitivity (RS) and fixation percentage changes (FIX) in patients diagnosed with Stargardt. This pilot study explores the potential benefits in enhancing visual residual and improving visual abilities.

Methods: Three patients (two males, one female; age range 35-57 years) diagnosed with Stargardt's were analyzed and underwent five sessions of combined neurophotostimulation therapy with ion induction. Visual acuity (BCVA) was assessed using standard Snellen tables, near acuity in pts (NA),and retinal sensitivity (RS) and (FIX) were assessed using the MAIA microperimetry system. Pre- and post-treatment measurements of BCVA, NA, RS, FIX were compared to assess the effectiveness of therapy.

Results:

1) FIX changes: patient 1 (57 years) TO 22% T1 58%, patient 2 (35 years) TO 77% T1 82%, patient 3 (36 years) TO 12% T1 60 %
2) BCVA changes: patient 1 (57 years) TO 0.15 T1 0,2 patient 2 (35 years) TO 0.25 T1 0.25, patient 3 (36 years) T0 0.08 T1 0.1
3) NA changes: patient 1 (57 years) TO 9 T1 7, patient 2 (35 years) TO 7 T1 6 patient 3 (36 years) T0 26 T1 26
4) RS change in dB: patient 1 (57 years) TO 16.72 T1 19.7, patient 2 (35 years) TO 17,02 T1 17.73 patient 3 (36 years) T0 7.57 T1 9.19

Pairwise t test revealed significant improvements only for RS ($p < 0.05$) The value for RS t-statistic of 2.66 for 2 degrees of freedom has a p-value equal to 0.046. While for FIX t-statistic 2.34 has a p-value about equal to 0,065 BCVA t-statistic of 1.59 with has a p-value avalue of 0.21.NA t-statistic of -1.73 has a p-value 0.170.

Conclusions: Neurophotostimulation combined with ion induction significantly improved retinal sensitivity with a modest change in fixation stability. While BCVA and NA did not detect significant changes. This preliminary study suggests further study on larger samples and longer floow-ups by opening the study also to other retinal pathologies.

107 - P41

EFFECTS OF NEURO-PHOTOSTIMULATION AND IONTOPHORETIC INDUCTION ON VISUAL ACUITY AND RETINAL SENSITIVITY IN PATIENTS WITH GLAUCOMA AND MYOPIA: A PILOT STUDY

Ilaria Ciochetta[1]

[1]*Centro Studi Ipovisione, Milan, Italy*

Purpose: This pilot study aimed to investigate the effects of a combined treatment involving neuro-photostimulation and ionophoretic induction on visual acuity and retinal sensitivity in patients diagnosed with both glaucoma and myopia. These coexisting conditions present a significant challenge in clinical management, and the study sought to explore whether these non-invasive therapies could offer benefits in improving visual function.

Methods: Five patients (three males, two females) aged between 49 and 86 years, all diagnosed with both glaucoma and myopia, participated in the study. Each patient received five sessions of combined neuro-photostimulation and ionophoretic induction. Visual acuity was measured using standard Snellen charts, while retinal sensitivity was assessed using the MAIA microperimetry system. Pre-treatment and post-treatment measurements of visual acuity and retinal sensitivity were compared to evaluate the efficacy of the treatment

Results: The study demonstrated a statistically significant improvement in retinal sensitivity ($p < 0.05$) following treatment. The mean retinal sensitivity increased from 2.41 ± 1.98 dB at baseline to 4.92 ± 2.33 dB post-treatment. Visual acuity showed a modest but statistically relevant improvement ($p < 0.05$), with the mean Snellen visual acuity increasing from 0.25 ± 0.12 to 0.31 ± 0.14. These findings suggest a measurable enhancement in visual function, particularly in retinal sensitivity, after the combined therapy

Conclusions: The combined therapy of neuro-photostimulation and ionophoretic induction showed promising results for patients with glaucoma and myopia, with significant improvements in retinal sensitivity and moderate gains in visual acuity. These preliminary findings suggest the potential of this non-invasive treatment to enhance visual function in this patient group. However, further studies with larger sample sizes and longer follow-up periods are needed to confirm these results and evaluate the long-term benefits of the treatment.

505 - P42

ENHANCING VISUAL REHABILITATION: QUANTIFYING OCULAR AND MOTOR STRATEGIES WITH DIGITAL ERGO-PERIMETRY AND EYE-TRACKING

Francesca Peveri[1], Antonella Panizzi[2], Andrea Canessa[1], Silvio P. Sabatini[1]

[1]Department of Informatics, Bioengineering, Robotics and Systems Engineering, University of Genoa, Genoa, Italy; [2]Fondazione David Chiossone - Impresa Sociale, Genoa, Italy

Purpose: Visual rehabilitation for low vision conditions (e.g., glaucoma, tunnel vision, retinopathy) aims to enhance patients' ability to use optical aids and maximize their limited vision for daily activities. A key aspect of rehabilitation is training individuals to rely on their residual vision for object localization and interaction, improving their functional field of view, and increasing independence in daily tasks. However, traditional visual field tests typically assess function under central fixation, ignoring the eye-head coordination that occurs in natural gaze shifts. To address this limitation, we developed a digitalized Ergo-Perimetry tool that enables a quantitative evaluation of both visual and motor strategies in a more ecological setting.

Methods: In the experiment, visual stimuli (e.g., shapes, playing cards, letters, words, and numbers) were projected onto a 2m x 1.5m surface in a dimly lit room at a distance of 1.73m, covering a 60° exploration area. The stimuli followed the Snellen chart proportions. Participants wore a PupilLabs eye tracker and were instructed to fixate on a central target, surrounded by randomly placed different stimuli. Upon hearing a sound, they searched for the target, which randomly replaced one of the peripheral stimuli (distractors), and pressed a wireless button that generated a sound to signal detection. Finally, they verbally reported the target's position. Each new trial began with the target at the central position. Head and eye movements were unrestricted, allowing for natural exploration. Reaction times, head movements, and gaze data were recorded.

Results: Preliminary results from low-vision participants suggest that Ergo-Perimetry provides more precise and objective measurements of ocular and motor strategies. The integration of an eye tracker with an automated procedure enables a standardized, quantitative assessment of functional vision and rehabilitation outcomes, free from operator bias. Moreover, this tool allows for a detailed monitoring of ocular dynamics, capturing subtle changes in gaze behavior.

Conclusions: Ergo-Perimetry offers a robust and ecologically valid framework for visual rehabilitation, providing subjective benefits for patients while also transferring improvements to daily living activities. By objectively tracking individual learning curves, it serves as a valuable tool for developing personalized rehabilitation programs and evaluating the effectiveness of rehabilitation strategies.

329 - P43

GATHERING INSIGHTS FROM PARTICIPANTS IN THE OT 1ST SERVICE DELIVERY QUALITY IMPROVEMENT PROJECT IN VISION REHAB SERVICES

Kimberly Hreha[1], Madison Dunning[2], Omar Mohiuddin[2], Fay Tripp[2], Diane Whitaker[2]

[1]Duke University, Orthopaedic Surgery, Ophthalmology, Durham, USA; [2]Duke Eye Center, Vision Performance and Rehabilitation, Durham, USA

Purpose: Long wait times to see medical professionals are not ideal. Patients with progressive eye conditions like age-related macular degeneration (AMD) may not always need optometry (OD) services but rather low vision occupational therapy (OT) to learn about activity modifications including task lighting, contrast enhancement techniques, and assistive technology training. Our prior work determined that in our clinic, the wait times to see an OD was approximately 9 months compared to 1 month for an OT. We also determined 58% of 97 AMD patients did not need OD services because their goals were related to non-prescription devices and strategies only. The current project followed up with the 97 patients who had a clinic visit on average three years ago, to better understand their degree of satisfaction with the flipped practice model (OT first or OT only), if they are still using the strategies they learned, and if they would recommend OT.

Methods: We used a phone questionnaire which consisted of an introduction script and 6 pre-developed questions which were (1) yes, no, unsure, or (2) Likert scale: from "not satisfied to extremely satisfied". Descriptive statistics were completed to determine counts and percentages.

Results: 29 of 97 (30%) completed the phone survey. Reasons for no participation included:17 deceased, 2 not interested, 48 lost-to-follow up (e.g., phone number not in service, voice mail), and 1 didn't recall appointment. Out of the 29, 68% were extremely satisfied with seeing the OT. 10% reported they would rather have waited to see the OD first. 100% said they use the strategies and devices shown during the OT appointment still today, most talked about lighting (62%). 97% would recommend low vision OT to someone with vision loss.

Conclusions: It is helpful to know that most participants had high satisfaction with seeing a specialized OT first. It is encouraging to know participants continue to use the strategies and devices discussed during the clinic visit and their enthusiasm to recommend OT to others. Future directions include a prospective cohort study comparing long-term outcomes between AMD patients following the "OT first" model versus those who receive OD +OT later.

28 - P44

GENETICALLY INHERITED DISEASE LOW VISION REHABILITATION STUDY IN AN URBAN HOSPITAL SERVICE

Heidi Bowie[1]

[1]*Ophthalmology, Self-Academic, New Braunfels, USA*

Purpose: To illustrate if there is any statistical/clinical function significance in small genetically inherited disease cohort regarding psychosocial testing in Visual Acuity(VA) and/or Contrast Sensitivity (CS) utilizing glasses only (dry manifest refraction) or combination low vision aides and glasses.

Methods: Descriptive statistical analysis from case series cohort of genetically inherited diseases (Leber's Heriditary Optic Neuropathy, Vitelliform Maculopathy, and Oculocutaneous Albinism); n = 3; Primary endpoint: VA(Log Mar) and CS(Log units) outcomes.

Results: N = 3, mean age ~31, 3 males stratified into 2 AA, 1Asian descent, mean CS log units ~1.30 lu, moderate loss; the standard of error of the mean CS was based on using lower end of normal CS log units, based on Pelli-Robson chart at 6meters, for subjects < 60 yrs which was .24log units

Standard deviation for CS log units ~.415; the Coefficient of variation relied on the skills of interobserver variability utilizing the Pelli-Robson Chart was 14%. Later, utililization of student t test statistical analysis to determine statistical significant sample size for VA(log Mar) dry manifest refraction only low vision preference verses combination treatment consisting of low vision assistive devices(LVAD) with dry manifest refraction which calculate to 17 subjects per group with alpha = .05, beta = .80., based on Taiwan study of 577 participants. It led 333 participants that preferred regular glasses (64.7%) for optic low vision aids (olvas).

Conclusions: The limitations to this study are assumptions:

1. Normal distribution data
2. P values reflect precision and effect size(may not be based on all inherited disease)
3. P value inversely correlates with sample size
4. The smaller p value the stronger evidence to assume alternative hypothesis
5. Gene therapy trajectories

Leber's Hereditary Optic Neuropathy, current in the market, gene therapy is based on Lumevoq based on mutation (MT-ND4), current subject not tested for mutation; also blue bird model for payment does not exist, such as: Lenadogene Nolparvovec Gene Therapy not paid by CMS or model by Bluebird Bio Lyfgenia and Vertex's CRISPR Thera and Casgevy (Retinitis Pigmentosa autosomal recessive 2%percent)

References

1. Ching-Ying Cheng et al, Min-Muh Po Sen Chan, Ophthalmic Physio Optices, Opt 2023 Nov, Volume 43, issue 6, 1356-1363.
2. Ronald A Fischer's Statistical Methods for Research Workers 2016.

138 - P45

INSULIN AND BIOLOGICAL VISUAL REHABILITATION IN PATIENTS WITH NEURORETINAL DEGENERATION PREVIOUSLY TREATED WITH MESENCHYMAL CELL-DERIVED SECRETOME

Celeste Limoli[1], Paolo Limoli[1], Marcella Nebbioso[2]

[1]Low Vision Research Center of Milan, Milan, Italy; [2]Department of Sense Organs, Faculty of Medicine and Odontology, Rare Retinal Diseases and Ocular Electrophysiology Centre, Umberto I Policlinic Sapienza University of Rome, Rome, Italy

Purpose: Neuroretinal degenerative diseases are characterized by progressive visual impairment, with metabolic dysfunction, oxidative stress, and neuronal loss being possible underlying factors. Insulin plays a crucial role in glucose uptake, neuronal survival, and oxidative stress modulation, making it a potential therapeutic target. This study investigates the effects of insulin in combination with mesenchymal cell-derived secretome on neuroretinal function in patients with degenerative retinal diseases previously treated with the Limoli Retinal Restoration Technique (LRRT).

Methods: Seventy-two patients (173 eyes) with severe neuroretinal diseases who had previously undergone LRRT were included in this longitudinal study and divided into three groups based on the intervention: (1) Group 1 (39 patients, 78 eyes) received a single injection of 5 units of insulin lispro into the suprachoroidal space of the worse-seeing eye; (2) Group 2 (25 patients, 50 eyes) received insulin injection in the better-seeing eye; (3) Group 3 (26 patients, 45 eyes) consisted of patients who demonstrated improvement after insulin injection and continued treatment with daily insulin eye drops (80% insulin lispro, 20% hyaluronic acid). Retinal function was assessed using microperimetry (MAIA, Centervue) and perimetry (Humphrey Zeiss) before treatment (60–180 days) and after treatment (3–90 days for injections, ~1 year for eye drops). Changes in retinal sensitivity were analyzed using paired t-tests.

Results: In Group 1, the insulin-treated eyes showed a significant increase in retinal sensitivity (from 10.09 ± 7.05 to 10.75 ± 7.25 dB, +6.54%, $p = 0.0067$), while the untreated eyes declined (from 12.35 ± 6.79 to 11.92 ± 6.81 dB, -3.44%, $p = 0.0448$). In Group 2, the insulin-treated eyes improved from10.8 ± 6.66 to 11.63 ± 6.71 dB,+7.29%, $p = 0.05$), whereas the untreated eye (worse-seeing eye) exhibited a decline from 8.68 ± 7.20 to 8.50 ± 7.14 dB, -2.06%, $p = 0.6771$). In Group 3, patients using insulin eye drops showed a stabilization or mild increase in retinal sensitivity (from 11.39 ± 8.12 to 11.73 ± 8.28 dB, 2.99% increase, $p = 0.231$), with no significant systemic glycemic changes.

Conclusions: The addition of insulin to LRRT-treated patients was associated with improved retinal sensitivity and a potential stabilizing effect on neuroretinal function. Further studies are needed to confirm the role of insulin in neuroretinal metabolism and better understand its long-term effects in neurodegenerative retinal diseases.

502 - P46

IS BIOFEEDBACK STIMULATION FOR SUBJECTS WITH STARGARDT DISEASE AN EFFECTIVE LONG-TERM TREATMENT? A FOLLOW-UP REVIEW STUDY

Monica Pennino[1], Valeria Silvestri[2], Paola Piscopo[2], Marco Sulfaro[2], Simona Turco[2], Filippo Amore[2], Giovanni Giacomelli[1], Gianni Virgili[3], Dario Mucciolo[1], Vittoria Murro[1]

[1]Ophthalmology Department, Azienda Ospedaliero-Universitaria Careggi, Florence, Italy, Florence, Italy; [2]National Centre of Services and Research for the Prevention of Blindness and Rehabilitation of Low Vision Patients, IAPB Italia ETS, Fondazione Policlinico Universitario "Agostino Gemelli" IRCCS, Rome, Italy; [3]NEURFARMA, University of Florence Florence, Italy

Aim: Biofeedback photostimulation (BF) is a current vision rehabilitation strategy useful for improving oculo-motor control in central field loss due to maculopathies. However, the long-term effectiveness in Stargardt's maculopathy has not been reported yet. This study aimed to determine whether biofeedback stimulation at MP-3 microperimeter is an effective long-term treatment and to provide long-term follow-up data from a cohort of visually impaired subjects with Stargardt disease.

Methods: This is a retrospective case series of 20 subjects with central vision loss due to Stargardt's maculopathy. Patients who underwent to BF at MP-3 microperimeter between Jan 2021 and Jan 2024 were identified and reviewed for inclusion. Their demographic and clinical data including best corrected visual acuity (BCVA), reading acuity (RA), contrast sensitivity (CS), reading speed in words per minute (RS) and fixation analysis, as location and stability were collected and statistically analyzed. These outcomes parameters were collected at baseline, after BF stimulation, at 6- and 12-months follow-up.

Results: Ten participants performed BF in both eyes. Comparing preliminary data before and after BF stimulation, as statistically significant improvement was found in BCVA of the worse eye (from 0.9 ± 0.2 LogMAR to 0.82 ± 0.1 LogMAR; $p < 0.05$), CS for both eyes (from 1.08 ± 0.2 LogC to 1.16 ± 0.2 LogC; from 1.0 ± 0.2 LogC to 1.13 ± 0.2 LogC; $p < 0.05$ for the best and the worse eye, respectively). Also, a statistically significant increase was registered for fixation stability in both eyes (from 3,7°2 ± 2,6°2 to 2.6°2 ± 2.4°2; from 5.4°2 ± 3.03°2 to 3.3°2 ± 2.5°2; $p < 0.05$) and RS (from 60.6 ± 51.1 wpm to 72.1 ± 47.6 wpm, $p < 0.05$). At 6- and 12-months follow-up a significant decrease for the visuo-functional outcomes improved was registered, in spite of no progression of the eye disease ($p < 0.05$).

Conclusion: Our results suggest that biofeedback photostimulation does not have a significant long-term effect on visually impaired diagnosed with Stargardt disease. In consideration of the decline of the visuo-functional outcomes at 6- and 12-months follow-up, it should be proposed to visually impaired subjects at least two BF sessions during one year.

388 - P47

LIGHT TABLE PLAYING ACTIVITIES WITH PARENTS: EFFECTS ON VISUAL FUNCTION AND EYE-HAND COORDINATION IN CHILDREN WITH VISUAL IMPAIRMENT

Simona Leone[1], Chiara Velli[1], Maria Petrianni[1], Lorenzo Orazi[1], Maria Mallardi[2], Francesca Sini[3], Filippo Amore[1], Daniela Ricci[1]

[1]National Centre of Services and Research for the Prevention of Blindness and Rehabilitation of Visually Impaired, IAPB Italia ETS, Rome, Italy; [2]Clinical Psychology Unit, [3]Pediatric Neurology Unit, Fondazione Policlinico Universitario "Agostino Gemelli", IRCCS, Rome, Italy

Purpose: The purpose of this pilot study is to actively involve parents in the promotion of the development of visual skills and eye-hand coordination in children with visual impairment, due to CVI or ocular pathologies, through an habilitation training with light table and adapted material.

Methods: Children aged between 18 and 36 months with visual impairment (visual acuity < 2/10) were recruited in 2 groups according to etiology of visual impairment (CVI or ocular disease).

The assessment was performed before and after the 6 months of training. It included:

- Visual function structured assessment
- Comprehensive ophthalmological examination
- Griffiths Scales of Child Development, Third Edition (Griffith -3)
- Peabody motor development scale- 2 (PDMS-2)
- Parent stress index- short form questionnaire

The protocol involved parents and children at home, with at least 15 minutes of structured playing activities. Meetings were organized every 14 days, alternating on-site and online, to check the work carried out and also provide the new activities and materials. The games and activities were organized according to the child's skills and age, using trasparent or reflecting toys and tactile materials.

Results: Six children, 4 female, have been recruited and underwent the habilitation training. Mean age at the enrolment 29 months. At the end of the training all of them showed improvements in visual acuity, contrast sensitivity, quality of ocular movements and eye-hand coordination. Parents reported a reduction of stress organizing daily activities for their children and more consciusness of their child's abilities.

Conclusions: The results of this pilot study evidenced an improvement of children's visual skills but also an increase of parents' awareness of their kids' abilities and interest. The involvement of parents in visual habilitation programs can play an important role also for Enhancing the child parent relationship.

199 - P48

LOW VISION MANAGEMENT OF UVEAL COLOBOMA

Sunkanmi Arogbokun[1], Elizabeth Barstow[2]

[1]Physical Therapy\Occupational Therapy, [2]Occupational Therapy, University of Alabama at Birmingham, Birmingham, USA

Purpose: The importance of low vision management in pediatric care cannot be overstated. Vision rehabilitation significantly impacts children's activities of daily living and, consequently, their quality of life. A case involving uveal coloboma a rare condition resulting in poor vision due to the absence of important structures behind the eyes, was managed. As a part of this case, the uniqueness of the condition and its effect on functional and daily life consequences and how these were managed in a low vision clinic were examined.

Methods: This case report highlights low vision assessment and management in a 14-year-old girl, black African descent, with Uveal Coloboma that was referred for low vision therapy at ECWA Eye Hospital, Kano, Nigeria. She presented with a significantly poor visual acuity at distance and at near, and a prior insignificant subjective refraction.

Results: Patient presented with microcornea, inferonasal coloboma of the iris, and nystagmus in both eyes. Fundal photography showed choroidal coloboma extending to the disc. Low vision assessment indicated no improvement with subjective refraction. Patient was prescribed a monocular 6X distance telescope, improving vision to 0logMAR. A +6.00D spectacle magnifier enhanced vision to 0.8M at 13 cm. Non-optical aids were also provided to enhance comfort and quality of life. These included counseling on letter magnification using relative distance magnification, controlling lighting with photochromic lenses, improving contrast with felt-tip pen, and using a reading stand for support. The patient's sitting position was adjusted to be closer to the board.

Conclusions: There was a significant improvement in the visual demands following low vision management. While non-optical aids enhanced comfort and improved quality of life of the patient.

408 - P49

MULTIDISCIPLINARY APPROACH TO REHABILITATION OF CHILDREN WITHIN THE NATIONAL CENTRE FOR BLIND AND VISUALLY IMPAIRED AT THE UNIVERSITY EYE CLINIC LJUBLJANA, SLOVENIA

Silvija Delfin[1], Sara Rot[1], Petra Ilc[1], Katja Molek[1], Spela Pungartnik[1], Jasmina Tahirovic[1]
[1]University Clinical Cetnre, Ophthalmology departmetn, Ljubljana

Purpose: In Slovenia children with blindness or visual impairment are treated at the National Centre for Comprehensive Rehabilitation of the Blind and Visually Impaired- University Clinical Centre, Eye Hospital, Ljubljana, Slovenia (NCCRBV). The treatment is multidisciplinary and delivered by a group of experts of different fields, composed by an ophthalmologist and a specialized nurse, a teacher for blind andvisually impaired, a psychologist and social worker.

Methods: The treatment is carried out on two levels. At the first treatment, the child meets withall the specialists. It is intended for an ophthalmological examination, testing and prescription of optical and non-optical devices, discussion of the diagnosis and prognosis of the disease, observation of the child with recognition of his abilities and needs, counselling and planning of further treatments. If further treatment is indicated by either the team and the parents or the child, further treatments are carried out, which are individual and targeted according to the expressed needs.

Results: The NCCRBV offers support to children with blindness and low vision. The treatment approach is multidisciplinary, adapted to the individual needs of the patient, and includes both the child and carers or family.

Conclusions: The final goal of the treatment is to enable the highest quality of the child's development and the greatest possible independence in all areas of life. A multidisciplinary enables highest results in achieving such goal.

134 - P50

OUR EXPERIENCE IN MEDICAL AND SOCIAL REHABILITATION OF MILITARY PERSONNEL WITH COMPLETE AND RAPIDLY PROGRESSIVE LOSS OF VISUAL FUNCTIONS

Kateryna Hrizhymalska[1], Yulia Saldan[1], Iryna Pshenychna[1]
[1]Ophthalmology, Vinnytsia National Pirogov Memorial Medical University, Vinnytsia, Ukraine

Purpose: For three years, the full-scale invasion of the aggressor state on the territory of Ukraine has been ongoing. Military personnel and civilians lose their sight due to combat injuries, trauma caused by mine explosions, and missile attacks by Russians. In the first half of 2024, doctors in Ukraine diagnosed vision loss or impairment in more than 19,000 people. To improve the quality of life of military personnel with irreversible vision loss and progressive vision impairments to slow down the process of vision loss. Maintaining the current state of vision functions. Ensure learning, communication, mobility, self-care, participation in daily life, interpersonal interaction, participation in social and civic life of veterans with vision impairments.

Methods: 16 veterans with complete and rapidly progressive vision loss, their family members. A team of trainers with a developed program and individual rehabilitation plans, formed taking into account the requests, needs and capabilities of the participants.

Results: Participants increased motor activity and improved coordination of movements. They completed a basic course on using gadgets, gained knowledge about their rights to consult a professional lawyer. Family members gained skills in organizing everyday life, safe and comfortable accompaniment of the blind. They learned techniques of psychological and physical relaxation. The main principles of medical and social rehabilitation of military personnel with full and rapidly progressing visual functions have been determined. Rehabilitation should be multidisciplinary and focused on the person, not on the rehabilitation institution. The need for cooperation at all levels between specialists involved in the rehabilitation process. The rehabilitation process is multilevel and individually oriented. To achieve the best results, rehabilitation should be started as early as possible.

Conclusions: The development or improvement of concepts for the rehabilitation of military personnel with complete and rapidly progressive loss of visual functions assumes the availability of data on the effectiveness of existing ones, which is our further research on this issue.

424 - P52

POST-GENE THERAPY VISUAL REHABILITATION IN LEBER'S HEREDITARY OPTIC NEUROPATHY: A CASE OF AUDIOVISUAL STIMULATION

Valentina Facchini[1], Valentina Salvagno[1], Aldo Vagge[2]
[1]Fondazione David Chiossone, Genoa, Italy; [2]University of Genoa, Genoa, Italy

Purpose: Leber's hereditary optic neuropathy (LHON) is a rare mitochondrial disorder that leads to progressive vision loss. Recent studies suggest that gene therapy may contribute to partial recovery of visual function. This case report describes the rehabilitation process of a patient with LHON who underwent gene therapy with voretigene neparvovec (Luxturna) and subsequently visual rehabilitation through multisensory stimulation, with the aim of evaluating the effectiveness of this approach in improving visual perception.

Methods: A 57-year-old female patient, diagnosed with LHON, received a subretinal injection of Luxturna in the left eye. Six months later, she began a rehabilitation program at the Chiossone Foundation, based on audiovisual stimulation. The protocol included sessions using a semicircular structure equipped with LEDs and speakers, employing unimodal (visual) and bimodal (audiovisual) stimuli programmed according to sequences and temporal frequencies tailored to a personalized therapy plan. The outcome of the program was monitored through analysis of the percentage of visual stimulus detection, response time, and a qualitative questionnaire regarding the patient's visual perception.

Results: After the first rehabilitation cycle, the patient reported improved perception of light, movement, and shapes in the central visual field. Quantitative analysis showed an increase in the detection percentage of visual stimuli and a reduction in response time. Audiovisual stimuli proved more effective than visual-only stimuli. Twenty-two months after the completion of the first cycle of bimodal stimulation, a regression in performance is observed, on which the patient appears to have stabilized thanks to constant training. Despite this, the qualitative questionnaire revealed that the patient subjectively perceived a further increase in residual vision, with an improved ability to discriminate object size, an expanded visual field, and enhanced contrast sensitivity.

Conclusions: The combination of gene therapy and audiovisual rehabilitation may represent an effective strategy to optimize brain plasticity in patients with LHON. Although visual acuity recovery was not observed, contrast sensitivity and spatial visual perception improved, facilitating the patient's autonomy. This multidisciplinary approach could contribute to enhancing the quality of life in patients with hereditary optic neuropathies.

387 - P53

PRIMA PHOTOVOLTAIC SUBRETINAL PROSTHESIS FOR GEOGRAPHIC ATROPHY

Marco Lombardo[1], Andrea Cusumano[1, 2], Marco Pileri[3], Raffaele Mancino[1], Carlo Nucci[1], Massimo Cesareo[1]

[1]University of Rome Tor Vergata, Rome, Italy; [2]Macula & Genoma Foundation, Rome, Italy; [3]Azienda Ospedaliera San Giovanni Addolorata, Rome, Italy

Purpose: PRIMA is an implantable photovoltaic wireless subretinal microchip designed to partially replace the physiological functions of the photoreceptors in the macula of patients suffering from loss of central vision due to geographic atrophy (GA). Our purpose was to assess the functionality of PRIMA throughout the visual rehabilitation process of 3 patients suffering from loss of central vision due to geographic atrophy (GA) who successfully underwent the implantation surgery.

Methods: We initiated the rehabilitation of three patients who had received the PRIMA microchip implant four weeks after successful surgery by delivering initial stimulations to the implant. The training of the patient with MP1 microperimeter biofeedback during the entire rehabilitation process was essential, especially over the initial alignment sessions, to optimize central fixation and improve the patient's oculomotor control. When the patient has reached a sufficient degree of confidence with the use of the system, specific remote rehabilitation sessions have been organized. The rehabilitation exercises were divided into three levels of increasing complexity. The first stimuli were sent in Artificial Pattern Mode (APM): dots, bars, and Landolt C of different sizes and orientations. After the optimization of the stimulation parameters, the camera was activated. Hereafter, the activation of the implant depends on the visual environment in front of the patient, in this case, a computer screen. Early visual camera experiences are simple stimuli, such as bars or dots of different sizes placed in front of the patient, under normal indoor light conditions. The pre-established training plan started when the patient could recognize those basic stimuli, and specific exercises were carried out. These have the aim of enhancing abilities for both practical and recreational reading.

Results: The results of our training sessions for remote rehabilitation planned to reduce cost and improve compliance of the three implanted patients suggest that better outcomes than those seen in the feasibility study can be realistically achieved.

Conclusions: The main objective of the PRIMA System, which consists of helping patients with GA in carrying out daily activities, seems close to becoming a reality.

443 - P55

PROVIDING SERVICES IN CRISIS -EXPERIENCES OF PROFESSIONALS IN DEAFBLIND REHABILITATION DURING THE COVID-19 PANDEMIC

Moa Wahlqvist[1], Mattias Ehn[1], Agneta Anderzen Carlsson[2]

[1]Audiological Research Center, [2]University Health Care Research Center, Faculty of Medicine And Health, Örebro University, Örebro, Sweden

Purpose: The aim of the study was to explore experiences of professionals in specialized rehabilitation providing services to people with deafblindness during the Covid-19 pandemic. The COVID-19 pandemic, with its prescribed physical distancing, affected everyone in society, posing particular challenges for people with disabilities who required physical proximity, including those with deafblindness. Experiences from front line healthcare workers and professionals in residential homes for the elderly have shown that providing services during the pandemic was a great challenge. However, experiences of professionals providing rehabilitation to people with sensory impairments such as deafblindness has not been explored.

Methods: A qualitative explorative design was employed. Twenty-two professionals specializing in deafblindness rehabilitation from seven health care regions in Sweden participated in semi-structured focus group interviews. Data were analyzed using inductive content analysis.

Results: Preliminary findings reveal a burdensome time for professionals, with worry of risking patient's and own health. They felt alone without team support, abandoned by managers, and troubled as they sometimes could not provide services. Nonetheless, professionals took on the challenge with the patients best in focus. They showed a flexibility to handle prescribed pandemic restrictions and were inventive in employing new digital tools to meet patients demands.

Conclusions: During the time of the pandemic, the professionals were "bending but not breaking". Professionals call for action plans and access to supervision, to be able to meet the next crisis. They concluded that they were sometimes the only agent who could provide services or reliable crisis information for some patients. The digitalization of health care stresses the need to develop accessible services and to safeguard ways to offer resilient in-person services when digital solutions are not applicable. The study reveal experiences of providing services in a specific time of crises, but also highlights more general insights of what it is to be part of a specialized rehabilitation team of professionals providing services to people with deafblindness.

256 - P56

PSYCHOSOCIAL CONSIDERATIONS FOR THE CARE AND REHABILITATION OF SURVIVORS OF OCULAR TRAUMA CAUSED BY STATE AGENT VIOLENCE IN CHILE

Joaquín Varas Reyes[1], Gonzalo Rojas[2], Matias Ríos[2], Andrea Herrera[2], Camila Corral[3], Sebastián Córdova González[4], Rodrigo Osorio Larraín[4]

[1]Department of Occupational Therapy and Occupational ScienceFaculty of Medicine,, [2]Institute for Research in Dental Sciences (ICOD), [3]Department of Maxillofacial Surgery, [4]Department of Restorative Dentistry, Faculty of Dentistry, University of Chile, Santiago, Chile

Purpose: At the end of 2019, Chile experienced massive protests nationwide, marked by violent police repression by state agents. A total of 460 cases of ocular trauma were recorded, an unprecedented situation in social and armed conflict scenarios (Rodriguez, 2020). This resulted in a high number of individuals suffering from severe mono- and binocular vision loss, forcing healthcare teams to respond unexpectedly to the needs of the affected population. The psychological trauma associated with ocular trauma became a critical factor in ensuring the delivery and continuity of care. Therefore, this study aimed to identify key psychological experiences relevant to the care and rehabilitation processes of individuals with ocular trauma who were victims of state violence during the 2019-2020 social mobilization in Chile.

Methods: This is an exploratory qualitative study using a grounded theory approach, based on content analysis, open, axial, and selective coding of 20 in-depth interviews with ocular trauma survivors previously treated in a rehabilitation program. Ethical approval was obtained from the relevant ethics committee.

Results: Experiences of marginalization, invisibility, and invasiveness were identified as key psychological aspects linked to emergency healthcare settings. Relational and structural elements of the healthcare system, such as uninformed, dehumanized, and untimely care, led to experiences of revictimization and retraumatization, especially given the expectation of prioritized and compassionate care. Key factors in preventing these negative experiences include unconditional acceptance, effective communication, compassion, validation of the survivor's experience, the delivery of hopeful messages, active participation in the rehabilitation process, as well as addressing sensory needs, the impact on daily life, continuity of care, and support in adapting to a new body image.

Conclusions: Healthcare processes for survivors of ocular trauma in contexts of human rights violations must incorporate these elements to prevent experiences of revictimization and retraumatization. This approach contributes to effective and comprehensive care and rehabilitation, framed within mechanisms of reparation and a human rights perspective.

335 - P57

READING BEYOND LIMITS: INTERVENTIONS TO COMBAT CENTRAL SCOTOMAS AND VISUAL FIELD DEFICITS

Dawn Ciccarone[1], Daniel Hoffman[1]
[1]Salus at Drexel University, The Eye Institute, Philadelphia, USA

Purpose: This poster will discuss treatment interventions to improve reading performance for patients with central scotomas and peripheral visual field loss.

Methods: 1. Patient education about visual field loss and the impact on reading performance. 2. Discussion of central field interventions: eccentric viewing, auditory devices, apps, video magnification, optical magnification and near vision only prescriptions. 3. Discussion of visual field interventions: scanning techniques, auditory devices, auditory apps, yoked prisms for hemianopia, near vision only prescriptions and environmental modifications. Environment modifications include line spacing, line markers, use of X-Y tables on CCTV, typoscopes, tactile cues and positioning of reading material.

Results: Cases will be presented with eye conditions that have a central scotoma, constricted visual fields and homonymous hemianopias. Results will indicate improved reading performance after education and training with central and/or peripheral field interventions. We will also discuss universal solutions for both central and peripheral field loss.

Conclusions: Reading performance can be improved with treatment interventions that address central and peripheral field deficits. Patient education about their visual field is an essential component for successful reading performance.

318 - P58

TELESCOPING THROUGH TUNNEL-VISION: A CASE REPORT ON THE ROLE OF LOW VISION IN STEROID-INDUCED GLAUCOMA IN A 25-YEAR-OLD FILIPINA WITH JUVENILE RHEUMATOID ARTHRITIS

Rafael Fontanilla[1], Sheila Santos-Jimenez[1]

[1]Department of Health Eye Center, East Avenue Medical Center, Quezon City, Philippines

Purpose: Glaucoma is the leading cause of irreversible blindness. The affectation of visual field in glaucoma can greatly impair a patient's activities of daily living. Low vision services play a significant role in maintaining functionality and quality of life in glaucoma patients.

Methods: This study is a case report.

Results: This is a case of a 25-year-old Filipina diagnosed with Juvenile Rheumatoid Arthritis who developed Steroid-Induced Glaucoma of both eyes. After 9 years of management, patient was referred to Low Vision. The goals of the patient were to have better navigation, to enjoy travelling, and to find an occupation. On physical examination, visual activity of light perception on the right and 20/231 using the ETDRS chart at 1 meter on the left. The patient had near vision of 1.6 M print using the near HOTV chart and a contrast sensitivity of 14/25. Visual field showed tunnel-vision with temporal field defect on the left eye. Low vision devices were prescribed according to the patient's needs. A telescope helped the patient see far objects while the tunnel vision was addressed by reversing the position of the telescope widening the field of vision. For near vision, mobile applications that read and identify objects were recommended (SeeingAI and SuperVision). The handheld magnifier maximized near vision to newspaper print. The patient was referred to Resources of the Blind for the use of a walking cane as well as to ATRIEVE, a training facility that helps the blind develop occupational skills using computers.

Conclusions: Despite a narrow view, the low vision clinic widened all opportunities for the patient to maximize functionality. The clinic met her goals and inspired her to live life despite her disability. Early referral to low vision will play a significant role in restoring function in patients with glaucoma.

498 - P59

THE EFFECTIVENESS OF VISUAL REHABILITATION FOR STUDENTS WITH DOWN SYNDROME: A CASE STUDY

Fu-Yu Kuan[1], Fu-Chun Chang[1, 2], Ting-Yu Tseng[1], Ting-Hsuan Lu[1], Ching-Ying Cheng[1, 2]

[1]Department of Optometry, Chung Shan Medical University, Taichung, Taiwan; [2]Department of Ophthalmology, Chung Shan Medical University Hospital, Taichung, Taiwan

Purpose: Children with Down syndrome often present with various visual impairments, including refractive errors (such as astigmatism, hyperopia, and myopia), strabismus, and reduced visual acuity. These visual challenges may impact learning, motor development, and daily functioning, highlighting the importance of early assessment and visual support. This study aimed to examine the effects of a visual rehabilitation intervention on a student with Down syndrome.

Methods: Three students with Down syndrome, aged 5, 12, and 17, were included in the study. Optometrists and special education teachers conducted a comprehensive visual assessment following ophthalmologic examinations, confirming no physiological ocular abnormalities. The assessment encompassed binocular vision, functional vision, visual-motor integration, and visual perception. The frequency of visual rehabilitation sessions for each student was determined through a collaborative assessment involving the interdisciplinary professional team and parents.

Result: Of the three students, one demonstrated a notable refractive error. All three were found to have strabismus, including one case of alternating exotropia, one case of bilateral esotropia, and one case of unilateral (left eye) esotropia. Furthermore, all three students exhibited unstable fixation and poor accommodative function. Their balance, spatial perception, and fine motor skills were below age-appropriate. Initial interventions included refractive correction, bi-nasal occlusion, flipper lenses, and prism flippers. These were subsequently combined with a balance board, trampoline, Marsden ball, Brock string tasks, and iPad visual training applications. These combined strategies led to improvements in ocular alignment and enhanced binocular vision. Additionally, notable progress was observed in fine motor coordination, balance abilities, and functional vision.

Conclusion: Refractive correction, including the application of prisms and training patches, serves as the foundational step in visual rehabilitation. The success of such interventions relies heavily on interdisciplinary collaboration; undoubtedly, family support is the most significant factor contributing to the success of the students' rehabilitation process.

Keywords: Visual Rehabilitation, Refractive correction, Down syndrome

135 - P60

THE FIRST RESULTS OF DICHOPTIC THERAPY IN THE GEORGIAN POPULATION

Nino Kobakhidze[1], Tinatin Jikurashvili[1, 2], Mariam Mkheidze[1], Faiza Bhombal[3]

[1]Chichua Medical Center Mzera, Tbilisi, Georgia; [2]Georgian National University SEU, Tbilisi, Georgia; [3]Bynocs, Singapore, Singapore

Purpose: To report the first results of dichoptic therapy in patients with isometropic and anisometropic amblyopia in Georgian population.

Methods: Prospective study enrolling 11 subjects with both isometropic and anisometropic amblyopia aged 7-50 years was conducted. Two groups were differentiated according to vision improvement prognosis as good or guarded. All participants were treated with the Bynocs® platform (Kanohi Eye Pvt. Ltd, India) following the protocol of training of 30 min daily 5 times a week. Duration of treatment varied according to effectiveness, until no longer improvement was seen or the eye reached maximal visual acuity. Changes in corrected distance visual acuity (CDVA) and stereopsis were analyzed.

Results: A Wilcoxon signed rank test was done before and after Bynocs Dichoptic Therapy which showed a statistically significant improvement in visual acuity of the amblyopic eyes ($p = 0.001$). A total of 6 participants with median age of 12 (8.5-21) were included into the group with good prognosis. The median visual acuity improved by 3 lines with a pre-therapy logMAR acuity of 0.32 (0.13-0.45) to 0.08 (0.04-0.23) log MAR units post therapy. Pre-therapy vision was 6/12 and post-therapy improvement was up to 6/6. Out of 6 participants 2 had no Stereopsis; All participants developed stereopsis with average improvement of 125 (42.5-200). Second group comprised 5 participants with median age of 19 (10-29). The median visual acuity improved by 2 lines with a pre-therapy log MAR acuity of 0.36 (0.34-0.44) to 0.16 (0.08-0.22) log MAR units post-therapy. Pre-therapy vision was 6/15 and post therapy improvement was up to 6/9.5. Out of 5 participants 3 had no stereopsis; Only 1 participant didn't develop stereopsis.

Conclusions: Dichoptic training with Bynocs digital platform significantly improves visual acuity and stereopsis both in children and adults with isometropic and anisometropic amblyopia.

220 - P61

THREE SIBLINGS, ONE DIAGNOSIS: A CASE SERIES ON LOW VISION REHABILITATION FOR JUVENILE MACULAR DEGENERATION IN A RESOURCE-LIMITED SETTING

Ekeoma Adure Edemeraro[1]
[1]DIA Hospital, Abuja, Nigeria

Purpose: This case series explores the low vision rehabilitation of three siblings with Juvenile Macular Degeneration (JMD) in a resource-limited setting, emphasising hereditary factors, barriers to genetic testing, and cost-effective interventions.

Methods: Three male siblings (ages 17, 18, and 22 years old) presented with progressive central vision loss, significantly impacting reading, facial recognition, and daily tasks. Case history revealed parental consanguinity and a strong family history of vision impairment, indicating the hereditary retinal condition, Juvenile Macular Degeneration. Comprehensive assessments included best-corrected visual acuity (BCVA), functional vision evaluations, and ocular examinations. Genetic testing was not pursued due to initial lack of awareness, compounded by financial constraints, perceived irrelevance, and limited availability of this specialized services. Given financial constraints, rehabilitation prioritized affordable interventions, including updated spectacles, high-contrast reading materials, handheld magnifiers, mobile-based magnification apps, and locally available tinted lenses for glare control. Eccentric viewing and visual scanning techniques were introduced to maximize residual vision. Educational support, such as preferential seating, audiobooks, and large-print materials, was recommended. Culturally sensitive counselling was also provided to improve the family's understanding of JMD, genetic risks, and the benefits of early intervention.

Results: Regardless of the financial and logistical challenges, all three siblings demonstrated measurable improvements in functional vision and daily independence. Eccentric viewing training improved reading efficiency, magnification devices enhanced near-vision tasks, and tinted lenses reduced glare sensitivity, aiding mobility. Despite the lack of access to genetic testing, culturally competent counselling deepened the family's understanding of JMD, encouraged greater acceptance, and improved adherence to recommended low vision strategies.

Conclusion: This case series highlights the importance of thorough case history in recognizing hereditary patterns in JMD, particularly in populations with high rates of consanguineous marriages. It underscores the need for culturally aware genetic counselling and cost-effective low vision interventions in resource-limited settings. Expanding awareness of inherited retinal diseases, improving access to genetic services, and developing affordable vision rehabilitation strategies are essential for optimizing patient outcomes in disadvantaged regions.

68 - P62

VISION REHABILITATION OF BILATERAL OPTIC NEURITIS SECONDARY TO DELAYED DIAGNOSIS OF NEUROMYELITIS OPTICA SPECTRUM DISORDER: A CASE REPORT

Chinenye Timothy[1]

[1]*Ophthalmology, State House Medical Centre, Aso Rock, Abuja, Federal Capital Territory, Nigeria*

Purpose: To present vision rehabilitation strategies employed in re-integrating a young patient with low vision caused by bilateral optic neuritis secondary to Neuromyelitis Optica Spectrum Disorder (NMOSD) back to school and career pursuit. Neuromyelitis Optica Spectrum Disorder (NMOSD) is an autoimmune disease more common in Asian and African populations. It primarily affects the spinal cord and optic nerves causing rapid profound visual loss. The prevalence of autoimmune diseases in developing nations, though low, is rising. There seems to be a huge lack of knowledge in developing nations making diagnosis difficult. Delays in diagnosis and limited/less effective treatment cause the disease progression with severe ocular complications leading to profound low vision or even blindness. Majority of the patients are in the active/productive phase of their lives, and any disability will have great financial and social impacts. Vision rehabilitation, as shown in this case presentation, can improve functional independence and overall quality of life.

Methods: Clinical low vision assessment of the patient was done including functional disability assessment using appropriate assessment tools and then trial and dispensing of low vision devices which improved visual functions. Patient's education and counseling was also part of the rehabilitation plan.

Results: Case presentation was a 22 years old female with bilateral optic neuritis secondary to NMOSD who paused her law school career because of significant functional visual disability. Functional disabilities recorded were that pertaining to distance vision, reading signpost, reading prints, face recognition, identifying colors and grooming (using cosmetics). Fairly good visual outcome was recorded, with vision corrected in the better eye from 1.3 logMAR to 0.7 logMAR at distance and from N20 to N5 at near after the detailed low vision assessment, optimal refractive correction, magnification and trials of low vision aids which met the needs of the patient.

Conclusions: Healthcare systems in developing nations need to be abreast with the burden of autoimmune diseases in order to close the gaps in their diagnosis and treatment and in turn, reduce disability and/or mortality. Early diagnosis and effective vision rehabilitation are fundamental in achieving good visual outcome, improve functional vision and overall quality of life.

469 - P64

VISUAL REHABILITATION FOR KINDERGARTEN CHILDREN WITH SPECIAL NEEDS

Hsi-Pao Hsieh[1], Chao-An Chi[2], Min-Muh Sheu[3, 4], Fu-Yu Kuan[1], Ching-Ying Cheng[1, 5]

[1]Department of Optometry, Chung Shan Medical University, Taichung, Taiwan; [2]Department of Special Education, National Taiwan Normal University, Taipei, Taiwan; [3]Eye Health Promotion Centre of Eastern Taiwan, Hualien, Taiwan; [4]Department of Ophthalmology, Mennonite Christian Hospital, Hualien, Taiwan; [5]Department of Ophthalmology, Chung Shan Medical University Hospital, Taichung, Taiwan

Purpose: This qualitative study comprised two parts: (1) Case studies to investigate the effects of visual rehabilitation programs on binocular visual functions and visual perception in children with visual performance deficit; (2) In-depth interviews to explore caregivers' experiences before and after their child's participation in such programs.

Methods: (1) Case Studies: Children were first diagnosed by an ophthalmologist, with the consent of their parents or guardians. Abnormalities in binocular visual function and visual performance deficits were then identified by optometrists. Changes in binocular visual functions and visual perception were monitored throughout the rehabilitation period. (2) In-depth Interviews: A narrative approach within a qualitative framework was adopted. Caregivers who participated in the visual rehabilitation programs were interviewed, and data were thematically analyzed.

Results: (1) Case Studies: Three children exhibited amblyopia, strabismus, impaired stereopsis, and functional challenges such as frequent falls, stair missteps, body tilt, head misalignment, reading difficulties, crowding effects, and trouble with visual search in complex environments. Following the program, amblyopia resolved, eye alignment improved, and stereopsis was restored. These improvements remained stable post-intervention, along with reduced daily life difficulties. (2) In-depth Interviews: Caregivers emphasized that visual ability extends beyond acuity. For children with non-refractive visual issues, understanding visual functions and visual performance are essential. Well-structured rehabilitation, paired with effective communication, not only improves visual functions but also eases daily challenges, enhancing learning and psychological well-being.

Conclusion: Beyond occlusion therapy, strabismus surgery, and conventional visual training, visual rehabilitation can further enhance treatment outcomes. Early intervention, strong family support, and multidisciplinary collaboration are key to successful rehabilitation.

Keywords: Special Education, Visual rehabilitation, Visual Function, Family Support, strabismus and amblyopia

197 - P65

VISUAL REHABILITATION IN AN INFANT WITH ANIRIDIA

Ana Balta Rodriguez[1], Silvia Lawlor[1], Claudia Alvarez Schwarzkopf[1]
[1]Consultorio, Montevideo, Uruguay

Purpose: Rehabilitation of a patient with low vision in early childhood through visual stimulation and integration of the other senses.

Methods: Patient seen (1st time) at 5 months of age. An examination of the fundus,retina and peripheral retina was performed, showing both optic nerves pale with pigment deposits, right eye with incomplete aniridia, asymmetrical in both eyes, with wandering movements and nystagmus. Visual evoked potential tests were performed on 2 occasions during treatment. On examination there is partial following, with a noticeable decrease in wandering, nystagmus persists (horizontal, moderate amplitude, with rapid phase to the left),when stimulated with light is (1 led in dim light), how the patient looks at 60 cm. Together with parents and treating ophthalmologists, rehabilitation treatment is started, which I plan and carry out in my capacity as an ophthalmologist. With not only visual stimulation games, but also the of positive lenses with a filter. Potentials performed in 2019 at over 36 months of age were reported to evidence bilateral normal electrophysiological cortical activity. Refraction was adjusted after the pandemic, the patient currently continues schooling, the performance of computerized visual field, HRT or OCT being pending. In addition to testing electronic aids.

Results: Starting from 3 months of treatment, an increased ability to fixate and follow the object with or without light is obtained. With one year of treatment – an increase in visual field width is observed at a distance greater than 60 cm with the patient's positive lenses with filter.

Conclusions: Shows the great help of integral stimulation in conjunction with optical aids (positive lenses and filter) obtaining qualitative improvement with the preferential looking test. In addition to the evoked potentials report. The patient is currently attending school with some difficulty and has specialized teachers A genetic study was requested to rule out whether it belongs to the group of rare diseases.

Key words: stimulation;rehabilitation.

421 - P67

VISUAL TELEREHABILITATION IN ADULTS WITH LOW VISION

Antonella Panizzi[1], Valentina Facchini[1], Sven Groenhoff[1]
[1]Fondazione David Chiossone, Genoa, Italy

Purpose: Telerehabilitation allows individuals to benefit from remote rehabilitation services with the support of new technologies.

Methods: A tablet or laptop is used to perform visual exercises at home. Requirements: a visual acuity ≥ 1/20 and a good familiarity with computer devices. The rehabilitation program is performed asynchronously, i.e. in remote control under specialist supervision.

Results: A predefined set of exercises is performed for 20 to 45 minutes a day, five days a week, over a period of 4 weeks. The exercise program encourages simple and complex discrimination, fixation, visual hooking, saccades, tracking, hand-eye coordination and reading rehabilitation. The results are determined by correctness, precision, speed and completeness. A final in-person session is scheduled to evaluate the impact on vision and satisfaction.

Conclusions: Personalized visual telerehabilitation appears to increase motivation and encourage adherence to the rehabilitation program, even among younger and busier patients.

1035 - P68

STATISTICAL DATA FROM THE VISUAL MONITORING PROGRAM IN EARLY INTERVENTION AT THE INSTITUTO DE CEGOS DA BAHIA IN SALVADOR, BAHIA, BRAZIL

Ana Carine Martinez[1], Patricia Lima[1], Maria de Fátima Góes[2]
[1]Visual Rehabilitation, [2]Medical Coordinator, Instituto de Cegos da Bahia, Salvador, Brazil

Purpose: The present study aims to identify the number of children born preterm after hospital discharge who were part of the Follow Up Program of the Instituto de Cegos da Bahia, non-profit social organization that serves people with visual impairments located in the city of Salvador, Bahia, Brazil, between 2023 and 2024, were discharged from the program and are only undergoing ophthalmological monitoring, and those who entered visual rehabilitation.

Methods: Cross-sectional study, using the database of Instituto de Cegos da Bahia in 2023 and 2024, on the number of preterm children treated after hospital discharge by the team of pediatric ophthalmologists referred to the Follow Up program, and how many entered rehabilitation after the program was implemented.

Results: The number of preterm children who participated in the Follow Up program was 28 children in 2023 and 26 in 2024. From this number, the equivalent of 10 children in 2023 and 11 in 2024, which represents a percentage of 35.71% in 2023 and 42.30% in 2024, entered rehabilitation/habilitation for monitoring by the multidisciplinary team at the Therapeutic Care Center of Instituto de Cegos da Bahia.

Conclusions: The results show that a significant portion of preterm infants after hospital discharge who were assisted by the team of pediatric ophthalmologists at Instituto de Cegos da Bahia and who were being monitored by the Follow Up program, entered multidisciplinary rehabilitation/habilitation. This fact reinforces the need for public health agencies to have vision screening systems with specialized ophthalmologists in all maternity hospitals, offering better care and adequate monitoring during prenatal care, childbirth and for this population's segment. The purpose here is to identify and intervene earlier in complications of visual functions and neuropsychomotor development, in addition to improving quality of life.

1026 - P69

NON-INVASIVE BRAIN STIMULATION COULD ENHANCE VISUAL PERCEPTION IN STROKE PATIENTS

Luis Leal Vega[1], Adrián Martín Gutiérrez[1], Antonio Dueñas Laita[1,2], Marta Ruiz Mambrilla[3], Jorge León Morales Quezada[4], David García Azorín[1,5], Juan Francisco Arenillas Lara[1,6], Maria Begoña Coco[1]

[1]Department of Medicine, Dermatology and Toxicology, [3]Ophthalmology, Otorhinolaryngology and Physical Therapy, Department of Surgery, University of Valladolid, Valladolid, Spain; [2]Clinical Toxicology Unit, Hospital Universitario Río Hortega, Valladolid, Spain; [4]Department of Physical Medicine and Rehabilitation, Spaulding Rehabilitation Hospital, Boston, USA; [5]Department of Neurology, Hospital Universitario Río Hortega, Valladolid, Spain; [6]Department of Neurology, Hospital Clínico Universitario de Valladolid, Valladolid, Spain

Purpose: To explore the efficacy of non-invasive brain stimulation (NIBS), alone or in combination with other therapies, to improve visual perception in stroke patients.

Methods: A systematic review and meta-analysis were conducted according to Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. PubMed, Scopus, Web of Science (WoS) and the Cochrane Central Register of Controlled Trials (CENTRAL) were searched for Randomised controlled trials (RCTs) evaluating the efficacy of NIBS in improving visual perception outcomes in stroke patients from database inception until August 2024. Meta-analyses, risk of bias assessment and forest and funnel plots were performed using Review Manager software (RevMan) and the certainty of evidence was assessed using GRADEpro GDT. This review is registered in the PROSPERO international prospective register of systematic reviews (CRD42024594263).

Results: A total of 7 RCTs met eligibility criteria, of which 6 had data available for meta-analysis. Random effects meta-analyses showed that NIBS versus sham stimulation had a large effect size on visual perception in stroke patients as determined by the Motor-free Visual Perception Test (MVPT) (4 RCTs, n = 124, 82 males, 42 females; SMD [95% CI]: 0.83 [0.48 ± 1.19]; I2: 0%). Random-effect meta-analysis also showed that NIBS combined with other therapies versus the other therapies alone had a large effect size on visual perception in stroke patients as determined by the MVPT (2 RCTs, n = 32, 14 males, 18 females; SMD [95% CI]: 1.20 [-0.42 ± 2.82]; I2: 70%). The risk of bias of the included studies was high mainly because there were concerns about allocation concealment and lack of blinding of participants, personnel and outcomes. The funnel plot of the included studies appeared symmetrical, indicating no publication bias.

Conclusions: There is evidence of low certainty in favour of NIBS compared to sham stimulation and of very low certainty in favour of NIBS combined with other therapies compared to the other therapies alone for the improvement of visual perception in stroke patients. These findings merit further research given the paucity of therapies available to improve visual perception deficits in stroke patients.

1038 - P70

A CLINICAL EVALUATION OF A VIRTUAL REALITY HEADSET-BASED VISUAL FIELD TEST COMPARED TO STANDARD AUTOMATED PERIMETRY IN HEALTHY VOLUNTEERS AND GLAUCOMA PATIENTS

Maribel Espinosa-Cabrera
University of Edinburgh , Edinburgh, United Kingdom

Purpose: To evaluate the feasibility and test-retest reliability of PeriVisions virtual reality head-mounted display compared to a Humphrey Field Analyser in healthy volunteers and glaucoma patients.

Methods: A dual-centre study was conducted at Glasgow Caledonian University and Falkirk Community Hospital. A total of 106 eyes from 53 healthy participants were tested, along with 6 eyes from 3 patients with glaucoma. All participants underwent visual field testing using both PeriVision's virtual reality (VR) headset (using the SORS 20 test on the VisionOne platform) and the Humphrey Field Analyser (HFA) with the 24-2 SITA-STANDARD protocol on the same day. Following the tests, participants completed two patient perception feedback questionnaires. Healthy volunteers returned for a second testing session on a separate day within a three-month period, allowing for the assessment of the PeriVisions test-retest reliability. Outcome measures included threshold sensitivities, test-retest variability, and test time comparisons. In addition, patients persepectives were explored through satisfaction questionnaires.

Results: 93% of participants felt they would be able to carry out the visual field testing at home independently or with help. 76% of participants found the VR glasses comfortable. The Bland-Altmann analysis for threshold values showed a mean difference of 0.13dB (SD = 2.5) with a 95% confidence interval of [5.03, -4.78]. The test-restest correlation coefficient for threshold sensitivity was r = 0.68. The PeriVision headset demonstrated a significantly faster mean test time (1.83 minutes) compared to the HFA (4.66 minutes), with a statistically significant difference ($p<0.0001$).

Conclusions: This study demonstrates that the PeriVision headset provides accurate visual field measurements, with significantly shorter test times and improved user comfort compared to traditional HFA testing.

POSTER SESSION 2A-2B

515 - P71

A VIRTUAL REALITY ITERATIVE DIGITAL COVER TEST FOR STRABISMUS ASSESSMENT

Federico Ferracini[1], Francesca Peveri[1], Carlo Catti[2], Aldo Vagge[2], Agostino Gibaldi[3], Andrea Canessa[1], Silvio P. Sabatini[1]

[1]DIBRIS, [2]DINOGMI, University of Genoa, Genoa, Italy; [3]DIEF, University of Modena and Reggio Emilia, Modena, Italy

Purpose: A novel, iterative digital cover test for assessing strabismus using a virtual reality (VR) setup with an embedded eye-tracking system is proposed. The protocol aims to automate the test, providing a quantitative and repeatable measurement of the strabismus angle by dynamically adjusting virtual stimuli on the basis of real-time eye-tracking data.

Methods: The protocol was developed and tested in a VR setup using an HTC Vive Pro Eye headset equipped with a Tobii eye tracker for gaze estimation. The VR environment was developed in Unity to present controlled visual stimuli and measure the response of each eye to occlusion conditions. Six participants with clinically diagnosed strabismus completed the digital cover test. The procedure involved alternating monocular occlusion conditions, during which participants fixated on a target while their eye movements were tracked. The offset of the target virtual stimuli position that simulates prism dioptres correction was progressively modified to iteratively refine the measurement, until a convergence condition is achieved, providing an implicit measure of the eye misalignment. The collected gaze data were analysed to determine the deviation angle before and after iterative compensation. The results were compared with conventional prism cover test measurements performed by clinical experts.

Results: The iterative refinement process led to a progressive reduction in deviation, providing a final compensation value. The number of trials required for convergence ranged from a minimum of three to a maximum of nine, with each trial lasting nine seconds. Therefore, the total test duration was at most approximately one and a half minutes.

Conclusion: Our iterative digital cover test represents a robust approach for automated strabismus assessment in VR environments. Number of trials and the total test duration demonstrated the method's efficiency compared to standard clinical procedures. This tool has the potential to complement traditional methods, offering a fast and standardized protocol for both research and clinical applications.

215 - P72

ASSESMENT OF FULL-FIELD STIMULUS THRESHOLD TEST RESULTS IN STARGARDTS' DISEASE: CORRELATIONS WITH FULL- FIELD ELECTRORETINOGRAPHY, MULTIFOCAL ELECTRORETINOGRAPHY AND OPTICAL COHERENCE TOMOGRAPHY

Zekeriya Cetinkaya[1], Neslihan Sinim Kahraman[2], Ayse Öner[3]

[1]Ophthalmology, Kayseri State Hospital, Kayseri, Turkey; [2]Acibadem Health Group, Istanbul, Turkey; [3]Ophthalmology, Acibadem Health Group, Kayseri, Turkey

Purpose: The aim of this study is to evaluate the results of the Full-Field Stimulus Threshold (FST) test in patients with Stargardts' disease (STGD), and to compare these results with those from other ophthalmological tests.

Methods: Twenty-six patients with STGD and 26 control subjects were included in the study. After a routine eye examination, all participants underwent optical coherence tomography, full-field and multifocal electroretinography, and FST testing. The FST test provides a measurement of retinal sensitivity thresholds in decibels (dB) for white, blue and red light presented through full-field stimulation.

Results: The mean age of the study group was 29.3 years, while the mean age of the control group was 27.1 years. All participants successfully completed the FST test. Visual acuity and central macular thickness (CMT) were significantly lower in the STGD group compared to the control group. Analysis of the multifocal electroretinography results showed that mean P1-wave amplitudes were significantly lower and mean P1-wave peak times were longer in all rings in STGD patients compared to controls. Additionally, the FST test values for white, blue and red light were significantly lower in the STGD group than in the control group. Correlation analyses revealed a positive relationship between all FST test results and visual acuity, mfERG amplitudes and CMT, individually.

Conclusions: The FST test is a simple, reliable and rapid test that is suitable for individuals with poor visual acuity. It effectively measures retinal sensitivity in patients with STGD. We believe that due to its simplicity, the FST test can be safely used to monitor the outcomes of treatments for inherited retinal diseases.

47 - P73

ASSESSING FUNCTIONAL VISION USING EYE-TRACKING IN PEOPLE WITH VISUAL AND INTELLECTUAL DISABILITIES

Minke de Boer[1, 2], Frans Cornelissen[1], Aly Waninge[2, 3, 4]

[1]Laboratory of Experimental Ophthalmology, University Medical Center Groningen, Groningen, The Netherlands; [2]Royal Dutch Visio - Centre of Expertise for Blind and Partially Sighted People, Huizen, The Netherlands; [3]Hanze University of Applied Sciences, Allied Health Care and Nursing, Groningen, The Netherlands; [4]University Medical Center Groningen, Health Psychology, Groningen, The Netherlands

Purpose: It is currently difficult to gain insight into the visual abilities of those with combined visual and intellectual disabilities. On one hand, this is because conventional vision tests provide little information on people's functional vision. On the other hand, these conventional tests are generally too complicated and fatiguing to perform for this population. Therefore, the aim of this study was to test the feasibility of using simple tests combined with eye-tracking to gain insight into the visual abilities of people with combined disabilities.

Methods: We evaluated eye movements in three participants with combined visual and intellectual disabilities (aged 24, 33, and 39 years). Three tasks were used, increasing in difficulty: free viewing while interacting with a caregiver, movie viewing, and visual stimulus tracking. Eye movements were recorded with a Pupil Invisible mobile eye-tracker. Data were analysed using custom scripts to determine basic eye movement parameters (e.g. saccadic frequency and amplitude) as well as time spent looking at people (during free viewing).

Results: With regards to feasibility, we found that the free viewing task worked best for provoking goal-directed eye movement. During the movie viewing and visual stimulus tracking it was difficult for two of the participants (with more severe intellectual disabilities) to keep their gaze on screen, also reflected by frequent saccades and head movements during these tasks. Importantly, none of the participants objected to wearing the eye-tracker. During free viewing, we found that the third participant spent most of their time looking at caregivers, likely reflecting their interaction with them, while the others also spent much time looking elsewhere (objects, walls, ceilings, their hands). Notably, therapists indicated that simply viewing the eye-tracking material already provides useful insight into the participant's preference for certain objects, and their stress and fatigue levels.

Conclusions: Overall, we found that mobile eye-tracking combined with a suitable task could be a fast and easy tool for screening the visual abilities of people with combined visual and intellectual disabilities. However, more research is needed to design better analyses as well as suitable tasks that are both feasible for the participant and provide useful information.

393 - P74

ASSESSMENT OF OVERALL FUNCTION IN LOW VISION PATIENTS USING WHO DISABILITY ASSESSMENT SCHEDULE 2.0, CHINESE-VERSION LOW VISION QUALITY OF LIFE QUESTIONNAIRE, AND INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH REHABILITATION SET

Zhiyong Meng[1, 2, 3], Yang Yu[1, 2], Tongtong Wei[2, 4], Jianmin Hu[1, 2]

[1]The Second Affiliated Hospital of Fujian Medical University, Quanzhou, China; [2]Engineering Research Centre of Assistive Technology for Visual Impairment, Fujian Province University, Quanzhou, China; [3]Shaowu Municipal Hospital of Fujian Province, Nanping, China; [4]The School of Medical Technology and Engineering, Fujian Medical University, Fuzhou, China

Purpose: To evaluate the applicability of World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), Chinese-version Low Vision Quality of Life Questionnaire (CLVQOL), and International Classification of Functioning, Disability and Health Rehabilitation Set (ICF-RS) in low vision patients, focusing on their reliability, validity, and demographic adaptability. These tools were selected to address gaps in existing assessment for vision impaired rehabilitation: WHODAS 2.0 (generic disability framework), CLVQOL (vision-specific functional limitations), and ICF-RS (based on ICF standards, but not yet applied to visual impairment).

Methods: A cross-sectional study included 84 low vision patients. Participants were assessed using three tools: WHODAS 2.0 (cognition, mobility, self-care, getting along, life activities, participation), CLVQOL (general vision, mobility and lighting, psychological adjustment, reading and fine work, activities of daily living), and ICF-RS (body function, activity and participation). Cronbach's α and KMO test evaluated internal consistency, construct validity for each domain separately, and demographic and clinical factors were analyzed.

Results: Reliability: WHODAS 2.0 (Cronbach's α coefficients > 0.7) and CLVQOL (Cronbach's α coefficients > 0.8) demonstrated robust consistency; ICF-RS "body function" was age-dependent, with Cronbach's α coefficients > 0.8 in over 60 years old patients but < 0.6 for younger individuals. Validity: CLVQOL and ICF-RS "activity and participation" were suitable for factor analysis. Age significantly impacted "cognition", "getting along" in WHODAS 2.0 and "activity and participation" in ICF-RS. Occupations of patients revealed statistically significant differences in WHODAS 2.0 "getting along", CLVQOL "psychological adjustment", and ICF-RS "activity and participation". Variance analysis between the marital status of patients and scales showed statistically significant differences in WHODAS 2.0 "getting along", CLVQOL "psychological adjustment" and ICF-RS "activity and participation". Significant differences were found in WHODAS 2.0 "self-care", "getting along" and "participation", CLVQOL "psychological adjustment", and ICF-RS "activity and participation" across different etiologies of patients. There were significant differences among all domains of three scales in degree of visual impairment.

Conclusions: CLVQOL and WHODAS 2.0 are suitable for multidimensional assessment across ages, while ICF-RS is optimal for elderly populations due to its focus on activity limitations. Tool selection should integrate age, etiology, and degree of visual impairment to optimize rehabilitation strategies.

370 - P75

ASSESSMENT OF OVERALL FUNCTIONAL STATUS APPLYING WHO DISABILITY ASSESSMENT SCHEDULE 2.0 IN PATIENTS WITH LOW VISION DUE TO DIABETIC RETINOPATHY

Miaoling He[1, 2, 3], Yang Yu[1, 2], Jian bo Yao[1, 2], Jianmin Hu[1, 2]

[1]The Second Affiliated Hospital of Fujian Medical University, Quanzhou, China; [2]Engineering Research Centre of Assistive Technology for Visual Impairment, Fujian Province University, Quanzhou, China; [3]Eye Institute and Affiliated Xiamen Eye Center of Xiamen University, Xiamen, China

Purpose: To explore the feasibility of applying WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) in patients with low vision due to diabetic retinopathy, and to analyze overall functional status of these patients using WHODAS 2.0, providing a basis for their rehabilitation treatment and improvement of quality of life.

Methods: A cross-sectional study design was employed, involving 120 patients with low vision due to diabetic retinopathy. Overall functional status and quality of life were assessed using WHODAS 2.0 and Chinese-version Low Vision Quality of Life Questionnaire (CLVQOL) through face-to-face questionnaires and telephone follow-ups. Data analysis included reliability (internal consistency and test-retest reliability), validity (empirical and construct validity), normality tests, and linear regression analysis of factors with significant differences in ANOVA analysis.

Results: WHODAS 2.0 demonstrated high levels of reliability and validity. Specifically, internal consistency reliability (Cronbach's α coefficients > 0.7) and test-retest reliability (correlation coefficients > 0.7) were both at high levels. In terms of validity, empirical validity ($P < 0.01$) and construct validity (average variance extracted > 0.5; construct reliability > 0.7) were also at high levels. The total score and scores of each dimension of WHODAS 2.0 were normally distributed. Correlation analysis with the WHODAS 2.0 scores revealed significant differences in gender, age, occupation, duration of diabetes, glycemic control methods, and presence of complications. Linear regression analysis indicated that the duration of diabetes had a significant positive impact on WHODAS 2.0 total score.

Conclusions: WHODAS 2.0 is suitable for assessing the quality of life and overall functional status of patients with low vision due to diabetic retinopathy and has good reliability and validity. The duration of diabetes mellitus has a significant impact on the overall functional status of these patients.

510 - P76

ENHANCING EYE-TRACKING ACCURACY THROUGH A CUSTOM MONOCULAR CALIBRATION METHOD IN VIRTUAL REALITY

Federico Ferracini[1], Francesca Peveri[1], Carlo Catti[2], Aldo Vagge[2], Agostino Gibaldi[3], Andrea Canessa[1], Silvio P. Sabatini[1]

[1]DIBRIS, [2]DINOGMI, University of Genoa, Genoa, Italy; [3]DIEF, University of Modena and Reggio Emilia, Modena, Italy

Purpose: Standard calibration methods inherently assume a normally functioning binocular system, which may lead to suboptimal performance for individuals with binocular vision disorders. We developed a custom monocular calibration method to enhance eye-tracking accuracy, specifically addressing the limitations of proprietary closed-system calibrations. Our approach improves accuracy in healthy subjects and ensures reliable gaze data for individuals with binocular impairments.

Methods: Eye-tracking data were collected during a custom fixation task developed in Unity. The proposed method was tested in a virtual reality (VR) setup using an HTC Vive Pro Eye headset equipped with a Tobii eye tracker for gaze estimation. Eight participants with binocular pathologies and eight control subjects completed the task after undergoing proprietary calibration. The task included 9 fixation targets at radial distances (11°) with eight orientations and the primary position. Targets were bullseye (3° gray outer disk with a 0.5° inner black dot), presented monocularly. Participants fixated on the dot and pressed a trigger to record 1 second of data for each fixation. Then participants completed the task after undergoing our custom calibration. A co-registering algorithm and a quadratic lens distortion model were used to calibrate gaze data. The recorded gaze data were projected onto the camera image plane, and fixation centroids were computed. These were paired with their target projections to create datasets for analysis and finally RMSE was calculated for each eye. The RMSE was first calculated after the binocular proprietary calibration and then recalculated after our custom monocular calibration.

Results: The proposed monocular calibration improved accuracy and consistency, as shown by RMSE values calculated after both calibrations for pathological and control subjects. Initial RMSE values of 3.5548° ± 3.2330° (left) and 1.8237° ± 2.0523° (right) improved to 0.9301° ± 0.3645° and 0.8285° ± 0.4661°, respectively, ensuring significant accuracy improvement for pathological subjects, with smaller yet present gains in controls.

Conclusions: This custom monocular calibration method enhances gaze data accuracy by overcoming the constraints of closed-system calibration. It offers a robust and practical solution for individuals unable to perform binocular fixation tasks, broadening the applicability of VR eye tracking in both clinical research and therapeutic interventions.

175 - P77

HOW DO PEOPLE WITH DIFFERENT LEVELS OF VISION LOSS ESTIMATE DISTANCES OF DIFFERENT SOUND SOURCES STIMULI?

Shahina Pardhan[1], Andrew Kolarik[2], Silvia Cirstea[3], Rajiv Raman[4], Saranya Velu[4], Brian Moore[5]

[1]Vision and Eye Research Institute, Anglia Ruskin University, Cambridge, United Kingdom; [2]University of East Anglia, Norwich, United Kingdom; [3]School of Computing and Information Science, Anglia Ruskin University, Cambridge, United Kingdom; [4]Sankara Nethralaya Eye Hospital, Shri Bhagwan Mahavir Vitreoretinal Services, Chennai, India; [5]Vision and Eye Research Institute, University of Cambridge,Cambridge, United Kingdom

Purpose: It has been shown that loss of vision does not always lead to better hearing. Some tasks show higher performance and others show lower performance. This study looks at the effect of the severity of vision impairment and the duration of vision impairment.

Methods: Thirty eight participants (18-31 years of age) of different levels of severity (mild, moderate, severe), were presented with static sounds in a simulated environment at virtual distances that ranged from 1.2m to 13.8m. Three different types of stimuli were presented: noise, music and speech in either an anechoic (no echoes) or reverberant (with echoes) environments. Data were compared to eighteen aged matched normals. Participants reported the estimated distance of the sound source. Each participant took part in 480 trials.

Results: A mixed-model ANOVA showed main effects of visual status ($p < 0.001$), distance ($p < 0.001$), and stimuli ($p < 0.001$) Significant interactions were shown between distance and visual status ($p < 0.001$). Participants with more severe vision loss estimated the distances of the sound sources to be further away that those with lower severity. Age matched normal subjects showed the most veridical distance estimation at closer distances for speech and music stimuli in both anechoic and reverberation environments.

Conclusions: As the severity of visual impairment increased, accuracy decreased for closer sounds. This suggests a need for rehabilitation support to enable correct estimation of sound source distances for people with vision loss. The association with the duration of vision loss is not as clear and needs further research.

482 - P78

INTEGRATING VISION REHABILITATION AS PART OF NEUROREHABILITATION IN ACQUIRED BRAIN INJURIES IN NEUROLOGICAL RECOVERY

Valeria Silvestri[1], Margherita Guidobaldi[1], Paola Piscopo[1], Marco Sulfaro[1], Francesca de Rossi[1], Augusto Fusco[2], Luca Padua[2], Filippo Amore[1], Simona Turco[1]

[1]National Centre of Service and Research for the Prevention of Blindness and Vision Rehabilitation of the Visually impaired- IAPB ETS, [2]UOC Neuroriabilitazione ad Alta Intensità, Fondazione Policlinico Universitario A. Gemelli, IRCCS, Rome, Italy

Purpose: Acquired brain injuries (ABI) represent one of the main contributors of lifelong disability limiting a person's daily living activities. To date, vision impairment after ABI is often overlooked due to poor competency and vision rehabilitation is not included in neurological rehabilitation recovery. The aim of this study was to show the integration of an interdisciplinary approach including vision rehabilitation program in NeuroRehabilitation Unit in order to improve assessment, rehabilitation and follow-up of visually impaired after ABI.

Methods: This is a retrospective electronic medical record review from March 2024 to August 2024 at Fondazione Policlinico Agostino Gemelli (Rome, Italy), elucidating descriptive data of patients with ABI with vision impairment. Patients hospitalized on NeuroRehabilitation Unit, due to ABI and receiving low vision rehabilitation consultation were included. Demographic and clinical characteristics, diagnoses, best corrected visual acuity (BCVA) examined with LEA gratings, contrast sensitivity evaluated with Lea low contrast grating, visual field defect (VFD) and vision rehabilitation strategies were retrospectively analyzed.

Results: In all, 6 ABI inpatients, mean age: 56.3 (±13.9), were evaluated by low vision rehabilitation therapists. The dominating reasons for referral were compensating and visual processing training due to visual field defect and consultant for low vision aids. The ischemic stroke (50%) was the most common neurologic disorder. Mean BCVA was 12.00c/°(±0.02) for the right eye and 10.08c/°(±0.1) in the left one. Visual field defect examination revealed homonymous hemianopia in 67% of the sample. Oculo-motor dysfunction as diplopia was managed in 2 (67%) patients. One patient was trained with compensating strategies aimed at improving visual exploration, visual attention, visuospatial memory and reading. Improvements in timing and accuracy for detecting the light stimuli were found during the post training evaluation when compared to the baseline measurements.

Conclusions: The integration of vision rehabilitation can lead to improved vision functions, health benefits, and quality of life in ABI survivors. Eye movement and compensating training seem to improve visual search response times and saccades efficiency. People with ABI need access to multidisciplinary vision rehabilitation services that should to be organized and integrated within the whole system of health and social care.

553 - P79

INVESTIGATING INHERITED RETINAL DISEASES IN A GREEK POPULATION: FUNCTIONAL VISION PARAMETERS AND DEMOGRAPHIC CHARACTERISTICS

Stavroula Almpanidou[1], Diamantis Almaliotis[1], Anna Nikolaidou[1], Persefoni Talimtzi[1], Theodosis Chatziballis[1], Vasileios Karampatakis[1]

[1]Program LIFE4LV-Laboratory of Experimental Ophthalmology, School of Medicine, Aristotle University of Thessaloniki, Greece, Thessaloniki, Greece

Purpose: Inherited Retinal Diseases (IRDs) represent a heterogeneous group of genetic retinal disorders that lead to progressive vision loss. Although IRDs usually affect visual acuity (VA), the assessment of additional functional vision parameters, such as color vision and contrast sensitivity (CS), has gained increasing clinical importance in the context of ongoing clinical trials. This study aims to evaluate the color vision and CS of individuals with IRDs, while also documenting their demographic characteristics in a Greek population.

Methods: This observational study was conducted at the Laboratory of Experimental Ophthalmology, Aristotle University of Thessaloniki, between 2019 and 2022. Patients diagnosed with IRDs underwent a thorough ophthalmologic examination, including the assessment of best-corrected visual acuity (BCVA) using the ETDRS chart, evaluation of color vision with the Richmond H-R-R and Ishihara tests, and CS measurement using the Pelli–Robson test at 1meter. Additionally, demographic data were recorded. Descriptive statistics were employed for data analysis.

Results: A total of 44 patients (n = 78 eyes) were examined and the mean age was 50.5 years (range: 34–61), with 56.8% being female. Retinitis Pigmentosa (RP) was the most common IRD (50%), followed by Stargardt's disease (27.3%) and cone-rod dystrophy (6.8%). The mean BCVA was 0.66 logMAR, with 70.4% of participants classified as having moderate low vision according to WHO criteria. Color vision was severely impaired, with a median H-R-R test score of 1/6 and Ishihara 4/24 plates. Furthermore, CS was significantly impaired, with a median Pelli–Robson score of 1.3 logMAR. Interestingly, patients with RP were found to have more preserved CS ($p = 0.003$) than patients with Stargardt's and cone rod dystrophy, albeit more severely impaired color vision ($p = 0.019$).

Conclusions: The most common IRD in this cohort was found to be RP followed by Stargardt's disease. This study also highlights that individuals with IRDs and moderate visual impairment in terms of VA, experience significant deficits in color vision and CS. CS and color vision provide valuable clinical information regarding the visual status of patients with IRDs and thus, they could serve as a valuable, secondary clinical endpoint to monitor visual function in these patients.

12 - P80

MICROSACCADIC PHASE SIGNATURE: AN OBJECTIVE MARKER OF VISUAL FIELD DEFECTS IN HOMONYMOUS HEMIANOPIA AFTER STROKE

Ying Gao[1], Huiguang He[1], Bernhard Sabel[2]

[1]Institute of Automation, Chinese Academy of Sciences, Beijing, China; [2]Otto-von-Guericke University of Magdeburg, Magdeburg, Germany

Purpose: In addition to visual field defects, patients with homonymous hemianopia (HH) demonstrate disrupted saccadic eye movement patterns, including disturbances of the small microsaccades critical for normal vision. This study aims to elucidate the relationship between microsaccadic disturbances in HH and the visual field function of patients across regions with varying degrees of defect depth.

Methods: The eye position data in 15 patients with HH (1 female, age: 57.6 ± 12.3) and 15 controls (4 female, age: 55.9 ± 13.1) were recorded during visual field testing. Microsaccade features and dynamics were measured and compared between both groups. The mutual impacts of microsaccades and visual field function in HH were evaluated. Support vector machines were trained to characterize the visual field defects in HH based on microsaccade rate dynamics.

Results: Compared to controls, patients with HH showed greater fixation instability, enlarged microsaccade amplitude and increased microsaccade velocity during visual field testing. Considering the temporal component of microsaccade dynamics, patients exhibited prolonged and stronger microsaccadic inhibition in the sighted areas, postponed and stronger microsaccadic inhibition in areas of residual vision (ARVs) compared to controls. Meanwhile, a rebound effect was evident in the sighted areas but absent in the ARVs and blind areas. Considering the spatial component of microsaccade dynamics, microsaccades surviving the inhibition were more attracted toward the stimulus, whereas microsaccades after the inhibition were notably directed away from the stimulus in controls. Such a pattern of microsaccade direction dynamics was not observed in any visual field sectors in HH. Based on the microsaccadic phase signature underlying microsaccade rate dynamics, we characterized patients' visual field defects and identified areas of residual vision inside both the blind and sighted hemifields.

Conclusions: Dissociated temporal and spatial impairments of microsaccade dynamics suggest multi-fold impairments of the visual and oculomotor networks in HH. The microsaccadic phase signature triggered by visual stimuli can be utilized to assess the visual field defects in HH. By providing an objective marker of visual field function and identifying partially damaged visual function, this method has potential in providing supplementary information for rehabilitation and visual field monitoring in HH.

187 - P81

NEUROPHYSIOLOGICAL INDICATORS IN PATTERN VISUAL EVOKED POTENTIAL (P-VEP) FOR PREDICTING AMBLYOPIA

Jong Soo Lee[1, 2], Myung Ho Cho[1], Jae Hyun Kim[1], Ji Hoon Ban[3]

[1]Pusan National University Hospital, Busan, South Korea; [2]Pusan National University School of medicine, Busan, South Korea; [3]Inje University Hospital, Busan, South Korea

Purpose: This study aims to identify key neurophysiological markers predictive of amblyopia by comparing Pattern Reversal Visual Evoked Potential (PR-VEP) test results between amblyopic and normal eyes.

Methods: We conducted a retrospective analysis of PR-VEP tests from 24 patients with unilateral amblyopia. Key measures included latencies (N75, P100, N135 in milliseconds) and amplitude potentials (N75-P100, P100-N135 in microvolts). Data analysis involved independent sample t-tests and logistic regression

Results: Amblyopic eyes showed significant delays in N75 and P100 latencies ($p = 0.002$ and $p < 0.001$, respectively) and decreased amplitudes in N75-P100 and P100-N135 ($p < 0.001$). Specifically, reductions in N75-P100 amplitude were significantly associated with amblyopia (OR = 0.456, $p = 0.049$). N135 metrics did not significantly predict amblyopia.

Conclusions: Delayed N75 and P100 latencies, alongside reduced N75-P100 amplitude potentials, are reliable PR-VEP indicators for diagnosing amblyopia. The findings underscore the N75-P100 amplitude reduction as a particularly strong predictor, enhancing diagnostic protocols for amblyopia through neurophysiological assessment.

385 - P82

PRELIMINARY RESULTS ON THE USE AND INTERPRETATION OF INTELLIGENCE TESTS FOR ADULTS WITH VISUAL IMPAIRMENTS: A LITERATURE REVIEW

Cynthia Lamper[1], Edine van Munster[1], Marit van Buijsen[1]
[1]Robert Coppes Stichting, Vught, The Netherlands

Purpose: Standardized guidelines for administering and interpreting intelligence tests for adults with visual impairments (VI) are lacking. The administration, interpretation, and necessary adaptations of intelligence tests for this population is underexplored. This study aims to explore how these tests have been adapted and utilized globally within research.

Methods: An exploratory literature review was conducted using PubMed, PsycINFO, and Google Scholar, covering studies from November 2014 to November 2024. Studies focusing on adults (≥18 years) with VI were included if they described the use, administration, or interpretation of intelligence tests. After screening 2,894 studies based on titles and abstracts, 29 full-text articles were reviewed, resulting in 9 studies that met the inclusion criteria.

Results: The included studies employed diverse research designs, such as reviews, clinical studies, and case reports. The WAIS-IV, General Intelligence Score (GIS), OTIS-R, and Raven's Progressive Matrices-R, and subtests of the Wechsler Adult Intelligence Scale (WAIS-IV) (the Digit Span Subtest, short memory tests, similarities-R, Arithmetic-R, and letter-number sequencing) were used to determine intelligence. Common adaptations included replacing visual tasks (e.g., Block Design) with verbal comprehension tasks. Tactile versions (e.g., haptic stimuli with raised lines and braille) were explored but proved to be problematic due to the loss of holistic visual processing. Moreover, cognitive tests to measure practical IQ (such as the B-101 DV and Vineland-3) in adults with VI exist but those cannot be used to measure total-IQ. Nitzan et al (2024) found that VI, including mild and unilateral cases, is associated with reduced cognitive performance scores assessed in late adolescence measured with the GIS.

Conclusions: In adults with VI, test-takers adapt general IQ-tests by relying more on verbal and tactile strategies to compensate for visual limitations. However, the psychometric properties (reliability, validity) and norm scores of these adapted tests remain insufficiently studied. Additionally, adaptations are not always clearly described. Further research is essential to ensure the reliability and validity of these modifications. Insights from this literature review and interviews with psychologists working with this population will be integrated into a knowledge document with recommendations for standardized testing practices in the field of visual impairment.

348 - P83

PREVALENCE AND CLINICAL ASSOCIATIONS OF VISUAL MIDLINE SHIFT IN POST-STROKE INDIVIDUALS: PRELIMINARY FINDINGS

Amritha Stalin[1, 2], Ran Ding[2], Susan Leat[1, 2], Tammy Labreche[1, 2]

[1]University of Waterloo, Waterloo, Canada; [2]Centre for Eye and Vision Research Limited, Hong Kong, Hong Kong

Purpose: Visual Midline Shift (VMS) is a potential consequence of stroke and may contribute to orientation and mobility difficulties and increased falls risk. This study aims to determine the prevalence of VMS in stroke patients compared to non-stroke controls and explore its associations with visual field defects, cognitive impairment, history of falls, and other visual and physical variables.

Methods: A total of 46 participants were recruited to date), including 29 post-stroke individuals (mean age: 64.3 years, 55% male) and 17 age- and sex-matched controls (mean age: 63.5 years, 77% male). VMS was assessed using two horizontal and vertical alignment tasks (one with a clinical wand and the other with a mechanical gauge). Other perceptual tests measured Visual Open-Loop pointing (VOL), Line Bisection Test (LBT) and Subjective Straight-Ahead alignment (SSA). Additional assessments included visual field, the Montreal Cognitive Assessment (MoCA), balance, and postural assessments. The prevalence of VMS, defined as outside the normal range, was compared between stroke and control groups, and its association with other variables was analysed.

Results: Overall, there were no significant differences in the average values of MoCA, VMS (wand or gauge method), VOL or SSA between stroke and control groups. The variances of LBT and horizontal VMS at 50 cm were higher in the stroke compared to control group ($p<0.05$). A horizontal or vertical VMS was identified in 55% and 28% of stroke participants, compared to 24% and 18% of controls, respectively. The prevalence of horizontal VMS was similar between people with right versus left hemisphere stroke (53% and 54%), but vertical VMS was more common in right hemisphere strokes (47% versus 8%). Only five stroke participants had a visual field defect. No association was found between VMS and fall history.

Conclusions: Preliminary findings suggest that VMS is more prevalent in post-stroke individuals than in non-stroke controls, with vertical VMS having a higher prevalence in people with right-hemisphere stroke. Ongoing data collection will investigate associations between VMS, balance, and postural control.

294 -P84

PULFRICH EFFECT: DIAGNOSTICS CHALLENGES IN VISUAL PERCEPTION AND REHABILITATION

Jan Koopman[1]

[1]*Royal Dutch Visio, Rehabiliation and Advice - Amsterdam, Amsterdam, The Netherlands*

Purpose: To investigate the diagnostic complexities of the Pulfrich effect and its implications for visual impairment professionals, exploring the multifaceted neurological and optical mechanisms that complicate accurate perception and assessment.

Methods: The Pulfrich effect was induced by having participants without visual impairment judge the clarity of the phenomenon on a Likert scale when placing a grey filter in front of one eye. The effect was assessed under various factors:

- Distance
- Illumination
- Distraction
- Cognitive load

Results: The study revealed increased effects of the (induced) Pulfrich phenomenon:

- An increased effect for increasing illumination levels
- An increased effect for increasing viewing distance
- Variability in illusion strength under conditions when cognitive load was increased

Conclusions: Results indicate that the Pulfrich effect may significantly impact daily life, especially in outdoor environments such as mobility and leisure activities like ball games. The impact may be difficult to recognize and requires individualized assessment strategies. Clinicians should pay special attention during patient histories, focusing on situations known to be challenging in daily life, and adopt assessment procedures that facilitate the evaluation of the Pulfrich phenomenon.

472 - P85

READING PERFORMANCE AND EYE MOVEMENTS IN PEOPLE WITH LOW VISION DUE TO BILATERAL AGE-RELATED MACULAR DEGENERATION

Polona Zaletel Benda[1], Grega Jakus[2], Jaka Sodnik[2], Nadica Miljković[2, 3], Ilija Tanasković[3, 4], Smilja Stokanović[3], Natasa Vidovic Valentincic[1, 5], Polona Jaki Mekjavić[1, 5]

[1]Department of Ophthalmology, University Medical Centre Ljubljana, Ljubljana, Slovenia; [2]Faculty of Electrical Engineering, University of Ljubljana, Ljubljana, Slovenia; [3]University of Belgrade – School of Electrical Engineering, Serbia, Beograd, Serbia; [4]The Institute for Artificial Intelligence Research and Development of Serbia, Beograd, Serbia; [5]Medical Faculty, University of Ljubljana, Ljubljana, Slovenia

Purpose: To examine reading abilities and eye movements in people with visual impairment due to age-related macular degeneration (AMD) with eccentric fixation using an eye-tracking technique and microperimetry.

Methods: Seventeen individuals with bilateral AMD (7 males; mean age 77.5 ± 6.0 yrs) and 17 age-matched healthy controls (10 males; mean age 72.2 ± 6. yrs) were assessed for reading abilities – reading visual acuity, reading speed (MNREAD-SI), and contrast sensitivity (Pelli-Robson). The location and fixation stability on the preferential retinal locus (PRL) were assessed using microperimetry (NIDEK MP-3). All subjects underwent optical coherence tomography, autofluorescence, and fixation determination on MP-3. Eye movements were recorded using Tobii Glasses Pro 2 and analyzed for saccade amplitude, peak saccade velocity, number of saccades, saccade duration, and fixation duration.

Results: Subjects with low vision due to AMD had worse reading visual acuity ($p < 0.001$), slower reading ($p < 0.001$), and lower contrast sensitivity ($p < 0.001$). PRL was in the upper quadrant relative to the fovea in the majority of AMD subjects. Static fixation was stable in 8, relatively unstable in 7, and unstable in two low-vision subjects with AMD. In the control group, fixation was stable in the fovea. There was a statistically significant difference between all static fixation stability indices between both groups. Eye movement analysis showed only a boundary-significant difference in the number of saccades ($p = 0.05$) between the groups among all the parameters studied. According to Spearman and Pearson coefficients, the number of saccades was moderately cross-correlated to reading speed, reading visual acuity, and contrast sensitivity.

Conclusions: People with low vision due to bilateral AMD exhibit significant impairments in reading visual acuity, reading speed, and contrast sensitivity compared to healthy controls. Eye movement analysis revealed a significant difference in the number of saccades, which moderately correlated with reading performance indices. These findings enhance our understanding of reading adaptations in AMD and may inform rehabilitation strategies to improve reading efficiency in low-vision individuals.

391 - P86

RETINAL STRUCTURAL CHANGES IN INFANTS WITH HYPOXIC -ISCHEMIC ENCEPHALOPATHY UNDERGOING THERAPEUTIC HYPOTERMIA AND ASSOCIATION WITH NEONATAL BRAIN MRI

Lorenzo Orazi[1], Giulia Amorelli[1], Marta Galanti[1], Elisa Pede[2], Francesca Serrao[3], Francesca Gallini[4], Domenico Lepore[5], Filippo Amore[1], Daniela Ricci[1]

[1]National Center of Services and Research for the Prevention of Blindness and Rehabilitaiton of Visually Impaired, IAPB ETS, Rome, Italy; [2]Pediatric Neurology Unit, Fondazione Policlinico Universitario A. Gemelli, IRCCS, Rome, Italy; [3]Neonatal Unit Fondazione Policlinico A. Gemelli IRCCS, Rome, Italy; [4]Neonatal Unit Fondazione Gemelli Isola IRCCS, Rome, Italy; [5]Ophthalmological Unit Fondazione Policlinico A. Gemelli IRCCS, Rome, Italy

Purpose: To report retinal findings in patients with Hypoxic-ischemic encephalopathy (HIE) treated with therapeutic hypothermia (TH), and to investigate a possible correlation between retinal findings at birth and neonatal brain magnetic resonance imaging (MRI)

Methods: Single-center retrospective observational study. Consecutive infant patients with a gestational age of ≥ 35 weeks, and a body weight of ≥ 1800, from August 2020 and May 2023, with at least 6 months of follow-up underwent to OCT and Brain MRI. Demographics, ophthalmic and neurological data were extracted from an electronic record system. Inclusion criteria were: gestational age ≥ 35 weeks, birth weight ≥ 1800 g, and clinical signs of HIE. Spectral-domain optical coherence tomography (SD-OCT) was performed within 72 hours of life and at 1, 3, and 6 months. Brain MRI was conducted between days 5 and 14.

Results: Overall, 57 patients were included. At birth, a thinning of RNFL at the papillo-macularbundle (PMB) was found in the group with MRI alterations ($p = 0.044$). Additionally, cystoid macular edema was observed in 21.4% of infants, with two distinct patterns. Overall, CFT, RNFL, GCL and CME gradually improved from the first to the sixth month of follow-up.The primary outcome was to investigate Retinal Nerve Fiber Layer (RNFL) thickness, central foveal thickness (CFT), Ganglion Cell Layer (GCL) reflectivity, and the presence of structural alterations such as cystoid macular edema (CME), presence or absence of photoreceptors in the subfoveal space and subretinal fluid (SRF) with SD-OCT. We further investigated a possible correlation between retinal findings at birth and neonatal brain MRI.

Conclusions: Retinal structural changes in HIE infants treated with TH undergo a dynamic process from birth to six months. These changes correlate with neonatal brain MRI abnormalities, indicating the potential for retinal assessment as a complementary tool in evaluating neurovisual outcomes in HIE patients. Further research is necessary to elucidate the clinical significance of these retinal alterations and their long-term impact on visual function

120 - P87

REVISITING PERIMETRY: EYE-TRACKING INSIGHTS INTO OCULOMOTOR BEHAVIOR IN STROKE PATIENTS WITH HEMIANOPIA OR SPATIAL NEGLECT

Marina Shurupova[1, 2, 3], Alina Aizenshtein[1], Salima Eneeva[1], Galina Ivanova[1], Alexander Latanov[3]

[1]Federal Center of Brain and Neurotechnologies, Moscow, Russian Federation; [2]Dmitry Rogachev National Medical Research Center Of Pediatric Hematology, Oncology and Immunology, Moscow, Russian Federation; [3]Lomonosov Moscow State University, Biological, Moscow, Russian Federation

Purpose: After right hemisphere stroke, two disorders of visual function and attention that are visually similar but pathogenically distinct often occur: left-sided hemianopia and visual neglect. When prescribing rehabilitation procedures for such patients, differential diagnosis is required. One promising method is conducting perimetry with both direct and reverse order of stimulus presentation to identify true visual field loss, which may be absent in patients with neglect. In our pilot study, we evaluated the feasibility of conducting such perimetry under high-frequency eye-tracking to record oculomotor activity.

Methods: The study was conducted at the Federal Center for Brain and Neurotechnologies (Moscow, Russia) and included 7 post-stroke patients (3 men, 4 women, mean age 58.86 ± 9.06 years, 4.14 ± 2.2 months post-stroke). Six patients had visual neglect, and one had hemianopia, as confirmed by computer perimetry. Visual attention was assessed using the paper-and-pencil Albert Test (AT), Bells Test (BT), and Line Bisection Test (LBT). A modified perimetry with eye-tracking (250 Hz) was performed, presenting peripheral stimuli in direct (periphery to center) and reverse (center to periphery) orders, with manual responses recorded.

Results: Three patients with neglect failed eye-tracker calibration and were excluded. Patients with neglect showed median scores of AT: 0% left-side omissions (range [0;100]), BT: 24/35 stimuli detected (range [6;29]), and LBT: 33% rightward shift (range [33;100]). The patient with VFD scored 0% on AT, 31 on BT, and 12.18% leftward shift on LBT. Eye-tracking revealed that all patients made saccades toward peripheral stimuli during perimetry, contradicting the intended purpose of the test. This behavior reflects focal vision rather than peripheral vision, which is expected in neglect due to fixation impairments but unexpected in hemianopia. Notably, patients with neglect exhibited inconsistent fixation and frequent gaze shifts, while the patient with VFD showed more stable fixation but still made saccades toward stimuli.

Conclusions: The study questions the reliability of perimetry in patients with hemianopia and neglect, highlighting the need to account for oculomotor behavior. Disabling the built-in pupil tracking feature during perimetry may lead to inaccurate results. We recommend integrating oculomotor activity analysis and potentially introducing auditory cues about central fixation during perimetry to improve accuracy.

258 - P88

VALIDATION OF THE SMITH FUNCTIONAL INDEPENDENCE MEASURE IN PEOPLE WITH LOW VISION IN CHILE

Joaquín Varas Reyes[1], Patricio Bustamante Veas[2], Annett Castro Barriga[3], Fabian Ureta Herrera[3]

[1]Department of Occupational Therapy and Occupational Science, [2]Department of Medical Technology, [3]School of Medical Technology, Faculty of Medicine, University of Chile, Santiago, Chile

Purpose: This study aimed to validate the Smith Low Vision Independence Measure (LVIM) Özkan, E., İlhan, B., & Smith, T. M. (2023), for use in visual rehabilitation units in Chile by assessing its psychometric properties through a cross-sectional study.

Methods: The validation process consisted of three stages. First, a cultural adaptation of the questionnaire was conducted with the assistance of a panel of healthcare professionals specializing in low vision. The second stage focused on semantic adaptation through a pre-test. Finally, the internal consistency, construct validity, and convergent validity of the instrument were evaluated. The LVIM was compared with the Lawton and Brody Instrumental Activities of Daily Living Scale and the Barthel Index, which are currently the most widely used tools for assessing functional independence. The study was conducted at the Low Vision and Rehabilitation Unit of the Clinical Hospital in Chile, with participants who had low vision as defined by the WHO criteria for visual acuity and visual field.

Results: The validated LVIM was successfully adapted to the Chilean context, demonstrating strong psychometric properties. Specifically, high internal consistency was found as measured by Cronbach's Alpha, along with significant construct validity confirmed through exploratory factor analysis. Convergent validity was established by comparing LVIM scores with those obtained from the Barthel Index and the Lawton and Brody Scale. Additionally, an analysis of the relationship between functional independence scores and sociodemographic variables was conducted.

Conclusions: The validation of the LVIM provided a standardized and culturally adapted tool for assessing functional independence in people with low vision in Chile. This instrument improved rehabilitation processes by offering a specific measure of independence related to visual function, allowing for more targeted and effective interventions. The findings contributed to the optimization of rehabilitation programs and enhanced the quality of life for individuals with low vision.

116 - P89

VISUAL ACUITY THRESHOLDS FOR HUMAN FACE IDENTITY RECOGNITION

Nathan Hupin[1,2], Coralie Hemptinne[1,2], Philippe Lefèvre[1,3], Bruno Rossion[1,4], Demet Yuksel[1,2]

[1]Institute Of NeuroScience, UCLouvain, Brussels, Belgium; [2]Ophthalmology Department, Cliniques Universitaires Saint-Luc, Brussels, Belgium; [3]Institute of Information and Communication Technologies, Electronics and Applied Mathematics, Louvain-la-Neuve, Belgium; [4]University of Lorraine, CNRS, CRAN, Nancy, France

Purpose: Patients' visual function is typically assessed in clinical settings using behavioral tests, such as the Snellen visual acuity chart, or standard automated perimetry for visual field evaluation. However, these tests measure abilities that share little in common with the complex visual recognition tasks encountered in daily life. Using fast periodic visual stimulation (FPVS) with electroencephalography (EEG), we objectively assessed the impact of visual acuity (VA) on an automatic, everyday visual task: face identity recognition (FIR).

Methods: We tested automated discrimination of unfamiliar face identity with a well-validated FPVS-EEG paradigm in 11 normally sighted adult volunteers with a 68-electrode EEG system. VA was artificially decreased using a blur technique to obtain a linear scale from 1.3 to 0 LogMAR.

Results: At the group level, a right occipito-temporal FIR emerges already at a monocular VA threshold of 1.0 LogMAR (z-score = 2.7259, p = 0.0032), with half of the tested participants showing a significant response. Neural amplitude reaches saturation at 0.7 LogMAR (z-score = 7.798; $p \approx 0$). Influence of monocular VA on FIR response can be separated in two trends: a first increase in neural response from 1.3 to 0.7 LogMAR and a second flat trend from 0.7 to 0 LogMAR.

Conclusions: The ability to recognize facial identity, a vital skill learned early in life, remains remarkably well preserved in normally sighted individuals at low visual acuity, with a threshold around 1.0 LogMAR of monocular VA.

397 - P90

VISUAL PERCEPTUAL SKILLS IN PATIENTS WITH USHER SYNDROME

Esra Sahli[1], Ozlem Bicer[2]

[1]Ophthalmology, [2]Institute of Health Sciences, School of Medicine, Ankara University, Ankara, Turkey

Purpose: Usher syndrome (US) is a genetic disorder that causes deaf-blindness and is one of the most common causes of syndromic retinitis pigmentosa. The aim of this study was to assess visual perceptual skills in patients with US.

Methods: Twelve clinically confirmed US patients aged 30-60 years underwent a detailed ophthalmic examination including best corrected visual acuity (BCVA), fundus examination, microperimetry, visual field test (VFT), optical coherence tomography, and visual perception. The Test of Visual Perceptual Skills-Third Edition (TVPS-3) was used to measure visual perception. The TVPS-3 contains seven motor-free subscales: visual discrimination (DIS), visual memory (MEM), visual spatial relationships (SPA), visual form constancy (CON), visual sequential memory (SEQ), visual figure ground (FGR), and visual closure (CLO). Hearing threshold levels were also assessed and recorded as Pure Tone Average over four frequencies (PTA4). The correlation between overall TVPS-3 score and visual function, retinal sensitivity, and PTA4 analyzed statistically.

Results: The mean age of the patients was 39.92-10.57 years, and 58.3% of the patients were female. The mean scores of DIS, MEM, SPA, CON, SEQ, FGR, CLO subscales and overall TVPS-3 scores were 8.75 ± 2.9; 10.67 ± 3.96; 10.17 ± 3.46; 9.25 ± 3.82; 9.83 ± 2.95; 7.25 ± 3.98; 8.83 ± 3.51; and 64.75 ± 21.02, respectively. The lowest scores were in DIS, FGR, and CLO subscales. The TVPS-3 scores were significantly correlated with BCVA and central retinal sensitivity ($p = 0.001$, $r = 0.813$; $p = 0.017$, $r = 0.697$, respectively). There was no statistically significant correlation between TVPS-3 overall score and VFT mean deviation ($p = 0.297$, $r = 0.329$). PTA4 was negatively correlated with TVPS-3 scores, suggesting that individuals with better hearing tend to perform better on TVPS-3, but the relationship was not statistically significant ($p = 0.815$, $r = -0.085$; $p = 0.894$, $r = -0.049$).

Conclusions: This study reveals significant deficits in visual perception among individuals with US, particularly in the areas of FGR, CLO, and DIS. There was a potential relationship between better hearing threshold and better visual perceptual skills. These findings emphasize the importance of incorporating perceptual assessment into visual evaluations to enhance rehabilitation strategies.

317 - P91

MUTATIONS IN RP1 AND BEST1 IN A PATIENT WITH RETINITIS PIGMENTOSA

Rafael Fontanilla[1], Manuel Benjamin Ibañez[1], Katherine Marlk Ferrer[1]

[1]Ophthalmology, East Avenue Medical Center - Department of Health Eye Center, Quezon City, Philippines

Purpose: Retinitis pigmentosa (RP) is an inherited retinal disorder characterized by progressive photoreceptor dysfunction (primarily rods), manifesting as nyctalopia and vision loss. It is genetically heterogenous and can involve multiple genes. This study reports a 44-year-old Filipino male who is compound heterozygous for RP1, one of which is novel, and heterozygous for BEST1, with overlapping RP features that can be seen in mutations from both genes.

Methods: This case report includes the history, examination, diagnostics, and inherited retinal dystrophy panel testing via next-generation sequencing

Results: A 44-year-old male presented with a 9-year history of nyctalopia and progressive vision loss. Examination showed 20/20 vision, constricted visual fields, and classic RP with mid-peripheral degeneration and bony spicule-like pigments. Fundus photo, full-field ERG, and optical coherence tomography of the macula supported classic RP. However, there was also a note of whitish patches around the macula of both eyes which hyperfluoresce on fluorescein angiography. Genetic testing revealed one pathogenic variant in RP1 c.6124del (p.Leu2042*), and another unreported variant of unknown significance in RP1 t c.5819A>G (p.Tyr1937Cys). This particular variant is not present in population database sets and is predicted to be damaging. The patient also carried a pathogenic variant in BEST1 t c.508C>T (p.Gln170*) which is also associated with RP and autosomal recessive bestrophinopathy (ARB).

Conclusions: This case highlights RP's genetic complexity. We report a case of a patient with RP carrying both RP1 and BEST1 mutations, who may have exhibited features from both genes. The identified variants and phenotype of the patient may expand RP's genetic landscape, emphasizing the role of genetic testing in diagnosis and novel variant identification. Family testing and functional studies are crucial for refining variant interpretations and exploring gene interactions.

497 - P92

ACCESSIBLE DESIGNS FOR ADAPTING MOBILITY DEVICES

Ting-Hsuan Lu[1], Pin-Hsuan Chen[1], Pei-Chan Teng[1], Ting-Yu Liu[1], Ching-Ying Cheng[1, 2]

[1]Department of Optometry, Chung Shan Medical University, Taichung, Taiwan; [2]Chung Shan Medical University Hospital, Taichung, Taiwan

Purpose: The purpose of this study was to investigate the accessible designs for adapting mobility devices.

Methodology: Participants were all aged 18 or above with the experience of using long canes. In order to understand the satisfactions and the expectations when orientating, moving, and even navigating for long cane users, A self-developed semi-questionnaire based on two times of interview including users' opinions about safety, convenience, ergonomic operability, economic and aesthetics were conducted. A total of 41 valid responses were collected for analysis.

Results: 1. Among the four evaluated dimensions of the traditional long cane, safety received the lowest level of satisfaction, followed by convenience and economic aesthetics, while ergonomic operability received the highest satisfaction. 2. Conceptual designs of adaptive mobility devices that were highly favored include:

- Safety: GPS navigation, obstacle detection, prevent tripping pedestrians, and emergency communication systems.
- Convenience: Foldable or adjustable to smaller size, integration remote control, additional hangers, and compatibility with smart cards (e.g., EasyCard or iPASS).
- Ergonomic Operability: Durable cane tip materials, ergonomically designed grips, interchangeable cane tips, sweat-absorbing and ventilated handle materials, lightweight designs for energy efficiency, and cane shafts made of flexible and durable materials.
- Economic Aesthetics: impact-resistance components, affordable pricing, and illumination for use in low-light environments.

3. Differences in preferences and opinions regarding the improved cane were observed based on gender and participants with multiple impairment.

Conclusion: Although traditional long canes reliably serve their basic detection and safety functions, there remains considerable room for improvement. Government incentive programs, along with collaborations between industry and academia, may help promote and enhance long cane design. Ultimately, these improvements could enable individuals with visual impairments to navigate safely, efficiently, gracefully, and independently.

Keywords: Adaptive Mobility Devices, Adults with Visual Impairment, Convenience, Economic Values and Aesthetics, Ergonomic Operability, Long Cane, Safety

311 - P93

BETWEEN SELF-DETERMINATION AND NEW DEPENDENCIES - EXPERIENCES OF ADULTS WITH ACQUIRED DEAFBLINDNESS IN GERMANY REGARDING THEIR ACCESS TO AND USE OF TECHNOLOGY

Carolin Gravel[1], Markus Dederich[1], Karolin Schäfer[2], Walter Wittich[3]

[1]Department of Rehabilitation and Special Education, Faculty of Human Sciences, University of Cologne, Cologne, Germany; [2]Faculty of Humanities, Institute for Special Needs Education, University of Duisburg-Essen, Essen, Germany; [3]École d'Optométrie, Université de Montréal, Montréal, Canada

Purpose: Adults with acquired deafblindness can use digital assistive technology (AT) as well as information and communication technologies (ICT) to engage in social life. It seems obvious that these technologies have a lot of potential to enhance participation and activities in a digitalized world. However, the lived experience of this group regarding their access to, and use of digital AT and ICT is understudied. The aim of this study is therefore to explore the potential of, but also the barriers to digital AT and ICT for adults living with acquired deafblindness in Germany with regard to their participation in social life.

Methods: A qualitative approach was chosen to explore diverse perspectives from the deafblind community in Germany regarding their access to, and use of digital AT and ICT. Thirteen adults (Mage = 57, Range = 27-73) participated in the study. The problem-centred interviews were conducted between June 2023 and January 2025 and were held in person (n= 11) as well as via the videochat platform Zoom (n = 2). To make the research process as accessible as possible, the participants could choose their preferred communication mode and interview setting. After each interview, a short socio-demographic questionnaire was completed.

Results: The data were coded and categorized according to structuring qualitative content analysis. The findings suggest that the experiences of access to, and the use of digital AT and ICT are multi-layered and not only positive. All participants described digital AT and ICT as important resources for various aspects in their lives, including informal education, leisure time and work. However, there are also obstacles when it comes to financing or learning how to use the devices. In addition, the importance of tactile modes of information was underlined by many participants.

Conclusions: The preliminary results show that digital AT and ICT are valuable for our participants to engage in social life. On the one hand, the participants experience a sense of self-determination while using the devices. On the other hand, dependencies in access to the technology arise both during bureaucratic procedures in which decision-makers demand proof of eligibility, and in handling the devices without proper instructions.

453 - P94

CHALLENGES ASSOCIATED WITH THE USE OF LOW-VISION ASSISTIVE DEVICES AMONG LOW VISION PATIENTS IN GHANA

Kwame Osei[1], Princella Danquah[2], Sylvester Kyeremeh[3], Jeremiah Badu Shayar[4]

[1]Korle Bu Teaching Hospital, Lions International Eye Centre, Accra, Ghana; [2]Tetteh Quarshie Memorial Hospital, Eye Unit, Mampong Akuapem, Ghana; [3]Kwame Nkrumah University of Science and Technology, Department of Optometry and Vision Science, Accra, Ghana; [4]Presbytarian Health Services, Visio Ghana, Accra, Ghana

Purpose: This study aimed to find out the challenges low vision patients encounter with the use of their low vision assistive devices and to identify strategies to improve with the situation.

Methods: A quantitative cross-sectional design was used to select study participants across four different low vision clinics in Ghana. The challenges were assessed using a semi-structured questionnaire to know whether they have low vision devices, type of devices used, challenges associated with the use and how they manage those challenges. Chi- square was used to test the association between the categorical independent and dependent variables. Significance was set at $p < 0.05$.

Results: Out of 65 respondents, 56.9% were male and 43.1% being female. Of the participants, 75.4% used assistive device with 36.7% having challenges. A positive correlation between employment status and access to low vision device was $p = 0.044$ which was clinically significant. The study found out that 41/49 (83%) of the devices used were telescopes, magnifiers or combinations of the two, which implies limited options for the study participants. This raised the concern of availability of other types which may include electronic devices such as portable video magnifier, mobile phone applications (mobile talk back features), computer screen readers, as well as electronic spectacles like NuEyes and E-glasses. The commonest challenges were difficulty in reading and seeing well at distance, which limits their performance with activities of daily living. Similar to a study done by (Hoogsteen and Szpiro, 2023).

Conclusions: Many low vision patients experience challenges with the use of their assistive device and they employ various personal adaptation measures. Therefore, there is the need for a comprehensive programme or guidelines to train low vision patients in order to be able to use their devices effectively. It is thus of utmost importance that further study on transformative strategies to curb the challenges is highly recommended.

477 - P95

CHROMATIC ABERRATION REDUCTIVE LENSES (CARL): DEFINITIVE RESULTS OF THE CLINICAL TRIAL INVOLVING 10 PATIENTS WITH ALBINISM

Caterina Tramontana[1], Alice Mentana[2], Giulia Gerosa[3], Angelo Tramontana[4], Alessandro Aduc[5], Giorgio Baiocco[2], Andrea Cristiano Piantanida[3]

[1]Faculty of Medicine and Surgery, Pavia, Italy; [2]Radiation Biophysics and Radiobiology Laboratory, Physics Department, Pavia, Italy; [3]Centro Oculistico Lariano, Cernobbio (Como), Italy; [4]Faculty of Engineering, Pavia, Italy; [5]Shamir-RX, Padua, Italy

Purpose: To promote a higher quality of vision in patients with albinism, the authors proposed the adoption of glasses that, through the reduction of the Longitudinal Chromatic Aberration phenomena of the eye (LCA), modify the quantity and the quality of light transmitted to the retinal fundus.

Methods: 10 patients were enrolled in the clinical trial. An ad-hoc developed software and spectrophotometry measurements have been employed to identify the combination of lens materials and filters that grant the maximum correction of LCA. The spherical refractive error of each patient was decomposed between two selected lenses; successively, contrast sensitivity, glare, near vision and visual acuity were tested in all patients, first with traditional and then with CARL (Chromatic Aberration Reductive Lenses) glasses. Patients were also asked to complete a questionnaire about the impact of CARL glasses on different aspects of photophobia, and on the ability to discriminate details in near and distant vision.

Results: After ten months of wearing CARL glasses, the 60% of the patients showed a higher contrast sensitivity (mean: from 14,09% to 8.97%), and the 85% a better visual function in glare testing (mean: from 0.78 to 0.63 LogMAR). The 65% of the patients revealed an increase in near vision (mean: from 0.49 to 0.31 LogMAR), and the 55% in visual acuity (mean: from 0,71 to 0,64 LogMAR). Furthermore, the majority of patients reported a marked improvement in the management of photophobia, and the perception of being able to discern details of texts and images in a reduced amount of time and with less effort.

Conclusions: The results of the study conducted on 10 patients with albinism suggest that, through the modulation of the intensity and the wavelengths transmitted to the retina, both a subjective and an objective improvement may be achieved in various aspects of vision.

368 - P96

COMPARING READING SPEEDS BETWEEN A HEAD-MOUNTED VIDEO DISPLAY SYSTEM AND SPECTACLE-BASED OPTICAL MAGNIFICATION

David Simpson[1], Kara Hanson[1], Jennifer Patnaik[1], Melissa Engle[1]

[1]Department of Ophthalmology, Sue Anschutz-Rodgers Eye Center, University of Colorado Aurora, USA

Purpose: Head-mounted video display systems (HMVDS) have become a widely available option for people with visual impairments. These devices are portable and useful for both distance and near visual tasks, which has the potential to benefit young adults in educational, vocational, and avocational settings. This study investigates if HMVDS perform better than optical magnification and is preferred by users for reading.

Methods: Participants between the age of 15-30 years old were recruited. Binocular best-corrected visual acuity ranged from 20/60 to 20/200 and participants had to be interested in using the IrisVision. Each participant was provided with an IrisVision device for the nine months. Reading speed was measured using the International Reading Speed Texts (IReST) with both spectacle magnification in a trial frame and the IrisVision after one month and nine months of IrisVision use.

Results: Ten participants completed the study. Participants read faster on average with the IrisVision than optical magnification, but this difference was not found to be statistically significant ($p = 0.08$). The mean reading speed with optical magnification was 80.1 words per minute (wpm) at one month and 88.6 wpm at the nine-months. The mean reading speed with the IrisVision was 100.4 wpm at one month and 102.4 wpm at nine-months. The difference in reading speed between the two methods decreased between the one month and nine-months, but not significantly. When participants were asked whether they preferred the IrisVision to other forms of magnification for reading, 6 out of 10 preferred the IrisVision and 4 out of 10 did not.

Conclusions: The IrisVision provides an option that is comparable to optical magnification for reading in young adults, though based on these results, it is not clear that the IrisVision is a superior option for all individuals. These devices give low vision professionals more options to provide patients, but our data also reinforces the idea that individuals with visual impairments should be provided with a range of device options to make a decision regarding their preferred device.

94 - P97

ENHANCING EDUCATIONAL ACCESS: EVALUATING MULTIMODAL TACTILE GRAPHICS TECHNOLOGY FOR BLIND STUDENTS

Jesse Wienholts[1]

[1]*Sensotec, Innovation, Delft, The Netherlands*

Purpose: This research aims to investigate the impact of advanced tactile reading technologies on blind students' learning experiences in mainstream educational settings, with a focus on devices that combine tactile graphics with additional sensory inputs.

Methods: The study evaluated students' interactions with tactile reading devices, including the Tactonom reader, in mainstream educational environments. The research included the development and optimization of multimodal tactile graphics creation processes, examining the most effective methods for designing and producing these materials. We studied how students engaged with educational materials through these multimodal technologies, which integrate tactile graphics with audio output for accessing multiple layers of information. The evaluation was conducted in collaboration with experts from Sensotec, Dedicon, Visio, and Bartimeus.

Results: Students demonstrated enhanced engagement with educational materials through the multimodal approach. The combination of tactile graphics supplemented with audio feedback provided multiple pathways for accessing and understanding information. The Tactonom reader specifically showed promise in improving accessibility to educational content through its integration of tactile graphics and audio feedback.

Conclusions: Advanced tactile reading technologies that incorporate tactile graphics with audio feedback offer significant potential for supporting blind students in mainstream educational settings. These tools contribute to improved educational development and classroom inclusivity by providing versatile access to learning materials. The integration of such technologies represents a promising approach to enhancing the learning experience for blind students in inclusive educational environments.

436 - P98

EVALUATION AND COMPARISION OF THE EFFICACY OF OPTICAL LOW-VISION DEVICES (LVDS) AND VIRTUAL REALITY (VR)-BASED HEAD-MOUNTED DEVICES (HMDS) IN ENHANCING VISUAL ACUITY AND ADDRESSING VISUAL REQUIREMENTS AMONG INDIVIDUALS WITH LOW VISION

Sneha Aggarwal[1], Radhika Tandon Tandon[1], Suraj SIngh Senjam[1]
[1]All India Institute of Medical Sciences, Dr R. P. Centre for Ophthalmic Sciences, Delhi, India

Purpose: Comparative analysis of optical and virtual reality-based low vision assistive devices for Enhanced Visual Rehabilitation

Methods: Prospective research was conducted in a tertiary eye care centre of India. where clinically confirmed low vision patients were recruited and we obtained data about their demographics, medical history, and task-specific visual requirements for mobility, distance, and proximity. The patients' responses regarding the improvement of visual acuity and user satisfaction were statistically analysed and compared between the groups with telescopes, optical magnifiers, and the VR-based head mounted low vision devices groups (VR-HMLVD) with an integrated application for magnification, contrast filters, and real time video and picture manipulation.

Results: 220 low vision patients (M-143, F-77; 23.06 ± 14.44) had UCVA(D) of 0.98 ± 0.40 improved to 0.74 ± 0.36 with glasses, 0.28 ± 0.18 (p value 0.001) with a telescope, and 0.17 ± 0.23 (p value 0.001) with VR-HMLVD. Near vision (NV) improved by 25% and 68% (p-value < 0.001) with optical LVD and VR-HMLVD, respectively, and distance vision (DV) improved by 61% (p-value < 0.001) and 85% (p-value < 0.001). The LVDs tested for close range included CCTV video magnifiers (55), dome magnifiers (82), spectacle magnifiers (34), stand magnifiers (2), illuminated hand-held magnifiers (86), mobile applications (43) and audio applications or devices (3). For distance, the LVDs tested included uniocular hand-held telescopes (n = 85), SEETV glasses (n = 10), and Ocutech (n = 4). 57% were for distance, and 92% were prescribed (n = 98). Subjects reported greater overall satisfaction with the VR-based HMD, particularly for distance-related tasks, emphasizing its user-friendliness, comfort, and functionality. Further, the VR-based HMD was the preferred option for distance vision, however, both device types proved effective for near-vision tasks. Notably, subjects expressed appreciation for the VR-based devices' customizable contrast filters and immersive capabilities.

Conclusions: Both optical and VR-based LVDs significantly enhance visual acuity and facilitate functional vision. However, VR-based HMD offers superior improvements for distance tasks, better adaptability to various visual requirements and overall user satisfaction, demonstrating its potential as a versatile tool in low-vision rehabilitation. Further investigation is warranted to explore its application in domestic environments and long-term usability.

58 - P99

EYE DROP GUIDE

Yin Mei Tin[1], Priscilla Lim[1]

[1]Allied Health Professional, Singapore National Eye Centre, Singapore, Singapore

Purpose: The goal of this project was to develop a device to instill eye drops safely and efficiently. This device aimed to reduce wastage and accommodate all eye-related medication with ease of instillation so that patients could administer their eye drops independently at home.

Methods: The device was co-designed and co-developed by students from Ngee Ann Polytechnic, Medical and Allied Health Professional Team from Singapore National Eye Centre (SNEC). The prototype was further improved and produced with engagement of vendor. Two sessions of evaluation and testing of the new device were conducted within SNEC and in the community in 2017.

Results: The new device was tested and evaluated by SNEC Nurses and non-nursing staff, and 65% of them rated the design of the device is above average. Our team also partnered with User Experience Centre, Singapore Polytechnic in collaboration with National Health Innovation Centre and Singapore Eye Research Institute to engage a group of 12 elderly at a senior activity centre to carry out another test on the new device. More than 75% of the elderly find the device easy to use. The new device received the Intellectual Patent (IP) recognition 2018. In 2019, two companies were licensed to start commercialisation in Singapore and overseas. Samples were given out to the community partners between 2023 and 2024. An evaluation will be conducted to gather feedback on the device and seek to improve the design if needed.

Conclusions: The device has aided individuals to instill eye medication independently, safely, and accurately. It enhances medication compliance and reduces reliance on community resources and next-of-kins, especially when the person is staying alone. This innovative device promotes dignity, enhances independence, and boosts the self-worth of individuals, especially those with visual impairment.

492 - P100

HANDS-FREE VIBROTACTILE COMMUNICATION FOR THE VISUALLY IMPAIRED:OPTIMIZING PRESENTATION METHODS AND PATTERN LENGTH

Nashmin Yehaneh[1], Ivan Makarov[1, 2], Mohammadmahdi Karimi[1], Árni Kristjánsson[2], Runar Unnthorsson[1]

[1]The Faculty of Industrial Engineering, Mechanical Engineering and Computer Science, [2]Faculty of Psychology, University of Iceland, Reykjavík, Iceland

Purpose: For individuals with visual impairments, accessing written information is often challenging-particularly in noisy or privacy-sensitive environments where auditory assistive technologies are impractical. Vibrotactile communication offers a discreet, hands-free alternative to Braille and audio-based systems by using haptic feedback for secure, private, and efficient information transmission. However, the optimal methods for encoding and presenting vibrotactile patterns for clear and accurate recognition remain unclear. We investigated how different ways of presenting vibrotactile information and pattern lengths affect recognition accuracy, as well as the role of learning.

Methods: Using a wearable sleeve equipped with six Lofelt L5 actuators corresponding to Braille pattern dots, vibrotactile patterns were transmitted to the forearm. We used a set of 14 Braille-like patterns derived from the Icelandic Braille alphabet. These patterns were divided into two categories: short-length patterns, which involved the use of 2–3 actuators, and long-length patterns, requiring 4–5 actuators. Each test began with the presentation of a pattern in random order. Subsequently, participants were tasked with reproducing the pattern using a keypad. We assessed their ability to accurately reproduce the vibrotactile patterns using a keyboard interface. A repeated-measures ANOVA was conducted to examine the effects of presentation mode (simultaneous or sequential) and pattern length (short or long) on the accuracy of pattern reproduction.

Results: Sequential presentation (93.24% accuracy) significantly outperformed simultaneous presentation (26.15%). Additionally, participants showed better recognition for short patterns than for long patterns. Primacy and recency effects were observed in the sequential mode, and participants demonstrated improvement with practice over time.

Conclusions: These findings highlight the importance of sequential presentation and training in enhancing recognition accuracy for wearable vibrotactile technology. Insights from this research can contribute to the design of more effective and reliable vibrotactile communication systems, benefiting visually impaired individuals in Braille reading, navigation, and human-computer interactions.

366 - P101

IMPACT OF COLORED MEDICAL FILTERS ON VISUALLY IMPAIRED CHILDREN. "AMONG VISUALLY IMPAIRED CHILDREN, DOES THE USE OF COLORED MEDICAL FILTERS IMPROVE VISUAL ACUITY AND CONTRAST SENSITIVITY (COMPARED TO THEIR INITIAL CONDITION)?"

Jerome Brohez[1]
[1]*Ophtalmology, Cliniques Universitaires Saint Luc, Brussels, Belgium*

Purpose: The study aims to evaluate whether the use of colored medical filters improves visual acuity and contrast sensitivity in children with low vision compared to their initial condition without filters.

Methods: This is a prospective study conducted at the Horus Functional Rehabilitation Center at CHU Brugmann. A total of 10 children aged 4 to 12 with visual impairment were recruited. Each child was equipped with optimal optical correction and underwent visual acuity and contrast sensitivity measurements both before and after the application of colored medical filters. The children tested several filters (Lucéo brand) to find the most comfortable one. The main outcome measures included visual acuity (near and distance) and contrast sensitivity in both monocular and binocular vision, recorded before and after filter application. Descriptive and statistical analyses were conducted to compare results.

Results: Visual acuity showed no significant improvement after the use of colored medical filters, except for one instance ($p < 0.05$) in the left eye for distance vision. Contrast sensitivity improved slightly in near vision, but results were not statistically significant across most measurements ($p > 0.05$). Children reported subjective comfort improvements when using filters, although quantitative gains in visual performance were modest.

Conclusions: The use of colored medical filters in children with low vision offers slight subjective benefits in terms of visual comfort but does not show significant improvements in objective measures of visual acuity and contrast sensitivity. Further research is needed to explore the potential of filter use in specific low-vision conditions, especially with larger sample sizes.

390 - P102

INFLUENCING FACTORS ON ABANDONMENT OF VISUAL AIDS IN VISUALLY IMPAIRED ADOLESCENTS

Bingbing Li[1, 2, 3], Yang Yu[1, 2], Binling Su[1, 2], Jianmin Hu[1, 2]

[1]The Second Affiliated Hospital of Fujian Medical University, Quanzhou, China; [2]Engineering Research Centre of Assistive Technology for Visual Impairment, Fujian Province University, Quanzhou, China; [3]Jinjiang Municipal Hospital, Quanzhou, China

Purpose: To investigate the utilization of visual aids among visually impaired adolescents and to examine the influencing factors associated with their abandonment of visual aids, informing optimized rehabilitation strategies.

Methods: The survey was conducted via telephone follow-up with 186 visually impaired adolescents. The information on basic characteristics (including gender, age, etiology of visual impairment, type of educational institution, and degree of visual impairment) and detailed aspects related to visual aids (such as the type of visual aids, frequency of use, satisfaction with use, and reasons for abandonment) were collected. The chi-square test was employed to analyze the influencing factors associated with abandonment of visual aid devices among visually impaired adolescents.

Results: Visually impaired adolescents demonstrated high rates of usage frequency, and satisfaction with portable electronic visual aids. However, more than half of the visually impaired adolescents reported abandoning the use of visual aids. The primary reasons for abandonment included the availability of alternative aids, personal skill improvement, and device damage. The abandonment rate of optical devices was significantly higher than that of electronic and non-optical devices. Significant differences in abandonment rates were observed among individuals with different etiologies of visual impairment, with the highest rate among those with uncorrected refractive errors (including aphakia). No significant associations were found between abandonment rates and gender, age, or degree of visual impairment.

Conclusions: Abandonment of visual aids is closely linked to etiology and device type. Rehabilitation efforts should tailor solutions to specific etiologies, enhance maintenance services, and promote durable electronic aids to reduce abandonment.

103 - P103

LOW VISION SOLUTIONS IN A DIGITAL AGE

Zhen Kiat Tan[1], Lisa Ong[1]
[1]Singapore National Eye Centre, Singapore, Singapore

Purpose: Digitalisation has transformed the delivery of care in vision rehabilitation. This case report demonstrates how a 63-year-old visually impaired man uses a combination of optical and digital low vision solutions to stay connected socially and continue to contribute meaningfully at work.

Methods: The patient with geographical atrophy first presented to the low vision service at a tertiary eye hospital with best corrected visual acuity of 6/150 and 6/96 on his right and left eye respectively. He had moderate loss of contrast sensitivity function with reduction to severe loss in dim testing. He was comtemplating retirement due to increasing difficulty using computer at work which he coped by using his smartphone to magnify the computer screen. He also attached stickers on his keyboard as tactile guide to cope with the reduced visibility of the keyboard prints from his reduced visual acuity and low office lighting. While he commutes independently, he had difficulty recognising bus numbers.

Results: To address his visual needs, accessibility features on digital devices were explored. He was taught the following features on his smartphone: bold text, invert contrast and magnification shortcut. For computer, he was introduced to invert color, magnifier function and was also loaned a large print high-contrast keyboard. On the subsequent review 2 months later, the patient demonstrated proficiency in using the smartphone accessibility features to access a range of applications, including messaging, email, and bus arrival information. He also reported significant benefits from the large print high contrast keyboard and computer accessibility features in supporting his continued employment. The patient subsequently underwent a magnifying intraocular lens implant on his left eye which has an effective +6 dioptres near addition at spectacle plane that enabled him to perform spot reading of fine prints.

Conclusions: Technological advancements are rapidly creating new opportunities in low vision care, enabling more empowering solutions. Building from the optics of magnification for optical interventions, general optometrists can also expand their scope of practice up to secondary level of low vision care1 by staying informed about evolving accessibility features in smart devices and other emerging technologies.

352 - P104

OPTICAL AIDS TO FACILITATE READING IN PATIENTS WITH DEGENERATIVE EYE DISEASES

Daniele Ferrari, Lara Radici, Paola Cassottana, Luca di Cello, Michele Iester, Carlo Alberto Cutolo

[1]Eye Clinic, IRCCS Policlinico San Martino, University of Genoa, DiNOGMI, Genoa, Italy

Purpose: Degenerative eye diseases significantly reduce both the quantity and quality of vision, frequently causing challenges in reading with a substantial impact on daily activities and quality of life. Magnifying self-illuminating spectacles, combined with optical filters designed to enhance contrast perception, may facilitate improved reading performance. This study aimed to evaluate the effects of these spectacles on reading speed and contrast sensitivity compared to standard near-vision correction.

Methods: This was a controlled, single-centre, interventional pilot study conducted at the low vision clinic of the University Eye Clinic, IRCCS Ospedale Policlinico San Martino. Adult patients diagnosed with visual impairments due to degenerative eye diseases, requiring visual rehabilitation and having a Mini-Mental State Exam score ≥ 23, participated. Primary outcomes included reading speed (binocularly assessed using an IREST paragraph) and contrast sensitivity measured by the Pelli-Robson test under four conditions: (MA) addition of 2.50 diopters to the distance refractive correction, (MB) binocular hypercorrective lenses (Fonda Srl, Italy) without illumination, (MC) binocular hypercorrective lenses with frontal illumination and (MD) binocular hypercorrective lenses with frontal illumination and F-Calm filter (400 – 540 nm).

Results: A total of 35 participants, 15 affected by age-related maculopathy (AMD) and 20 by glaucoma was enrolled. Median (IQR) age 76 (70, 79). Mean near visual acuity was 0.30 (0.20, 0.78) and 0.20 (0.05, 0.20) logMAR in the AMD and glaucoma group, respectively. In glaucoma patients, no significant differences in reading speed were observed (MA vs. MB $p = 0.664$; MA vs. MC $p = 0.664$; MA vs. MD $p = 0.792$). However, significant improvements in the AMD group were measured (MA vs. MB $p = 0.028$; MA vs. MC $p = 0.017$; MA vs. MD $p = 0.017$).

Conclusions: Binocular hypercorrective self-illuminating spectacles significantly improve reading performance in patients affected by AMD compared to conventional reading glasses.

289 - P105

SUPPORTING AID OF GOGGLES BY ORDER MADE - MUTUAL COOPERATING SYSTEM IN TWO AMBLYOPIA

Tsutomu Tanzawa[1], Yusuke Sato[2], Masaharu Sasaki[1]

[1]Engineering, Yamanashi University, Kofu, Japan; [2]Commerce, Nihon University, Tokyo, Japan

Purpose: To develop a head-mounted display (HMD) to enhance the visual function of individuals with amblyopia while cognizing the visual world. Because of the significant individual differences in the visual function among individuals with amblyopia, developing custom-tailored aids for each patient may be the only practical approach. At the outset of our HMD experiment, we transformed the 3-dimensional visual world into a 2-dimensional (2D) representation, erasing the real distance. This was visually presented because amblyopia Kawa (A-Ka) said, "I can't see far.", but was able to cognize the 2D display.

Methods: We used a partially modified Meta Quest 3 in five amblyopia cases. Based on the psychological experiments results, we selected two amblyopia cases-A-Ka, who had photophobia, color blindness, and nystagmus, and A-Os, who underwent repeated congenital cataract operations. The HMD was customized for each individual to display images of the outside world by adjusting the brightness, contrast, or size based on psychological experiments assessing their visual cognition.

Results: A-Ka and A-Os didn't exhibit atypical responses to inverted goggles, and certain illusion illustrations. In contrast, when the HMD adjusted the outside image brightness to 150-200lux, A-Ka could, for the first time, see the distant mountain, road shadow, pattern, location, and obstacles, resulting in his enhanced walking posture. However, the intermittent display method failed in order to improve his nystagmus. When observed using Tobii Pro Glasses 2, his nystagmus varied in distance, and left or right eye movements in both width and direction (a certain situation, approximately, 1:2). Although the HMD enhanced visual cognition function hierarchy in distance, it was not conclusively helpful for his color blindness.

Conclusion: The HMD is generally used for two types of amblyopia. The current challenge is to reduce the nystagmus. Meanwhile, a separate psychological experiment is being conducted to study colour cognition. A novel experiment using a device to enlarge a specified area has begun - involving a girl with optic atrophy and nystagmus.

449 - P106

USEFULNESS OF IRISVISION HEAD-MOUNTED VIDEO DISPLAY SYSTEM FOR TEENS AND YOUNG ADULTS WITH CONGENITAL OR EARLY ONSET LOW VISION

Kara Hanson[1], David Simpson[1], Jennifer Patnaik[1], Melissa Engle[1]
[1]Ophthalmology, University of Colorado School of Medicine, Aurora, USA

Purpose: This pilot study's purpose was to determine how useful the IrisVision (IV) head-mounted video display system is for teenagers and young adults with congenital or early onset vision loss. Our goals were to determine how IV assisted them in their daily lives; which activities and viewing modes were most used; and participants' overall feelings about using IV.

Methods: Subjects ages 15 to 30 with binocular best-corrected visual acuity from 20/60 to 20/200 were recruited. Each subject received an IV for a 9-month period during which they returned for clinic visits at one, four and nine months after the initial dispense to complete a variety of assessments measuring performance with IV compared to optical magnification devices. The VFQ-25 was administered at the dispense and 9-month visits. Subjects also completed a questionnaire regarding their use of IV at the 9-month visit and were given the option to keep the device if it was useful.

Results: 10 participants completed the study. IV was most commonly used for reading and homework, or watching TV and computer activities (4 subjects each). Scene mode was most preferred by 8 subjects for distance activities, and 3 liked it for reading activities. Other preferred modes for reading were reading-inverted and reading (enhanced contrast). 5 subjects were never embarrassed to use IV around friends, 3 were rarely embarrassed, and 2 were always embarrassed. 8 felt that the IV was worth $2,950 MSRP; 2 did not. The VFQ scores slightly increased over the study period with mean at dispense of 62.6 (SD: 17.5) compared to 66.8 (SD: 14.8) at the 9-month visit ($p = 0.08$).

Conclusions: 8 out of 10 teenagers and young adults felt IV was useful in some capacity and opted to keep the device upon study completion. 8 out of 10 subjects were never or rarely embarrassed to use the device around friends. The mean VFQ score increased slightly over the course of the study period. IV is a viable option for teenagers and young adults with visual impairments to access information during a variety of activities.

226 - P107

VISIONARY REMOTE REHABILITATION APP FOR LOW VISION CHILDREN

Ayse Turan[1], Sara Erol[2], Tolga Erol[3]

[1]Ophthalmology, Altay Kültür Sanat ve Eğitim Vakfı, Ankara, Turkey; [2]Ankara Yildirim Beyazit Faculty of Medicine, Ankara, Turkey; [3]METU Middle East Technical University, Ankara, Turkey

Purpose: Our innovation CAN-EYE provides early vision-specific cognitive developmental support and visual assessment with visual stimuli on mobile platforms. The purpose is to develop a means of stimulating functional vision in children with visual impairment remotely. This will be a further innovative intervention to prevent poor vision in children. This would lead to substantial benefits for the quality of life of the children as they get older.

Methods: CAN-EYE is designed with the necessity of social distance due to COVID-19, will ensure that the low vision rehabilitation services do reach the larger masses without any problems. As mobile technologies are getting more advanced and affordable, visually controlled tablet screens can be used to support home-based therapy programs. Children aged less than 18 months with visual impairment in at least at one eye are planned to be referred to a developmental programme, carried by occupational therapists. Occupational therapy intervention programs are implemented client-centered and interactively with the person face-to-face. Occupational therapists apply rehabilitation technique which has been known for many years for the treatment of low vision in children. Our innovation is a technology that act as a personalised virtual rehabilitation centre. Our technology is categorised as a self-driven digital healthcare solution. Our innovation comprises a range of personalized rehabilitation exercises for infants that help to stimulate and develop children's visual and cognitive skills, It also provides performance tracking and sharing function for caregivers

Results: To solve this accessibility problem to low vision rehabilitation, we developed visionary application CAN-EYE, which is used in parental control, with engineers, neonatologists, ophthalmologists and occupational therapists to support the visual and cognitive development of children with low vision or at risk of low vision.

Conclusions: Our goal is to solve real world healthcare problems with technological innovations to create tangible impacts on patients, families and most importantly in NHS. The primary aim is improving visual functions of children. This includes improvement of fixation time and stimulation of saccadic/smooth pursuit movements. We believe that smarter use of digital technology and data will empower people to lead healthier and more independent lives.

520 - P108

ATYPICAL OPHTHALMOLOGICAL MANIFESTATIONS IN A PATIENT WITH MELAS SYNDROME AND M.3243 A>G MUTATION

Ariadna Garreta-Rafecas[1]

[1]*Hospital Clínic of Barcelona, Ophthalmology. ICOF, Barcelona, Spain*

Purpose: This study presents a patient with a complex neuro-ophthalmological presentation, leading to the identification of rare ocular findings in MELAS (Mitochondrial Encephalomyopathy, Lactic Acidosis, and Stroke-like episodes) syndrome. While progressive external ophthalmoplegia and ptosis are common ocular manifestations, this case exhibited unusual features. The complexity of this presentation prompted a literature review to assess the ophthalmological spectrum of MELAS syndrome and mitochondrial maculopathy. By integrating case-based evidence with a broader review, we aim to enhance the understanding and recognition of these ocular manifestations in clinical practice.

Methods: A 50-year-old Caucasian female with diabetes mellitus, hypertension, dyslipidemia, and mild sensorineural hearing loss, with a family history of MELAS, was referred for ophthalmological evaluation due to diplopia, horizontal gaze apraxia, and decreased visual acuity in her left eye (LE). She underwent comprehensive ophthalmological, neuro-ophthalmological, electrophysiological, and genetic assessments, including optical coherence tomography (OCT), fundus autofluorescence (FAF), and perimetry. Additionally, a systematic review of the literature was conducted to further investigate MELAS-related ophthalmological findings and mitochondrial maculopathy.

Results: Genetic testing confirmed the presence of the m.3243A>G mutation in heteroplasmy in mitochondrial DNA (MTTL1 gene) in both the patient and her daughter. The patient's best-corrected visual acuity was 0.8 in the right eye (RE) and 0.6 in the LE, with anisometropic amblyopia. Findings included iris heterochromia and severe horizontal gaze limitation with impaired saccades and pursuit. Fundoscopy revealed annular chorioretinal atrophy with a preserved central macular island. FAF showed a "donut" pattern of hypoautofluorescence with scattered hyperautofluorescent points. OCT revealed perifoveal atrophy affecting the outer retina and retinal pigment epithelium-choriocapillaris complex, with ganglion cell layer thinning (36µm RE, 50µm LE), despite preserved optic nerve parameters.

Conclusions: While ophthalmoplegia and ptosis are common in MELAS, oculomotor apraxia and annular chorioretinal atrophy with foveal sparing represent an unusual presentation. The observed ganglion cell layer thinning suggests a mitochondrial maculopathy. The identification of the m.3243A>G mutation in the patient's daughter underscores the importance of genetic screening and early multidisciplinary management. This report, alongside a literature review, highlights the need for further research to clarify the clinical implications of MELAS-related ocular findings and mitochondrial maculopathy.

410 - P109

CLINICAL, OPHTHALMOLOGIC, AND GENETIC CHARACTERISTICS OF PATIENTS WITH BARDET-BIEDL SYNDROME

Zisan Onaran Uner[1], Ozlem Bicer1, Yasemin Subaşı[2], Esra Sahli[2]

[1]Ankara University Institue of Health Sciences, Ankara, Turkey; [2]Ankara University School of Medicine, Ankara, Turkey

Purpose: Bardet-Biedl Syndrome (BBS) is a rare autosomal-recessive inherited disorder characterized by multisystem anomalies. BBS is diagnosed on the basis of clinical signs and symptoms, which can be confirmed by genetic testing. The aim of this study was to characterize the ophthalmic and genetic features of BBS in a cohort of patients from a specialized ophthalmic care center in Turkey.

Methods: This was a cross-sectional study performed at a single tertiary eye care center. The study enrolled 24 patients between the ages of 8 and 37 years. Best corrected visual acuity (BCVA) and systemic manifestations were recorded, along with multimodal retinal imaging, electroretinography, ang genotypic data, if available.

Results: Among 24 patients (Male:20; Female:4), the mean age was 18.25 ± 7.42 years. Of 22 patients with measurable BCVA, seven (29.1%) had severe visual impairment (mean 0.87 ± 0.46 logMAR, range 0.22 to 2.3 logMAR). In 10 (41.6%) patients, there was a family history of retinitis pigmentosa, and 17 patients (70.8%) had a history of a parental consanguineous marriage. All patients demonstrated bilateral pigmentary retinopathy. The most commonly documented other ocular findings were high myopia (37.5%, 9 of 24), nystagmus (%29.2, 7 of 24), exotropia (16.7%, 4 of 24), and anterior&posterior polar cataract (4.2%, 1 of 24). The most common associated systemic features were polydactyly in 20 (83.3%) patients, cognitive impairment in 19 (79.2%) patients, and obesity in 16 (66.7%) patients. The most common associated variants were in BBS10, BBS9 and BBS4 genes, with frequencies of 9 (33.3%), 2 (7.4%), and 2 (7.4%), respectively.

Conclusions: Due to its rarity, BBS requires a high suspicion in order to be diagnosed. Pigmentary retinopathy in BBS is almost always bilateral and predominantly affects males. Early onset of the ocular disease in BBS is associated with a poor prognosis for visual function. Since there is no known treatment for BBS, early diagnosis is crucial for facilitating comprehensive multidisciplinary care to minimize preventable morbidity and mortality.

422 - P110

COMBINED APROACH TO THE TREATMENT OF PATIENTS WITH IOL DISLOCATION AND SECONDARY GLAUCOMA

Tatiana Sokolovskaya[1], Khadija Magomedova[1], Natalia Kislitsina[1], Sultanova Dinara[1]

[1]Glaucoma, The S. Fyodorov Eye Microsurgery Federal State Institution, Moscow, Russian Federation

Purpose: To present the first results of the combined treatment of secondary glaucoma in patients with a dislocation of the intraocular lens.

Methods: There were 11 patients (11 eyes) with the following diagnosis: IOL dislocation of 2, 3 degrees. Secondary uncompensated glaucoma. As it is known, performance of glaucoma surgery in this group of patients is associated with a high risk of serious haemorrhagic complications, as well as the location of conjunctival bleb limits the choice of localisation for further IOL fixation. Therefore, all patients were firstly treated with micropulse transscleral cyclophotocoagulation (mTSCPC) to normalise IOP - a method providing IOP reduction with minimal risk of complications. In the second stage, in case of normal ophthalmotonus, IOL repositioning with suturing into the ciliary sulcus was performed.

Results: No intraoperative or early postoperative complications were observed. The IOP level in the postoperative period (1st day) after mTSCPC was 19 ± 2.3 mmHg. There was no decrease in visual functions after RCFC. After normalisation of ophthalmotonus, all patients performed IOL repositioning with suturing into the ciliary sulcus. After IOL repositioning IOP level averaged 18 ± 1.4 mmHg. Increase in IOP was observed in all patients.

Conclusions: Application of mTSCPC is a non-invasive, safe and effective way of IOP normalization, which does not limit the possibility of subsequent IOL fixation with preservation of high anatomic and functional results.

555 - P111

LONGSTANDING RETINITIS PIGMENTOSA - A CASE REPORT

Agnes Choi[1], Mark Feltham[1], Mei Ying Boon[1]
[1]University of Canberra, Canberra, Australia

Purpose: To report the structural and functional findings of a longstanding case of retinitis pigmentosa.

Methods: The patient underwent an ocular examination at an independent optometric practice in 2024. She had a low vision assessment in 2025 at a not-for-profit charity organisation that helps individuals to cope with the results of low vision. Following that assessment, the patient also had further tests at a university optometry clinic.

Results: A 65-year-old woman diagnosed with retinitis pigmentosa when she was in her thirties had a best corrected visual acuity (BCVA) of 6/6 in each eye at the time. Her BCVA in 2024 was 6/15 in each eye. She had cataract surgery in both eyes 15 years ago. She was diagnosed with type 2 diabetes in 2023 which was being controlled by medication. Widefield fundus imaging showed bone spicule pigmentation in the peripheral fundus and narrowing of the retinal arterioles in each eye. Visual field test (Humphrey Field Analyzer 24-2 threshold SITA Faster) showed diffuse reduction in sensitivity in each eye with a mean deviation value of -32.25dB OD and -31.82dB OS. Comparison between the eyes revealed that the left eye had relatively higher sensitivity within the central 10 degrees of the visual field compared to the right eye which was consistent with 10-2 threshold test results. Monocular colour vision test (Farnsworth-Munsell D15) showed 5 crossings OD and 4 crossings OS, all along the tritan axis. Binocular Farnsworth-Munsell 100 Hue test suggest tritan-type results using the Kinnear method. Optical coherence tomography (Heidelberg Spectralis) imaging of the macula showed drop-out of the outer retinal layers in the parafoveal region in each eye. There was no sign of macular oedema in either eye on imaging.

Conclusions: The patient's reduced BCVA and colour vision results suggest that the cone photoreceptors were affected which is consistent with the natural history of retinitis pigmentosa. However, type 2 diabetes may have played a role in the colour vision results in this case as both retinitis pigmentosa and type 2 diabetes may associate with tritan-type results.

332 - P112

MINIMALLY INVASIVE LASER-SURGICAL TREATMENT OF PRIMARY OPEN-ANGEL GLAUCOMA AND COMPLICATED CATARACT

Tatiana Sokolovskaya[1], Grigoriy Sorokoletov[1], Krasnova Ekaterina[1]

[1]Glaucoma, The S. Fyodorov Eye Microsurgery Federal State Institution, Moscow, Russian Federation

Purpose: Currently, combined surgical interventions are widely used in cases of complicated cataract associated with primary open-angle glaucoma. To evaluate the effectiveness of a combined treatment approach for patients with early-stage primary open-angle glaucoma and complicated cataract, utilizing micropulse transscleral cyclophotocoagulation (mTSCPC) as the anti-glaucoma component.

Methods: The study included 30 patients (30 eyes). The first stage involved laser treatment - mTSCPC - performed using an 810 nm diode laser with an exposure time of 80 seconds, applied along a 160° arc in the inferior and superior hemispheres of the eyeball, 3-4 mm from the limbus, with an energy level of 1800-2500 mJ, a duty cycle of 31.3%, an impulse duration of 0.5 ms, and an interval of 1.1 ms. The second stage consisted of cataract phacoemulsification with intraocular lens (IOL) implantation following standard procedures. The follow-up period was 6 months. No intraoperative or postoperative complications were observed.

Results: Preoperative intraocular pressure (IOP) was 23.7 ± 2.6 mmHg. Visual acuity was -0.2 ± 0.08 uncorrected and 0.5 ± 0.1 with correction. After 6 months, IOP decreased by an average of 7.17 ± 1.25 mmHg (a 29.4% reduction from baseline). Postoperative corrected visual acuity improved to 0.83 ± 0.2. The number of hypotensive medications used before treatment was 1.6 ± 0.71, decreasing to 1.0 ± 0.36 after 6 months. After the combined intervention, normalization of intraocular pressure was achieved in 96.4% of patients.

Conclusions: The proposed technique effectively improves visual acuity, ensures stable normalization of intraocular pressure, and contributes to the stabilization of the glaucomatous process.

276 - P114

THE ROLE OF MICRO-PULSED MAGNETIC FIELD THERAPY (CEMP) IN THE MANAGEMENT OF REACTIVATING MYOPIC CNV DESPITE TREATMENT WITH AN INJECTION OF ANTI-VEGF

Joseph Sajish Pinackatt[1], Manuela Brucculeri[1]
[1]Samalenah Srl, Sirmione, Italy

Purpose: to identify the role of the use of micropulsed magnetic field therapy (CEMP) in the management of reactivating myopic CNV despite treatment with an injection with anti-VEGF.

Methods: We followed with Oct two patients with myopic CNV treated with antivegf. In the first case, the CNV showed signs of reactivation two months after the injection. In the second case the CNV showed signs of enlargement without exudation after 5 months. In both cases we used a treatment with cemp. In the first case once a week for two months, in the second case twice a month for two months

Results: The therapy with CEMP was able to inactivate the reactivating CNV in the first case and to block the enlargement and favor the involution of the CNV in the second case.

Conclusions: The use of cemp in the management of myopic CNVs treated with an injection with ant-vegf could be a possible strategy in the management of relapses. Further cases are needed to verify its validity.

270 - P116

PREVENTION AND EARLY DIAGNOSIS OF VISUAL DYSFUNCTIONS

Chiara Mastantuono[1], Luca Labianca[2], Carlo Brogioni[3], Irene Di Sanzo[1], Benedetta Bellagamba[1], Mirco Fava[1]

[1]Fondazione Officina dei Sensi, ets, Ascoli Piceno, Italy; [2]University Hospital Sant'Andrea, Roma, Italy; [3]Hospital Mazzoni - ATS Ascoli Piceno San Benedetto del Tronto, Ascoli Piceno, Italy

Purpose: The "Vediamoci al Nido" project promotes early diagnosis and prevention of ophthalmological disorders in preschool-aged children through a structured visual screening program. The initiative, conducted in nurseries in Ascoli Piceno and its province, facilitates the timely identification of refractive errors and ocular anomalies, enabling targeted interventions to enhance neurodevelopmental outcomes. Additionally, it raises awareness among caregivers and educational staff about pediatric eye health, providing essential tools for the early detection of visual dysfunction. Timely diagnosis prevents permanent visual deficits that could negatively affect learning and psychomotor development.

Methods: The screening, conducted between December 2022 and February 2025 on 692 children, followed standardized protocols, including visual acuity measurement, binocular function analysis, and objective refraction assessment using advanced tools such as the 2WIN, a portable binocular autorefractometer. The test was administered in controlled environments to minimize interference factors and ensure reliable evaluation.

Children were classified into:

- Red Code: High probability of significant visual impairment, requiring immediate specialist evaluation.
- Orange Code: Moderate risk, periodic monitoring recommended.
- Green Code: No clinically significant visual anomalies, routine ophthalmological follow-up advised.

Results:

- 39 children (5.63%): Red Code, requiring urgent specialist consultation.
- 58 children (8.38%): Orange Code, requiring close monitoring.
- 595 children (85.99%): Green Code, no significant anomalies detected.

Significant differences emerged between urban and rural areas: in city nurseries, 6.75% received a Red Code and 11.08% an Orange Code, whereas in rural areas, the percentages were 3.97% and 4.33%, respectively. This discrepancy may be linked to environmental factors, home lighting quality, and screen time exposure.

Conclusion: The findings underscore the importance of early ophthalmological screening in preventing visual dysfunctions and their implications for child development. The high percentage of cases requiring follow-up highlights the necessity of systematic screening programs. This project confirms the effectiveness of preventive initiatives and supports their integration into pediatric healthcare protocols, contributing to improved neurocognitive and visual development. A continuous approach, supported by awareness campaigns and educational staff training, can ensure maximum benefits for children's visual health.

330 - P117

PREVENTION ON THE ROAD

Giulia Torboli[1]
[1]*AbilNova Cooperativa Sociale, Trento*

Purpose: We were born as Cooperative IRIFOR del Trentino in 2008. In 2022 a new name change and the choice falls on AbilNova, which combines the words 'ability' and 'innovation'. The gradual ageing of the population and current lifestyle habits (diet, sedentary lifestyle, alcohol, smoking ..) lead to an increase in visual problems. Eye checks-ups are very important in order to detect pathologies in time, stopping them and/or slowing down their possible degeneration. Taking care of your eyesight means improving your quality of life. The goals of this project are:

- through screening examinations, highlight any clinical problems or pathologies at an early stage, which will then have to be assessed by a specialised doctor.
- to make prevention widespread and touch all communities and territories.

Methods: The Mobile Ophthalmic Unit (UMO) is a camper van complete with full ophthalmic equipment for eye screening on a travelling basis. The team on board consists of an ophthalmologist, an orthoptist and ophthalmology assistant. Depending on the result of the examination, further exams may be proposed at the specialised clinic. The examinations are free of charge, thanks to the collaboration between the Cooperative, the Autonomous Province of Trento, the Provincial Agency for Health Services and IAPB Italia Onlus. Public and private organisations can collaborate and organise UMO outings and prevention campaigns.

Results: A summary of the activities carried out mainly in Trentino South Tyrol and neighbouring regions. People visited in 2022 548, in 2023 1233, in 2024 1086. Recommended check up in 2022 44%, in 2023 42%, in 2024 28%. People with known pathologies in 2022 21%, in 2023 and 2024 26%.

Conclusions: The data shows how prevention activities are fundamental, in fact, more than a quarter of the population involved in the screening exams (28% - 44%) were prescribed an in-depth check-up and only 20-25% of the total knew they had some known health conditions. The UMO reached more than 30 different communities and territories. Treating eyesight means improving the quality of life, and through prevention work, action can be taken to limit the onset of silent and disabling diseases.

353 - P118

A NOVEL INDEPENDENT LIVING SKILLS PROGRAM: AN INTERPROFESSIONAL COLLABORATION BETWEEN OPTOMETRY AND NURSING

Serena Sukhija[1]

[1]*Optometry, Western University of Health Sciences College of Optometry, Pomona, USA*

Purpose: Maintaining independence and safety in daily life is essential for visually impaired patients. With an aging population, the prevalence of visual impairment is increasing, underscoring the need for comprehensive support. Collaboration among healthcare professionals offers valuable perspectives that can improve patient outcomes. Despite this potential, there are no known U.S. programs combining optometry and nursing expertise to address these challenges. The purpose of this abstract is to present a model of an independent living skills (ILS) program that uses an interdisciplinary approach to assessment, goal-setting, and intervention to address self-care deficits and promote greater patient independence.

Methods: A collaborative program was developed between optometry and nursing professionals to enhance support for visually impaired patients. Nursing students participated in a two-week training led by a certified ILS instructor, a low vision optometrist, and optometry interns. The course covered common low vision conditions, their impact on activities of daily living (ADLs), and ILS strategies to help patients achieve functional goals. Nursing students then conducted home visits to assess patient needs, create problem lists, and develop care plans, which were implemented at home or in the clinic. They provided patient training and documented progress through detailed reports.

Results: Patients benefited from high-quality care informed by the combined expertise of optometry and nursing. Nursing students applied their training through a quality improvement project for the low vision clinic, such as designing floor markings to improve patient mobility within the clinic and building.

Conclusions: Interprofessional programs present valuable opportunities to enhance care for visually impaired patients. Training in independent living skills equips patients to manage daily activities, promoting greater independence and better health outcomes. Collaborative efforts between healthcare professionals improve patient experiences and outcomes while allowing nurses and optometrists to gain valuable insights from each other's expertise, fostering more effective care strategies.

400 - P119

COMPARING PATIENT AND OPTOMETRIST JUDGMENTS OF VISUAL ABILITIES ASSOCIATED WITH 20/40 AND 20/200 ACUITY - PRELIMINARY RESULTS

Yueh-Hsun Wu[1], Joseph Showalter[1], Deyue Yu[1], Gordon Legge[2]

[1]The Ohio State University, College of Optometry, Columbus, USA; [2]Department of Psychology, University of Minnesota, Minneapolis, USA

Purpose: Visual Acuities (VA) of 20/40 (6/12) and 20/200 (6/60) are commonly used in screening processes. This study compared the judgments of optometrists specializing in low vision about the real-world visual abilities associated with these acuities with patient self-reported visual abilities.

Methods:

Optometrists specializing in low vision rehabilitation were recruited to complete two iterations of a Visual Acuity Survey comprising 100 yes/no items. Each survey item was designed to assess the ability to perform everyday visual tasks; for example, "Would you be able to see the eye of a needle if you held it at arm's length?" Clinicians provided responses based on hypothetical patient scenarios defined by two visual acuity (VA) levels: 20/40 (low vision) and 20/200 (legal blindness). An Item Response Theory (IRT) model, developed using data from 385 low vision participants, was employed to estimate clinicians' perceptions of visual abilities (in logits) at two acuity levels, with higher logits indicating better visual abilitiies. These estimates were then compared with visual ability estimates derived from actual low-vision patients. Demographic information and years of clinical experience were also collected from clinician participants.

Results: Data were collected from six optometrists who specialize in low vision, and compared with responses from 31 low vision participants with 20/40 and 19 participants with 20/200 acuity from our previous study . The clinicians averaged 13.72 (SD = 14.36) years of practice, with a mean age of 46.33 (SD = 14.33). For the 20/40 condition, clinicians' perceived visual ability averaged 0.22 logits (SD = 0.63), which was not significantly different from the patient-based estimate (mean = 0.35, SD = 0.78; $t(8.22) = 0.45$, $p > .05$). Similarly, for the 20/200 condition, clinicians' average perception was -0.79 logits (SD = 0.50), compared to the patient estimate of -0.67 logits (SD = 0.47; $t(8.04) = 0.51$, $p > .05$).

Conclusions: Our findings indicate that optometrists specializing in low vision have perceptions of patients' vision abilities consistent with those reported by the patients. These results provide early evidence that clinicians' understanding based on standard VA measures may reliably reflect patients' real-world visual abilities.

511 - P120

EFFECTS OF PROGRESSIVE ADDITIONAL LENSES DESIGN ON VISUAL QUALITY IN ADULT WITH PRESBYOPIA

Shih-Hao Tseng[1, 2], Fang-Chun Lu[1], Po-Yu Chen[1], Yi-Han Peng[1], Ching-Ying Cheng[1, 3]

[1]Department of Optometry, [3]Department of Ophthalmology, Chung Shan Medical University, Taichung, Taiwan; [2]Asia University, Department of Optometry, Taichung, Taiwan

Purpose: Progressive spectacle lenses are a common solution for accommodative decline. This study aimed to compare the visual performance of different progressive additional lens(PAL) designs in adults with presbyopia.

Methods: Nineteen participants aged 40–55 were initially recruited; nine were excluded due to ocular surgery, high refractive error (> -5.00D), or suboptimal visual acuity (< 0.8). Ten participants (4 males, 6 females) completed the study. After a full optometric exam, each was fitted with spectacle frames containing three lens types: single vision (SV), AMP PAL (back surface process), and LSB PAL (dual-surface design). Visual acuity at distance, intermediate, and near was measured using fixation targets at 5-degree intervals across 30° horizontally and 15° vertically (10° at near). SV lenses served as the baseline for each distance. Data were analyzed using SPSS.

Results: SV lenses provided the best acuity at all distances. While the AMP lenses showed slightly better average peripheral acuity (left and right) than the LSB lenses at distance, the difference was not statistically significant. Among these progressive additional lens, the LSB design yielded significantly better visual quality than the AMP design, particularly at intermediate and near distances. This indicates that the main differences in visual quality between the LSB and AMP designs are most evident in the intermediate and near.

Conclusion: Although LSB provided significantly better visual quality than AMP, individual variations were observed among participants. In the intermediate zone, the LSB design offers a wider field, while the AMP design appears narrower. However, AMP tends to perform better for distance vision. Clinical lens selection should consider individual binocular visual needs.

432 - P121

FUNCTIONING AND DISABILITY IN CHILDREN AND ADOLESCENTS WITH VISUAL IMPAIRMENT: INPUTS FROM THE SEEMYLIFE PROJECT

Alice Colombo[1], Francesca Incagli[1, 2], Martina Lanza[1], Maria Eleonora Reffo[2], Agnese Suppiej[2, 3, 4], Francesco Parmeggiani[4, 5], Hélène Dollfus[6], Erika Guastafierro[1], Matilde Leonardi[1]

[1]Fondazione IRCCS Istituto Neurologico Carlo Besta, SC Neurologia, Salute Pubblica, Disabilità, Milan, Italy; [2]Robert Hollman Foundation, Padua, Italy; [3]Pediatric Unit, Department of Medical Sciences, University of Ferrara, Ferrara, Italy; [4]ERN-EYE Network - Center for Retinitis Pigmentosa of Veneto Region, Camposampiero Hospital, Azienda ULSS 6 Euganea, Camposampiero, Italy; [5]Department of Translational Medicine, University of Ferrara, Ferrara, Italy; 6University Hospital of Strasbourg, Strasbourg, France

Purpose: Visual impairment significantly affects children's neuromotor, cognitive and social development but also their well-being and that of their families. Children with this sensory disability tend to achieve developmental milestones later and are more vulnerable to experiencing psychological issues and social withdrawn. In Europe, and in Italy too, visual impairment and blindness are one of the leading causes of disability in children and adolescents. The aim of this work is to understand how disability impacts on functioning and everyday life of children and adolescents with visual impairment.

Methods: Data collection is part of a larger European project (SeeMyLife: Holistic mixed approaches to capture the real life of children with Rare Eye Diseases) that aims at assessing quality of life of children and adolescents with visual impairment. The study is recruiting children and adolescents aged 8 to 18 years, along with their caregivers and referring clinicians. Participants were involved in semi-structured interviews that explore various aspects of vision-related quality of life, social inclusion/integration, and their perspectives on clinical and social interventions. This work focuses on the impact of disability from parents and healthcare professionals' perspective. The thematic analysis of the interviews was performed by NVivo 14.

Results: Preliminary results showed that both parents and professionals consider visual disability to have a greater impact when the child's social participation is limited and when the impairment is associated with other disabilities. In fact, they report that other people do not really know how to deal with children with visual impairment because it is less well known than other types of disabilities, such as motor disability. These results are expected to provide valuable insights into the environmental and familiar factors contributing to the challenges faced by children and adolescents with visual impairment.

Conclusions: The comprehensive perspective involving both caregivers and healthcare professionals contributes to defining tailored care pathways and rehabilitation interventions based on multidisciplinary approach. Specifically, in Italy, there is a need to strength the focus on these patients by adopting a biopsychosocial approach that consider, in addition to functioning, also the influence of environmental characteristics.

24 - P122

IMPROVING QUALITY OF LIFE IN YOUNG ADULTS WITH VISUAL IMPAIRMENTS WHO REFUSE LOW VISION AIDS DUE TO PSYCHOSOCIAL FACTORS

Carmen Perez[1]

[1]*Nova Southeastern University, Davie, FL, USA*

Purpose: To determine ways of helping visually impaired patients by using mainstream technology instead of low vision aids to reduce negative psychosocial factors and increase quality of life.

Methods: Reviewing literature and anecdotal encounters from patients in our low vision clinic, Including a 22 yo female college student with usher's syndrome – uses iPhone and iPad, phone flashlight and refuses white cane, and a 17 yo male high school student with RP – refused any low vision aids, wants meta glasses and refuses white cane

Results: Studies have shown that several visually impaired patients refuse low vision aids because they are concerned with cosmesis and the psychosocial element of showing their disability to the rest of the world. In my experience, this mainly includes young adult patients, and it greatly affects their quality of life and independence. Training patients to use software in smartphones/tablets/computers or other mainstream technology allows the patient to participate in a more inclusive environment and may even reduce the cost to the patient.

Conclusions: We need to do a better job of creating technology that does not make the patient stand out to help with the psychosocial aspect of a patient's quality of life. The patient will be better served by attending technology training classes/sessions.

155 - P123

PATIENT REPORTED QUALITY OF LIFE BY GLAUCOMA SEVERITY USING THE GLAUCOMA COMPUTERIZED ADAPTIVE TEST, GlauCAT

Aleksandra Mihailovic[1], Hoang-Viet Tran[1], Delcora Huggins[1], Istabraq Musa[1], Shriya Jain[1], Pradeep Ramulu[1], Eva Harper[2], Ecosse Lamoureux[2], Mona Kaleem[1]

[1]Johns Hopkins Wilmer Eye Institute, Baltimore, USA; [2]Duke-NUS Medical School - Singapore Eye Research Institute, Singapore, Singapore

Purpose: Patient reported outcomes are important in informing ophthalmic care but are often misestimated due to under-assessment of patient experiences. The goal of this project it to evaluate quality of life (QoL) across 12 QoL domains by glaucoma severity using the Glaucoma Adaptive Test (GlauCAT).

Methods: Study enrolled participants with a primary glaucoma diagnosis from the Wilmer Eye Institute. The GlauCAT is composed of 12 QoL domains; using an adaptive algorithm it estimates domain specific score based on up to 10 questions per domain, ending once sufficient responses are obtained. Better eye visual field mean deviation (MD) was used to categorize participants to mild (MD ≥ -6 dB), moderate (MD <-6 and ≥ -12 dB), and severe (MD < -12 dB) glaucoma groups. Kruskal-Wallis and Wilcoxon Rank Sum tests were used to compare the QoL domain scores between severity groups as well as the multiple linear regressions controlling for demographics.

Results: Two hundred and twenty three participants were part of this analysis. Mean age differed significantly between the groups (mild: 66.1, moderate: 71.1, severe: 69.9; $p = 0.04$). Higher number of male participants was observed in the moderate (59%) and severe (64%) groups compared to mild (43%) ($p = 0.02$). Mild (93%) and moderate (90%) groups reported higher education than those with severe disease ($p = 0.02$). No difference by race was found ($p = 0.29$). Scores for all QoL domains significantly differed across severity groups ($p < 0.01$ for all) except treatment convenience and economic factors. When adjusting for other covariates moderate and severe groups showed significantly worse scores in all domains ($p < 0.05$ for all) compared to the mild group except for visual symptoms, driving, treatment convenience, and general convenience domains. In addition, severe group showed significantly lower score in activity limitation, social interactions, and general convenience ($p < 0.05$) as compared to moderate group, although no longer significant after controlling for demographic factors.

Conclusions: Significant QoL differences exist between glaucoma severity groups, emphasizing the need for targeted interventions addressing functional impairments and enhancing social well-being. Incorporating the GlauCAT in clinical care can help providers prioritize patient needs and achieve equitable care.

350 - P124

QUALITY OF LIFE OF PATIENTS WITH OPEN GLOBE OCULAR TRAUMA

Asma Khallouli[1], Kallel Zeineb[1], Belguith Mariem[1], Nourhene Aidi[1], Afef Maalej[1]
[1]Ophthalmology, Military Hospital of Tunis, Tunis, Tunisia

Purpose: To evaluate the epidemiological and clinical characteristics of patients with open globe injuries (OGIs) and assess the impact of these injuries on their quality of life (QoL) and mental health

Methods: A prospective study was conducted on 20 patients with OGIs treated at the Military Hospital of Tunis between January 2020 and March 2023. Data were collected through clinical examinations and the NEI-VFQ-25 questionnaire to assess QoL.

Results: The mean age of patients was 34.2 years, with a male predominance (65%). Most injuries were work-related (70%), and 70% of patients had a final visual acuity (VA) of less than 1/10. Corneal wounds were the most common (65%), followed by corneoscleral (20%) and scleral wounds (15%). Lens involvement was present in 50% of cases, and posterior segment involvement in 25%. The mean NEI-VFQ-25 score was 63.28/100, with the lowest scores in mental health (50), difficulties (51.25), general vision (56), and peripheral vision (56.25). Other domains, such as ocular pain (58.75), near activities (65.83), dependency (65.41), and distance activities (67.08), also showed significant impairment. Final VA and posterior segment involvement were significantly associated with lower QoL scores

Conclusions: OGIs significantly impair patients' QoL, particularly in mental health and daily functioning. These findings highlight the need for comprehensive care, including psychological support, to improve outcomes for patients with OGIs. Ultimately, the emergence and development of the field of quality of life in ophthalmology, although still recent, represent an undeniable advancement in improving the assessment of the impact of various pathologies.

129 - P125

REFRACTIVE ERROR AND VISION RELATED QUALITY OF LIFE FOR SCHOOL AGED CHILDREN IN ZIMBABWE

Deborah Tigere[1], Jonathan Jackson[2], Edson Munsaka[1]

[1]National University of Science and Technology, Bulawayo, Zimbabwe; [2]Department of Ophthalmology and Optometry, Northern Ireland Clinical Research Network, Belfast, Northern Ireland

Purpose: Visual impairment due to uncorrected refractive error is relatively common among school-aged children and in cases of high refractive error this can be a leading cause of avoidable blindness. The aim of this study was to investigate service uptake and vision related quality of life in school-aged children with uncorrected refractive error.

Methods: School-aged children accessing eye care services in two tertiary institutions (Sekuru Kaguvi and Richard Morris Eye Hospitals) participated in the study. The study, which was guided by the pragmatism philosophy, used a mixed methods approach. Various sampling techniques were employed to select the number of participants per category. The sample size of 112 school-aged children was estimated using a single population proportion formula; the prevalence of visual impairment related to uncorrected refractive error to be 50% (maximum variance was assumed), with a confidence interval of 95% and a margin of error of 10%. A contingency of 10% for the nonresponse rate was added. The Impact of Vision Impairment for Children (IVI_C) questionnaire was administered to children and additional data was collected through focus group discussions and interviews with parents, education and health professionals.

Results: Several major barriers were identified hindering access to services. These included lack of service awareness, high cost of services, including spectacle costs, and limited capacity to deliver services within the health institutions. 79% of the 112 children did not access services after identification of refractive error and referral to eye health facilities. 21% of the children (9) who accessed services and who were provided with spectacles, reported improved vision related quality of life. Children with poor vision who failed to access eye care services experienced headaches, mobility challenges and emotional bullying. Teachers confirmed that children with visual impairment had challenges reading, writing, and interacting with other learners. Uncorrected refractive error was confirmed as a common cause of visual impairment among school- aged children that affects education and quality of life.

Conclusions: Access to eye care services and the provision of affordable spectacles is recommended to reduce the impact of visual impairment on the quality of life.

272 - P126

THE IMPACT OF A COMMUNITY-BASED MULTIDISCIPLINARY LOW VISION REHABILITATION CLINIC ON THE QUALITY OF LIFE OF PATIENTS WITH VISUAL IMPAIRMENT

Xiu Ling Tan[1]

[1]*Tan Tock Seng Hospital, National Healthcare Group Eye Institute, Singapore, Singapore*

Purpose: To evaluate the effectiveness of a community-based multidisciplinary low vision rehabilitation service on the quality of life in visually impaired adults.

Methods: A prospective study of a multidisciplinary low vision rehabilitation clinic was conducted in the community setting. First-time patient referrals were assessed before and after rehabilitation (ranging from 3 to 6 months). It included a low vision optometrist assessment, followed by an occupational therapist assessment, and a medical social worker interview if required. National Eye Institute 25-item Visual Function Questionnaire (NEI VFQ-25) and Patient Health Questionnaire (PHQ) were also administered to patients at each visit.

Results: 20 men and 12 women, with a mean age of 71.5 years, attended the clinic. The top 3 causes of visual impairment were age-related macular degeneration (31.3%), neuro-ophthalmological disorders (21.9%) and glaucoma (18.8%). More than half of the patients had moderate to severe visual impairment (defined as visual acuity worse than 6/18). 75.9% had moderate to profound loss of contrast sensitivity. Pre-rehabilitation intervention, the VFQ-25 subscales with the largest deficits were distance vision and role limitations. 38.7% of patients had minimal to mild depression while 6.5% were moderately depressed. Post-intervention, there was improvement in VFQ-25 vision functional and socio-emotional scores in 63.6% of the patients and improvement in PHQ scores in 50% of the patients. 90.6% of the patients preferred to be seen in the community setting, rather than in a tertiary hospital.

Conclusions: Patient reported quality of life is a significant outcome measure for low vision rehabilitation. Improvements in both vision-related quality of life and psychosocial mental health are found after community-based visual rehabilitation. It is important to actively screen for depression in patients with visual impairment.

105 - P127

THE INTERCONNECTION OF SOCIAL AND HEALTH SYSTEMS

Chiara Mastantuono[1], Luca Labianca[2], Benedetta Bellagamba[1], Luigina Petrucci[1], Irene Di Sanzo[1], Mirco Fava[1]

[1]Fondazione Officina dei Sensi, ETS, Ascoli Piceno, Italy; [2]University Hospital Sant'Andrea, Rome, Italy

Purpose: Within the Third Sector, an important role is played by social enterprises, which adopt an entrepreneurial model that goes beyond the welfare intervention typical of the State. Precisely from the development of the third sector arises the need to support a process of change with a view to retraining the person based on value, which implies the strengthening of actions and organizational processes aimed at accompanying families to autonomy through a new welfare system based on economic sustainability parallel to the public system. The objectives are care, guaranteeing levels of assistance to people with disabilities free of charge and work, promoting the employment of people with fragility, who would be unlikely to be included in "market" work contexts, and who work to provide useful services for society.

Methods: The project arises from the establishment of a Participation Foundation which holds the strategic management of two social enterprises, with operational autonomy which respectively carry out free rehabilitation activities (company A) and productive activities of social utility (company B) in support of the former, and develop an interconnection of actions. Company A carries out a free rehabilitation service for families with visual and multiple disabilities: the individualized rehabilitation programs are structured on a flexible care model tailored to the characteristics and potential of individual children. Company B is engaged in productive activities in the field of socially useful services through the employment of disadvantaged people

Results: Over a period of 4 years, an internal system was created capable of achieving a financial return in favor of the health and social area, an inclusive work path, where it is necessary to take the risk of encountering diversity, the alternative and making it an active part of a common path.

Conclusions: The Foundation generates a new ideal of assistance capable of setting up rehabilitative contexts, building social infrastructures, designing new economies to put people back to work regardless of the presence of disability. An intrinsic investment of value, innovation and the beauty of diversity, to be undertaken with courage to develop a sustainable social economy and inclusive prosperity

401 - P128

THE SEXUAL DEVELOPMENT AND SEXUAL ORIENTATION OF PEOPLE WITH VISION IMPAIRMENTS

Sabina Kef[1]
[1]*University of Amsterdam, Amsterdam, The Netherlands*

Purpose: What do we know on the sexual development and sexual orientation of persons with vision impairments (VI)? How can we support their healthy sexual development and functioning?

Methods: We performed a scoping review and used data of a national longitudinal study on sexual development and sexual orientation. The scoping review provides an overview of the current knowledge on sexual development and sexual orientation of persons with visual impairment (VI), based on research published between 1970 and 2024. In the longitudinal study we interviewed 98 persons (51 males and 47 females; 25% blind) with VI twice (T1 adolescence and 12 years later T2).

Results: Results of the 14 studies we found in the scoping review show that youth VI have less access to sex education, have a lack of sexual knowledge and delayed sexual development. Although young people with VI report an interest in sexuality, they often had no extensive sexual experiences. This may be partly explained by limited access to sex education and the challenges arising from communication barriers on this topic, both at home and at school. Moreover, there is little attention to cultural differences and intersectionality, such as LGBTQ+ individuals within the VI population. In our interview project we found that during adolescence 2% of the participants were bisexual and 6% had doubts about their sexual orientation. In their young adulthood the results for sexual orientation were: 2% homosexual, 3% bisexual and 3% had doubts about their sexual orientation.

Conclusions: We need more empirical research on sexual development, and sexual orientation is hardly studied. Attention for sexuality is needed because studies point towards a positive associations between satisfying romantic sexual relationships and wellbeing.

1012 - P129

CHALLENGES IN USING CONTRAST SENSITIVITY AND READING ACUITY AS DEMENTIA BIOMARKERS: THE EFFECT OF VARIABILITY

Walter Wittich[1], Natalie Phillips[2]

[1]School of Optometry, Université de Montréal, Montreal, Canada; [2]Psychology, Concordia University, Montréal, Canada

Purpose: Changes in visual function (e.g. acuity or contrast sensitivity/CS) have repeatedly been demonstrated among individuals living with dementia (e.g. Alzheimer's/AD or Mild Cognitive Impairment/MCI); however, few studies measured both these visual functions in the same cohort, and many diagnostic subgroups have not been examined. The purpose of the present study was to explore reading acuity (RA) and CS in older adults across 10 diagnostic groups, compared to healthy age-matched controls.

Methods: We analyzed the data of the COMPASS-ND cohort study, with focus on binocular RA (MNRead) and CS (Mars chart), using habitual correction. Participants were categorized as healthy (n = 161), subjective cognitive impairment/SCI (n = 138), MCI (n = 261), MCI with vascular contribution (n = 153), Parkinson's with MCI (n = 39), Parkinsons with motor symptoms only (n = 79), Parkinson's with dementia (n = 15), Fronto-Temporal dementia (n = n = 30), Lewy-body Dementia (n = 28), AD (n = 104), and AD with vascular dementia (n = 75). For each group, we plotted RA as a function of CS and calculated 95% Confidence Ellipses. We used the ellipse circumference, as well as horizontal and vertical ellipse diameter as measures of variability and data dispersal.

Results: Ellipse models for 95% confidence captured between 90-97% of data points. Compared to healthy controls, data dispersal (ellipse circumference) was largest in Fronto-Temporal and Lewy-body Dementia, followed by AD with vascular dementia. Horizonal ellipse diameter (RA) was largest in Fronto-Temporal dementia, whereas vertical ellipse diameter (CS) was largest in MCI with vascular contribution and Lewy-body Dementia.

Conclusions: Data variability of visual function measures among individuals living with different dementia types is generally highly heterogeneous; however, this effect appears to be more pronounced in some diagnostic groups. The use of RA and CS as potential behavioural biomarkers for dementia therefore remains limited.

1019 - P130

COMPARISON OF MANUAL VERSUS ELECTRONIC AUTOMATED VISUAL FUNCTION TESTS ON A 29 YEAR OLD FEMALE WITH BILATERAL COMBINED RETINAL ARTERY AND RETINAL VEIN OCCLUSION SECONDARY TO P- ANTINEUTROPHIL CYTOPLASMIC ANTIBODY ASSOCIATED OCCLUSIVE VASCULITIS ON BOTH EYES

Ann Jelynne Marfori[1,2], Jed Mikhail Tabangcura[1]

[1]Ophthalmology, The Manila Doctors Hospital,Manila, Philippines; [2]Ophthalmology, The Medical City South Luzon, Sta Rosa, Laguna, Philippines

Purpose: To compare the use of various diagnostic low vision tools in a tertiary training hospital (NCR, Manila) at the residency training level.

Methods: Alongside low vision assessment, other functional visual tests such as contrast, color and glare, a maculopathy-retinopathy-metamorphopsia (Amsler Grid Test) and a vision disc were compared with corresponding automated (Humphrey) visual field test settings.

Results: After treatment with oral steroids, panretinal photocoagulation, series of intravitreal injections, vitrectomy on the right eye and a more stable course, low vision assessment was done. Uncorrected vision for far were OD 0.16 decimal OS 0.1 decimal. Best corrected visual acuity for far with subjective refractions were OD 0.20 decimal with -2.75 () -0.50 X 180 OS 0.16 decimal with -3.00 () -0.50 X 180. Near visual acuity with 0.00 adds were OD and OS 0.05 decimal (4 M print) at a distance of 37 cm, reading 30 words per minute . Contrast sensitivity test OU 1% contrast threshold (60 contrast sensitivity). There was no significant glare, however there was tritanomalous color defect (blue-yellow deficiency) using the Pseudoisochromatic Plates 24. On gross visual field testing using a vision disc, right eye horizontal totaled 140 degrees while vertical totaled 100 degrees, left eye horizontal totaled 140 degrees while vertical totaled 115 degrees. In contrast it was constricted in the Humphrey kinetic test by 54% horizontally and 60% vertically. For the 24-2 setting, the visual field loss was absolute on the right and near-absolute on the left. The Amsler grid and the Humphrey macular setting were more consistent. On low vision devices, far vision improved to 0.4 decimal using a monocular telescope on the left, while near vision improved to 0.6 to 0.8 decimal (0.5 to 0.6 M print) using a 5X lighted hand magnifier.

Conclusions: Whenever available, functional vision tests should be explored to be done both manually and electronically (automated). Results should be compared and correlated with the patient's visual complaints and overall visual performance, including activities of daily living, orientation and mobility.

1031 - P131

BRINGING THE CLINIC HOME: VISION-MONITORING IN PATIENTS WITH AMD USING A SMARTPHONE APP

Mehal Rathore, Will Leeney, Stephanie Campbell
OKKO Health, London, United Kingdom

Purpose: Frequent in-clinic monitoring for age-related macular degeneration (AMD) is increasingly unsustainable, leading to the growing popularity of at-home monitoring tools. The OKKO Circles app is a vision assessment tool that uses gamified "Vanishing Optotypes" to evaluate visual acuity. This study aimed to assess the level of agreement between the OKKO circles app and the standard clinical measure, the Early Treatment Diabetic Retinopathy Study (ETDRS) chart, and to evaluate the test-retest variability (TRV) of both methods in patients with AMD using the app unsupervised at home.

Methods: This prospective cohort study was conducted at the macula clinics of two eye hospitals (Oxford and Nottingham) and the homes of participating patients in England. A research practitioner recruited participants, obtained consent, and provided training on the app. Patients were advised to use the app a minimum of three times weekly, and visual acuity was also measured during routine clinic visits using the ETDRS chart. Agreement and variability between the two methods were analysed using Bland-Altman plots and TRV calculations.

Results: A group of 525 AMD patients agreed to participate in the study, and a subset of them with stable vision (n=227) engaged with the game with the desired frequency. The Bland-Altman analysis between the app-based test and the clinical measure showed an agreement of ±0.35 logMAR (Bias: 0.07). The app-based test and the ETDRS chart had TRV values of ±0.13 logMAR (Bias: -0.01) and ±0.22 logMAR (Bias: 0.0), respectively, demonstrating greater repeatability of the OKKO measurements over the conventional ETDRS test.

Conclusions: The OKKO app demonstrated strong test-retest consistency, outperforming traditional in-clinic LogMAR measurements in repeatability. These promising results support the viability of remote vision monitoring. Future research should emphasise strategies to enhance efficiency for both patients and clinicians without compromising on quality of care.

1032 - P132

A NEW METHOD TO INVESTIGATE THE EFFECT OF MOVEMENT IN MULTISENSORY INTEGRATION IN BLIND CHILDREN

Margherita Sturlese[1,2], Helene Vitali[1], Martina Riberto[1], Fabio Vannucci[1], Claudio Campus[1], David Tovar[3], David Lewkowicz[4], Murray Micah M.[5], Mark Wallace[3], Monica Gori[1]

[1]Istituto Italiano di Tecnologia, Genoa, Italy; [2]University of Genova, Genoa, Italy; [3]Vanderbilt University, Nashville, USA; [4]Yale School of Medicine, New Haven, USA; [5]The Sense Innovation and Research Center, Lausanne, Switzerland

Purpose: Multisensory temporal perception is crucial for interacting with the environment, especially in the absence of vision. While the temporal binding window (TBW) narrows with development, how active versus passive movement affects multisensory processing in visually impaired children remains largely unknown. Prior studies in adults show that active movement sharpens temporal sensitivity, but developmental trajectories and adaptations in blind individuals are unclear. Here, we introduce a novel method to assess multisensory temporal processing in blind children using audio-tactile stimuli and controlled motor tasks.

Methods: We developed an experimental setup combining two devices: the Haply Inverse3 for controlling arm movement at specific speeds (slow, medium, fast) and the MSI Caterpillar for delivering spatially congruent auditory and vibrotactile stimuli. This setup enables precise measurement and manipulation of movement dynamics during a Temporal Order Judgment (TOJ) task. Participants hold the devices and perform either active or passive arm movements while judging which stimulus (auditory or tactile) occurred first.

Results: Preliminary pilot data in typically developing children show that TOJ precision improves during active movements compared to passive ones. These improvements are associated with reduced Just Noticeable Differences (JNDs) in active condition, suggesting enhanced temporal resolution when efferent motor signals are present. Ongoing data collection in blind children aims to determine whether similar motor-sensory integration benefits are preserved or altered in the absence of visual input.

Conclusions: Our method offers a novel approach for investigating the interplay between movement and multisensory integration in blind children. By enabling controlled manipulation of movement speed and condition (active vs. passive), the setup can reveal developmental and compensatory mechanisms in multisensory temporal processing. These insights may inform rehabilitation strategies and enhance our understanding of sensory development in visual impairment.

Acknowledgements: The funding of MELD is supported by a generous unrestricted gift from Reality Labs Research, a division of Meta.

1036 - P133

DEVELOPMENT OF A QUESTIONNAIRE TO ASSESS FUNCTIONING IN PEOPLE WITH DEAFBLINDNESS: A PILOT-STUDY TO ENHANCE ACCESS TO CARE AND SUPPORT

Marianne Rorije[1], Marleen Smits[1], Annelies Witsiers[2], Eline Heppe[1,3]

[1]Royal Kentalis, Kentalis Academy, Utrecht, The Netherlands; [2]Kalorama, Beek, The Netherlands; [3]Vrije Universiteit Amsterdam, Amsterdam, TheNetherlands

Purpose: In 2022, the Netherlands established a functional definition of deafblindness (DB). A functional definition describes an impairment in terms of its impact on functioning not based on medical criteria. In the Netherlands, access to deafblind-specific support is often based on medical criteria for hearing and vision loss. However, not everyone with DB meets these criteria as the impairment is not solely due to limitations in bodily functions/structures. Therefore, a functional definition alongside medical criteria, would better determine access to deafblind-specific support. The next step is national, local and social implementation of this functional definition. To facilitate local implementation, the Functioning Questionnaire in Hearing and Vision impairment was developed and tested in a pilot-study. This questionnaire is a practical tool to assess functioning of people with DB. It aims to improve access to care and support and clarify their needs across various domains of functioning. The pilot-study assesses the questionnaire's feasibility, usability and perceived value.

Methods: The questionnaire was developed by a multidisciplinary working group. Its content was informed by assessing 19 key sources, including the ICF-model and the InterRAI Community Health Assessment. The identified functioning domains were prioritized collaboratively through expert consensus. The pilot-study was conducted in five Dutch health-care organizations specialized in rehabilitation services for people with DB. Professionals involved in intake or care for people with DB used the questionnaire with (potential) clients and/or their relatives. To evaluate experiences with the questionnaire professionals completed a survey, additionally, professionals and clients participated in interviews. So far, the questionnaire has been administered seven times and eight more participants are expected to participate.

Results: Currently, data collection and analysis are ongoing. Preliminary findings of the pilot-study and the implementation process of the functional definition will be presented at the conference.

Conclusions: Results are expected to inform future improvements to the questionnaire and the implementation process in rehabilitation services.

1040 - P134

DEVELOPMENT AND PILOT-STUDY OF THE COMMUNICATION AND LANGUAGE PROFILE FOR YOUNG CHILDREN WITH VISUAL IMPAIRMENT

Saskia Damen[1,2], Marianne Rorije[2]

[1]Inclusive and Special Needs Education, University of Groningen, Groningen, The Netherlands; [2]Royal Kentalis, Academy, Utrecht, The Netherlands

Purpose: Children with profound vision loss are more likely to have delays in their communication and language development. Their parents and caregivers do not always know how to take into account their child's communication and language support needs. Therefore, it is important to map in detail the communication and language development of young children with profound vision loss, and the quality of the communication and language support provided by their parents and caregivers. However, there was no specific assessment instrument available for this.

Methods: A literature study, document analysis and focus group sessions were carried out to investigate the applicability of existing instruments for the assessment of communication and language skills of children aged 0-4 with profound vision loss, and the assessment of communication and language support provided by their parents and caregivers. The focus group sessions also focused on getting insight in the adjustments of these instruments made by professionals, and their recommendations for the assessment process. Based on the results of the applied mixed methodology, the Communication and Language Profile – Visual Impairment (CLP-V) was developed. The CLP-V is an assessment procedure that leads to an individual profile of the child, which is based on the results of several instruments that are administered by a multi-disciplinary team, together with the parents and caregivers. The CLP-V was reviewed by experts, adjusted, and then applied in a pilot study involving seven young children with moderate or severe vision loss. Evaluations were held with the involved professionals about the added value, the construction, and applicability of the CLP-V.

Results: Professionals indicated that they believed the instrument has a good construction and significant added value over other instruments. However, especially the early interventionalists experienced some difficulties with the administration despite the short training and guideline offered to them.

Conclusions: The first evaluations of the CLP-V are promising, but more training might be needed for professionals that want to use it. More research is recommended on its psychometric quality.

1060 - P135

PERFORMANCE-BASED OUTCOME MEASURES FOR LOW VISION REHABILITATION: COMPARING SELF REPORT AND VIRTUAL REALITY ACTIVITIES

Gislin Dagnelie, Elnaz Bailey, Chris Bradley
Ophthalmology, Johns Hopkins University, Baltimore, USA

Purpose: To create a set of outcome measures that meets the following criteria: 1) encompasses both self-reported and performance-based ability; 2) spans a broad range of visual impairment (20/800≤BCVA≤20/50); 3) is validated against real-world performance measures; 4) is psychometrically calibrated.

Methods: Items for both self-report and performance measures were solicited from focus groups with visual impairment levels spanning the target range; using the Activity Inventory (Massof et al., OVS 2007), participants were prompted to report visually challenging activities in all 4 visual domains. A pilot questionnaire with 140 items was drafted and administered to 100 participants spanning the visual impairment range. A subset of items representing in-home activities was implemented in real-world and virtual reality versions.

Results: Rasch analysis of pilot questionnaire data using the method of successive dichotomizations (Bradley & Massof, PlosOne 2018) is currently ongoing. Pilot data for performance measures in real world and VR are currently being collected and will be analyzed using method for m-alternative forced choice data developed by Bradley & Massof (PlosOne 2019). A comparison of the pilot data sets will be presented.

Conclusions: The approach followed replicates the development of self-reported and performance outcome measures for ultra-low vision previously developed in our laboratory. The resulting instruments will lend themselves to functional ability assessment in a broad low vision population, and can be used for low vision rehabilitation as well as for clinical trials requiring functional vision outcomes.

1047 - P136

NOVEL APPROACHES TO RETINAL REPAIR: LEARNING FROM ZEBRAFISH AND THE POTENTIAL OF EXOSOMES

Lucia Poggi, Ignacio Babiloni Chust

Department of Cellular, Computational and Integrative Biology - CIBIO, University of Trento, Trento, Italy

Purpose: Exploit the zebrafish (Danio rerio) model to investigate human retinal diseases, focusing on age-related macular degeneration (AMD). Due to conserved molecular pathways and retinal architecture, zebrafish effectively model various inherited and age-related retinal disorders, including AMD, retinitis pigmentosa, glaucoma, and neurodegenerative conditions. Their genetic tractability, rapid development, and in vivo accessibility enable detailed study of retinal disease mechanisms in a complex tissue environment where vasculature, neurons, and glia interact. Notably, zebrafish Müller glial (MG) cells serve as endogenous stem cells capable of regenerating lost photoreceptors, offering a unique opportunity to explore retina regeneration triggered by neurodegeneration.

Methods: We employ a light-induced retinal degeneration (LIRD) model to mimic AMD-like damage and investigate transcriptomic changes linked to photoreceptor apoptosis and MG cell reprogramming and proliferation. Special focus is placed on the roles of oxidative stress (OS) and inflammation.

Results: Transcriptomic analyses reveal that photoreceptor apoptosis correlates with increased inflammation, OS, and activation of proliferation-related genes in MG cells. Pharmacological inhibition of OS with N-acetylcysteine (NAC) reduces apoptosis and MG proliferation but does not affect inflammation-associated gene expression. These findings highlight OS as a key driver of retinal regeneration.

Conclusions: Zebrafish provide a powerful vertebrate model to identify molecular targets and biomarkers linked to AMD pathology and retinal regeneration. Our transcriptome analysis highlights OS as a key trigger of the regenerative response. Future research must dissect the molecular pathways that enable MG regeneration in zebrafish but not in humans. Activating these pathways in humans could pave the way for effective retinal regeneration, contrasting with the typical inflammation and gliosis observed in disease. Additionally, extracellular vesicles (EVs) show promise as mediators of retinal repair through their cargo of chaperones, signaling molecules, and genetic material. Leveraging the zebrafish model to characterize EV signatures and functions in the context of both OS and the beneficial inflammatory response can inform the development of optimized EV-based therapies for retinal diseases. This approach bridges basic research and clinical translation, advancing novel regenerative strategies for human retinal disorders.

1024 - P137

APP-BASED ASSISTIVE TECHNOLOGY FOR LOW VISION CLIENTS

Natalie Huff, Julianna Eng, Graham Teaford, Katherine Apostol, Brianna Gilbert, Jennifer Gibbs, Jasmine Huang

Occupational Therapy, San Jose State University, San Jose, USA

Purpose: This qualitative study explored the perspectives of occupational therapists (OTs) regarding their use of app-based assistive technology (AT) in interventions for clients with low vision. Through semi-structured interviews and thematic analysis, the study identified key themes related to these applications' integration, challenges, and benefits in low vision rehabilitation.

Methods: A phenomenological qualitative study design was used, allowing for a deep exploration of AT's practical application and its impact on OTs and clients (Basias & Pollalis, 2018). Two data collectors, consisting of one interviewer and one notetaker, conducted semi-structured interviews with participants for approximately 30-50 minutes.

Results: Six key themes emerged from the data, highlighting how OTs learn about, implement, and reflect on the use of app-based AT in low vision rehabilitation. These themes included learning resources for OTs, factors influencing AT selection, therapeutic strategies for integrating app-based AT, barriers and facilitators to AT use, client feedback, and the evolving role of OTs in shaping future AT development. Tables 5 through 10 provide a deeper look at these themes, supported by participant quotes and common codes.

Conclusions: App-based AT plays a vital role in low vision rehabilitation. Key findings from this study highlight the importance of OTs staying informed through self-learning and hands-on experience with apps to ensure they select the best tools for clients. Client-centered care is essential, and apps should be chosen based on individual readiness, abilities, and environment to support successful use and engagement. Training strategies like teach-back and personalized methods are crucial in building client confidence and independence. Barriers to app use, including technical issues, socioeconomic factors, and client readiness, require therapists to adapt and collaborate with clients. Ongoing evaluation is necessary for OTs to monitor app use and adjust interventions. Lastly, OTs can shape app development by providing feedback to developers for better accessibility and user-friendliness.

1033 - P138

ASSESSMENT OF LOW VISION AIDS UTILIZATION IN PATIENTS WITH RETINITIS PIGMENTOSA IN IRAN

Ali Ayatollahi[1], Mohammad Hajiebrahimi[2], Maryam Dashti[1], Seyed Amirhossein Mirfendereski[3]

[1]Optometry, Shahid Beheshti University of Medical Sciences, Tehran, Iran; [2]Javadi Eye Hospital, Tehran, Iran; 3Novindidegan Eye clinic, Tehran, Iran

Purpose: Retinitis Pigmentosa (RP) is one of the most common causes of progressive visual impairment with a genetic basis, primarily characterized by peripheral visual field loss and photophobia. Given the important role of low vision aids (LVAs) in improving the quality of life for these patients, this study aimed to evaluate the prevalence and types of LVA usage among RP patients in Iran.

Methods: This cross-sectional study was conducted on 112 patients diagnosed with RP who visited a specialized low vision clinic in Tehran during 2024-2025. Demographic data, types of low vision devices used, and patients' satisfaction were collected using a structured questionnaire and analyzed descriptively.

Results: Among the participants, 54% reported using at least one type of low vision aid. The most commonly used aids included optical filters (68%), handheld magnifiers (42%), telescopic devices for distance vision (25%), and screen readers or audio-based assistive technologies (21%). Only 17% reported using electronic devices such as digital magnifiers or CCTVs. The most frequently reported visual complaints were photophobia (81%) and significant peripheral field constriction (76%).

Conclusions: Despite the high prevalence of functional visual limitations among RP patients, a considerable number still lack access to appropriate low vision aids. Improving patient education, public awareness, and rehabilitation infrastructure can play a crucial role in enhancing visual functioning in this population.

1045 - P139

THE ROLE OF 3D PRINTING IN THE DEVELOPMENT OF ASSISTIVE TECHNOLOGY FOR THE VISUALLY IMPAIRED

Suraj SIngh Senjam

Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Science , New Delhi, India

Purpose: Assistive Technology (AT) is essential in providing low vision and vision rehabilitation services. Such technology can significantly minimize the daily living challenges faced by persons with visual impairment. There are a wide range of AT available starting from low cost to high and computer-based technology. Recently, In the recent past, 3D printing has played a crucial role in designing assistive technologies for individuals with visual disabilities. This printing technology supports rapid production and provides cost-effective, adaptable, and creative solutions, whereby improving availability, accessibility, independence, and overall quality of life in visually disabled. Therefore the aim of the study is to explore the potential roles of 3D printing in developing assistive technologies for people with vision loss.

Methods: A comprehensive review of current solutions and existing literature and publication on the use of 3D-printed assistive technologies for individuals with visual impairments was conducted. This includes applications such as educational tools, low-cost Braille production, medical labeling, and self-care items. The study evaluates the potential benefits of these technologies in enhancing the lives of legally blind individuals.

Results: The study showed that 3D printing significantly enhances assistive technologies for individuals with visual impairments by offering cost-effective, high-quality solutions. 3D printer helps in designing and production of tactile toys, embossed print and map, and 3D educational materials. In a nutshell, notable benefits were observed in areas such as vision rehabilitation, education, navigation, manufacturing, and object recognition. Additionally, this technology supports the development of independent living skills and contributes to an improved quality of life

Conclusions: The use of 3D printing demonstrates strong potential in developing tailored solutions for individuals with visual loss. Further research and refinement of these techniques can enhance the availability of assistive technology for vision loss.

1052 - P140

FROM VIBRATION TO VISION:ENHANCING VISUAL SUBSTITUTION THROUGH FINE-TUNED TACTILE FEEDBACK

Nashmin Yehaneh[1], Ivan Makarov[1,2], Hafliði Ásgeirsson[1], Árni Kristjánsson[2], Runar Unnthorsson[1]

[1]The Faculty of Industrial Engineering, Mechanical Engineering and Computer Science, [2]Faculty of Psychology, University of Iceland, Reykjavík, Iceland

Purpose: This study explores how stimulus frequency, interstimulus interval (ISI), actuator spacing, and anatomical placement influence tactile perception on the forearm. The aim is to fine-tune these parameters to enhance the precision, comfort, and effectiveness of vibrotactile sensory substitution devices (SSDs) for individuals with visual impairments.

Methods: Controlled psychophysical experiments using custom wearable sleeves with Lofelt L5 actuators explored tactile perception on the forearm. Participants completed discrimination and pattern recognition tasks while spatial (actuator spacing, placement) and temporal (interval, frequency) parameters varied. Performance accuracy and consistency were analyzed via repeated-measures ANOVA and post hoc tests to assess the effects of each parameter.

Results: Our findings show that tactile discrimination was most effective when actuators were spaced approximately 20 mm apart, as this distance allowed for clear separation between stimulation points without sensory overlap. Pattern recognition accuracy was also highest when the interstimulus interval (ISI) ranged between 100 and 500 milliseconds; shorter intervals led to perceptual fusion, while longer delays reduced memory retention and increased cognitive load. Notably, performance improved significantly near anatomical reference points such as the wrist and elbow, where tactile acuity is naturally higher due to the presence of joint-based sensory landmarks. Additionally, we observed that discrimination remained stable across a frequency range of 100–250 Hz when amplitude was held constant, suggesting that spatial and temporal parameters exert a more pronounced influence on tactile perception than frequency variations within this effective range.

Conclusions: These findings highlight the importance of precise parameter tuning in tactile SSDs to improve perceptual clarity, comfort, and usability. Optimized settings enhance the responsiveness of assistive devices such as vibrotactile navigation aids and Braille-like encoders, enabling more effective real-time tactile encoding of visual and textual information. This supports safer mobility and greater independence for visually impaired users.

1058 - P141

A COMPREHENSIVE CLINICAL PROTOCOL FOR MANAGING GLARE IN INDIVIDUALS WITH LOW VISION THROUGH SPECIALIZED FILTER LENSES TO ENHANCE VISUAL RESOLUTION, COMFORT AND QUALITY OF LIFe

Maria Haddad[1,2], Karina Eiko Yamashita[1], Marcos W. Sampaio[1], Eduardo Bernardino Filho[3]

[1]Department of Ophthalmology/ Low Vision Rehabilitation Service, Faculty of Medicine - University of São Paulo,São Paulo; [2]Brazilian Association for Assistance to Visually Impaired People, São Paulo, Brazil; [3]Segment, São Paulo, Brazil

Purpose: Glare is one of the main adverse effects of light on the visual system; it can lead to visual discomfort symptoms or to lower visual resolution and performance in daily tasks, especially in patients with low vision, due to the lower contrast of the retinal image. The purpose is to present a protocol for the indication and prescription of filtering lenses for glare control, greater visual comfort, and visual resolution in the leading causes of low vision with altered sensitivity to light.

Methods: A protocol has been developed based on: 1. the optical and non-optical characteristics of filter lenses (the light transmittance curve, the optical density of the lens material, the photosensitivity, the polarization, the protection against ultraviolet radiation, the presence of mirror surfaces, and the frame model); 2. the low vision patient profile according to underlying eye disease, the patient's visual function, functionality and lifestyle; 3. Data obtained from the evaluation with the Lux IQ equipment according to the patient's preferences regarding the color and light characteristics of a visual stimulus.

Results: The protocol for adapting filtering lenses for patients with low vision helps specialists in visual rehabilitation make the most accurate indications for improved visual resolution, greater comfort, and enhanced performance in daily tasks.

Conclusions: Glasses with filtering lenses can be used for: protection of the eyes against the deleterious effects of sunlight; providing greater visual comfort by reducing glare and discomfort; enhancing visual acuity and image contrast in cases of disabling glare; improving adaptation to ambient light; and achieving a cosmetic effect. The adverse effects of filtering lenses include decreased visibility secondary to lower lens transmittance and a consequent reduction in visual acuity and contrast sensitivity, as well as alterations in color perception. The developed protocol takes into account the optical characteristics of the filter lenses, benefits on visual function and functionality, as well as the possibility of adverse effects on visual functionality in the performance of daily tasks.

1002 - P142

AQUEOUS HUMOR ANALYSIS IN GLAUCOMA DIAGNOSIS AND PROGNOSIS

Alberto Izzotti
Experimentla Medicine, University of Genoa, Genoa, Italy

Purpose: The aim of this study was to develop a new easy to use approach for glaucoma diagnosis using aquous humor.

Methods: Aqueous humor samples have been collected from 20glaucoma cases and 20 unaffected age matched controls. Both groups underwent cataract surgery during which aqueous humor sampling was performed. The presence of the protein biomarker nestin was evaluated in each sample by quartz balance oscillography.

Results: Nestin was constantly detected at high levels in samples collected from glaucoma patients. This protein was not detectable in control samples. The amount of nestin amount in glaucoma cases was related with visual field defect and glaucoma progression.

Conclusions: Nestin analysis by quartz microbalancing is a new possible tool for glaucoma diagnosis and prognosis. This analysis can be performed directly without any need of sample processing other than dropping aqueous humour onto quartz crystal. This new method my represent a step forward in glaucoma diagnosis to be performed every time a cataract surgery interventions performed. This approach could results in a glaucoma screening able to intercept this diseases before the onset of irreversible optic nerve damage.

1043 - P143

LOW VISION REHABILITATION IN EXTENSIVE MACULAR ATROPHY WITH PSEUDODRUSEN-LIKE APPEARANCE: A CASE SERIES

Maria Haddad, Éricles Dos Santos, Bruna Sousa, Eduardo Júnior, Alex Haruo Higashi, Rodrigo Sato

Universidade de São Paulo, São Paulo, Brazil

Purpose: To present a case series study of extensive macular atrophy with pseudodrusen-like appearance (EMAP), containing multimodal retinal evaluation and rehabilitating procedures in low vision.

Methods: EMAP patients underwent Ophthalmologic low vision evaluation, fundus-related perimetry (microperimetry) and full-field eletroretinography. Ophthalmologic procedures in visual rehabilitation were performed.

Results: Five patients were analysed (four women and one man), with a mean age of 59 years, presenting a progressive and insidious bilateral low visual acuity and nyctalopia. Four patients had benzylpenicillin chronic exposure, three due to rheumatic fever and one due to recurrent tonsilitis. Visual acuity with optic correction varied from 20/50 to 20/640, with mean spherical equivalent of -0,67. The mean contrast sensitivity by the Pelli-Robson test was 0,45 (logCS). All patients presented reading speed values lower than fifty words/minute. In glare testing, three patients had a progressive decline in visual resolution. All patients were submitted to microperimetry. The mean of sensibility was 7,67dB in right eye and 7,94dB in left eye; three of the eyes examined had a stable fixation and seven of them unstable. One patient was submitted to full-field electroretinogram with rods' activity of 5,5% and cones' of 70%. Optical correction for distance was necessary for three patients and four needed near distance prescription. One patient needed a hand held magnifier and other a sphero-prismatic lenses with nasal base prescription and a binocular telescopic system. All patients had a satisfactory adaptation to a portable eletronic video-magnifier system. Two patients were prescribed with light-filtering lenses. All patients received orientations in smartphones' accessibility, enhanced contrast, lighting control, orientation and mobility techniques.

Conclusions: EMAP is a rare and progressive disease and it is believed that genetics and environment factors may be involved. EMAP is one emergent cause of low vision, frequently misdiagnosed with other atrophic retinal diseases. Early diagnosis of EMAP is critical to prognosis orientations and improvement in quality of life through low vision rehabilitation.

1056 - P144

BINOCULAR CONTRAST SENSITIVITY IN SYMMETRIC AND ASYMMETRIC AGE-RELATED MACULAR DEGENERATION: A COMPARATIVE STUdy

Yuliia Boieva, Pavlo Bezditko
Ophthalmology, Kharkiv National Medical University, Kharkiv, Ukraine

Purpose: To investigate the characteristics of contrast sensitivity changes in patients with age-related macular degeneration (AMD) at different stages of the disease.

Methods: The study involved 35 patients (70 eyes) aged 55–75 years with AMD. They were divided into three groups:
- Control group (n=10): healthy individuals without AMD;
- Study Group I (SG I, n=15): patients with the same stage of AMD in both eyes (dry or wet);
- Study Group II (SG II, n=11): patients with different stages of AMD in each eye.

Patients had stage 2, 3, or 4 AMD (AREDS classification). Binocular vision and contrast sensitivity (CS) were assessed at 1 meter using the Pelli–Robson chart, both monocularly and binocularly, with full optical correction. Exclusion criteria: systemic disease, myopia >6.0 D, cataract, diabetic retinopathy, glaucoma.

Results:
- In the control group, CS remained normal (2.1–2.4 log).
- In SG I, CS was normal in 46.7% (stages 2–3), moderately reduced in 40% (1.43 log, stage 4–exudative), and significantly reduced in 13.3% (0.93 log, stage 4–atrophic) ($p < 0.05$).
- In SG II, no patients had normal CS.

o 36.6% had slight reduction (1.79 log, stages 2–3),
o 36.6% had moderate reduction (1.52 log, stages 4+3 or 2+4),
o 27.3% had marked reduction (1.06 log, same combinations) ($p < 0.05$).

Conclusions:
- CS declined in all AMD groups.
- Binocular summation and compensation were present in 92.3%.
- In 7.7% of cases with asymmetric AMD, perceptual rivalry was observed.
- The obtained results indicate further possible research and analysis of changes in age-related macular degeneration (AMD).

1018 - P145

AMBLYOPIA TREATMENT IN CHILDREN : ABOUT 100 CASES

Sara Ettouri, Ali Rami1, Kawtar El Hadi, Daghouj Ghizlane, Laftimi Zyad, Loubna El Maaloum, Bouchra Allali, Asmaa El Kettani

Pediatric ophthalmology Department, 120 August Hospital, Casablanca, Morocco

Purpose: The interest of treating amblyopia in children .

Methods: Retrospective Study. The study was conducted on 100 children with functional amblyopia between December 2018 and December 2023. Pediatric ophthalmology department

Results: The mean age of symptom onset was 4 years, with a mean diagnosis at 6 years. 50% of cases are moderate amblyopia 37% deep 73% of bilateral amblyopia 77% strabisic and ametropic at the same time. The primary treatment was total occlusion, used alone in 71% of cases. The mean final visual acuity was 8/10, with better results in children treated early.

Conclusions: Amblyopia is the most common cause of poor vision in children, highlighting the importance of early screening.It's a diagnostic and therapeutic emergency that needs to be dealt with early and effectively .

1023 - P146

A NOVEL VIRTUAL REALITY-BASED SOLUTION TO ADDRESS PATCHING CHALLENGES IN AMBLYOPIA

Luis Leal Vega[1], Maria Begoña Coco[1], Ainhoa Molina Martín[2], Carlos Javier Hernández-Rodríguez[3], Rubén Cuadrado Asensio[4], Ana Vallelado Álvarez[5], Hortensia Sánchez Tocino[6], Agustín Mayo Íscar[7], Juan Francisco Arenillas Lara[1,8], David P. Piñero-Llorens[2,9]

[1]Department of Medicine, Dermatology and Toxicology, [7]Institute for Research in Mathematics, University of Valladolid, Valladolid, Spain; [2]Department of Optics, Pharmacology and Anatomy, University of Alicante, Alicante, Spain; [3]Department of Ophthalmology, Ribera Virgen de la Caridad Hospital, Cartagena, Spain; [4]Institute of Applied Ophthalmobiology, Valladolid, Spain; [5]Department of Ophthalmology, [8]Department of Neurology, *Hospital Clínico Universitario de Valladolid, Valladolid, Spain; [6]Department of Ophthalmology, Hospital Universitario Río Hortega, Valladolid, Spain; [9]Vithas Medimar International Hospital, Department of Ophthalmology, Alicante, Spain*

Purpose: To evaluate the efficacy, safety, usability and satisfaction obtained with a novel virtual reality (VR) system (NEIVATECH) to provide binocular vision training in older amblyopic children with non-compliance or non-response to patching.

Methods: A prospective, multicentre, open-label, single-arm, pilot study was conducted in which the intervention under study was 9 h of therapy with the NEIVATECH system distributed in 18 half-hour sessions spread over 1 month. The NEIVATECH system was designed as a serious game (SG) to provide binocular vision training in an interactive and immersive VR environment. The perceptual learning task integrated consists of discriminating the orientation of Gabor patches that were only presented to the amblyopic eye, the main novelty of this system being the real-time modification of their contrast depending on the responses provided by the patient by means of the Best PEST (Parameter Estimation by Sequential Testing) psychophysical method. Amblyopic children > 7 years with non-compliance or non-response to patching at the discretion of the physician were recruited from Valladolid and Alicante. A comprehensive visual assessment was performed before and after therapy, and after therapy, system safety and usability and patient satisfaction were assessed using the Simulator Sickness Questionnaire, the System Usability Scale and the User Satisfaction Evaluation Questionnaire, respectively.

Results: A total of 12 previously treated older amblyopic children (6 boys, 6 girls, 11.25 ± 2.45 years) were included in the study. After therapy, statistically significant differences were observed in the best corrected near visual acuity (BCVA) of the dominant ($p = 0.022$) and non-dominant ($p = 0.022$) eye, in stereopsis based on the Binocular Function Score ($p = 0.045$) and in the break ($p = 0.012$) and recovery ($p = 0.009$) points of negative fusional vergence for distance vision. The safety and usability of the system and patient satisfaction with the therapy also proved to be adequate.

Conclusions: Treatment with the NEIVATECH system appears to be a feasible and effective alternative for previously treated older amblyopic children with non-compliance or non-response to patching. Nevertheless, these systems should be used cautiously and fusional vergence should be monitored during treatment in this population.

1027 - P147

CLINICAL PROFILE OF LOW VISION PATIENTS AND RELATIONSHIP OF AGE AT ONSET AND BEST CORRECTED VISUAL ACUITY (BCVA) ON QUALITY OF LIFE(QOL): A REGISTRY BASED STUDY

Nur Hidayah Yusuf[1], Noor Suriani Mohamad[2], Mohammad Ridzwan Bihem[3], Farah Wahidah Hashim[4], Haizan Farah Hamzah[5]

[1]Ophthalmology, Hospital Tuanku Ampuan Najihah, Negeri Sembilan, Malaysia; [2]Ophthalmology, Hospital Sultanah Bahiyah, Kedah, Malaysia; [3]Ophthalmology, Hospital Sibu, Sarawak, Malaysia; [4]Hospital Selayang, Selangor, Malaysia; [5]Ophthalmology, Hospital Selayang, Selangor, Malaysia

Purpose: The low vision and blind registry was initiated in 2017 by the Ministry of Health (MOH) Low Vision and Visual Rehabilitation Committee to register all new patients that were seen at low vision clinics in MOH facilities across Malaysia. This study aim to analyze the clinical profile of the registered low vision patients and to find the relationship of age at onset and best corrected visual acuity on quality of life.

Methods: This is a registry based cross sectional study which involved all completed data in Low Vision Registry from year 2022 to 2024. The demographic and clinical profile were descriptively analysed. Then, the correlation between quality of life, age onset and best corrected vision were examined.

Results: A total of 595 data were included comprising of 252 (42.4%) female and 343 (57.6%) male with a mean age of 43.5 years old. The causes of visual impairment were the retinal disease(59.8%), optic nerve problem (22.5%), neurological (8.1%), syndromic (5%) and corneal anomaly (4.5%). The mean of BCVA on best eye and low vision quality of life (LVQoL) score were 0.98 (±0.60) LogMar and 68.12 (±22.82) respectively. For the stage of QoL, 15.6% was normal, 43.7% mild, 35.8% moderate and 4.9% severe. 35% of the patients also having visual field defect. As for the management, 36.5% prescribed with optical aids, 67.6% with non-optical aids, 46.2% assistive technology, 14.9% with special technique and 60% were referred to other department or agencies. 78% patients were planned for more than one type of management and 1.7% were refused of having any. A Spearman's rank order correlation revealed that QoL was mildly correlated with age onset ($r = -0.2$, $p < 0.001$) and moderately correlated with the BCVA of best eye ($r = -0.37$, $p < 0.001$). These suggested that the higher the age onset and the lower BCVA on better eye lead to lower LVQoL score.

Conclusions: Analysing the Malaysian Low Vision and Blind Registry represents the structured management of low vision patients in Malaysia. Quantifying the QoL is important as it is significantly correlated with visual impairment. It is also strongly suggested to include post management LVQoL score in our registry as our quality assurance.

1028 - P148

EXAMINATION OF PHYSICAL ACTIVITY, VISION, AND VISION-RELATED QUALITY OF LIFE AMONG ADULTS WITH PROGRESSIVE EYE DISEASES

Laura Dreer[1], Laura Griggs[1], Alexandra McBrayer[2], Molly Whitney[1], Marissa Locy[1], Laura Rogers[3]

[1]Department of Ophthalmology and Visual Sciences, [2] Department of Health Policy & Organization, [3]Department of Medicine, Birmingham, University of Alabama at Birmingham, USA

Purpose: To (1) identify the prevalence rate for meeting the Centers for Disease Control and Prevention (CDC) recommended guidelines for weekly moderate-vigorous physical activity (MVPA) among adults with progressive eye diseases, (2) examine the relationships between objectively measured physical activity intensity (PA) classifications and perceived vision severity, and (3) the relationships between MVPA intensity and vision-related quality of life.

Methods: The sample consisted of N=182 patients who were diagnosed with a progressive eye disease and being managed in a specialty eye care clinic at an academic medical center. Average age of participants was 68 years old (SD=11.91), and 63% female. Participants completed a one-time battery of biopsychosocial questionnaires and were provided with an Actigraph accelerometer to wear around their waist to track PA intensity over a 9-day period (objective PA intensity). Bivarate correlations were conducted to determine the relationships between PA intensity classifications, perceived vision severity, vision-related quality of life (NEI VFQ-25 subscale scores), and sociodemographic variables. Significance was based on $p<.05$.

Results: Only 11.5% of patients met CDC recommended guidelines for engaging in weekly MVPA. Poorer vision was significantly related to greater percentage of time spent in sedentary PA behavior (r=-.218), yet better vision was significantly related to greater percentage of time in light PA intensity (r=.209) as well as vigorous PA intensity (r=.166). While non-significant, a trend was observed for better vision and moderate PA (r=.209, p=.062). Greater time in MVPA intensity per week was significantly related to younger age (r=-.234), higher income (r=.165), better general health (r=.168), and better scores on perceived vision (r=.164), near vision (r=.196), driving (r=.278), distance vision (r=.260), social functioning (r=.164), mental health (r=.182), less problems with role difficulties (r=.273) or dependency (r=.160). MVPA was not statistically related to color vision or peripheral vision scores.

Conclusions: A significant proportion of patients living with chronic eye diseases do not meet recommended guidelines for engaging in MVPA necessary to enhance health and minimize risk for preventable health conditions. Greater time in MVPA among those with better vision did confirm benefits to health and vision related-quality of life. This data supports the need for greater research and health promotion efforts to foster PA among patients living with progressive eye diseases and poorer vision.

1050 - P149

GERIATRIC VISUAL IMPAIRMENT IN MALAYSIA : DEMOGRAPHIC PATTERNS AND QUALITY OF LIFE CORRELATES

Noor Suriani Mohamad[1], Mohammad Ridzwan Bihem[2], Nur Hidayah Yusuf[3], Farah Wahidah Hashim[4], Haizan Farah Hamzah[4]

[1]Ministry of Health Malaysia, Kedah, Malaysia; 2Ministry of Health Malaysia, Sarawak, Malaysia; [3]Ministry of Health Malaysia, Negeri Sembilan, Malaysia; [4]Ministry of Health Malaysia, Selangor, Malaysia

Purpose: Malaysia is projected to become an aged nation within five years. This demographic shift is reflected in national health registries, including the Low Vision and Blind Registry (initiated 2017) which captures geriatric data. This study describes the demographics of new low vision and blind geriatric patients registered from 2022 to 2024 and explores the correlation between Best Corrected Visual Acuity (BCVA) in the better eye and Low Vision Quality of Life (LVQoL) scores.

Methods: This registry-based cross-sectional study analyzed validated data from the Low Vision and Blind Registry for the years 2022 to 2024. Relevant demographic data for geriatric patients were described and analyzed. The correlation between BCVA in the better eye and LVQoL scores was examined using Spearman's rank-order test.

Results: Of the 595 new cases registered in the Low Vision and Blind Registry from 2022 to 2024, 178 (30.0%) were patients aged 60 years and above. Within this geriatric cohort, males (61.8%) outnumbered females (38.2%). The age range was 60 to 87 years, with a mean age of 69.24 (±7.03) years and a median age of 67 years. Approximately 19.7% of these elderly patients were still working, while the rest were retirees or unemployed. The leading causes of low vision and blindness in this age group were retinal diseases, including Age-Related Maculopathy (66.90%), followed by optic nerve head diseases such as Glaucoma (26.4%), corneal abnormalities (2.8%), neurological disorders (2.2%), and syndromic causes (1.7%). Additionally, 25 of these geriatric patients were reported to have concurrent physical, hearing, or speech disabilities, or a combination thereof. A Spearman's rank-order correlation revealed a statistically significant, moderate negative relationship between BCVA in the better eye and LVQoL scores ($r_s(176) = \pm 0.409$, $p < 0.001$). This suggests that as best corrected visual acuity in the better eye declines in log unit (improving vision), the reported Low Vision Quality of Life score increases, signifying a greater adverse impact of vision impairment.

Conclusions: Optimizing the best corrected visual acuity is essential to ensure good quality of life status and LVQoL is a scientifically significant tool to be employed among geriatric patients with visual impairment.

1057 - P150

EMBRACING THE UNSEEN: BUILDING RESILIENCE AMONG VISUALLY IMPAIRED UNIVERSITY STUDENTS FROM BANGLADESH DURING THE PANDEMIC

Rashedul Islam Islam[1], Khorshed Alam[2], Noor Amin[2], Md Mozadded Hossen[3]

[1]Projahnmo Research Foundation, Dhaka, Bangladesh; [2]Shahid Mukul Foundation, Dinajpur, Bangladesh; [3]Kentucky State University, Psychology, Frankfort, USA

Purpose: The purpose of the study is to examine the coping strategies of visually impaired university students in Bangladesh during the COVID-19 Pandemic, highlighting the essential importance of support structures in enhancing their safety and well-being.

Methods: This study employed grounded theory and conducted in-depth interviews with visually impaired university students chosen via theoretical sampling. Nine visually impaired students were interviewed face-to-face and online. The interview questions focused on their overall experience during the COVID-19 Pandemic. The detailed description data were coded and finally, a theory emerged on how these students use different resources to cope with the unique challenges of the times of emergency.

Results: Research demonstrates that visually impaired students predominantly depend on a blend of personal fortitude, social assistance, and tailored institutional tools to navigate crises successfully. The students demonstrated significant adaptability through many coping mechanisms, with assistive technology, familial support, and advocacy organizations serving as essential tools for addressing pandemic-related issues.

Conclusions: The study emphasizes the capabilities and resilience of visually impaired university students in crises, along with the necessity for a comprehensive support framework designed to meet their specific needs. Tailored assistance methods enhance access to vital resources and substantially improve these students' welfare in emergencies. Practitioners and politicians must acknowledge the significance of customized treatments and the necessity for improved policies that offer increased support for visually impaired students in disaster planning and response. Formulating inclusive disaster management policies and providing practical disaster response training, as demonstrated by the COVID-19 pandemic, are crucial for enhancing the resilience and safety of this vulnerable population.

POSTER SESSION 3A-3B

467 - P151

A FOLLOW-UP STUDY ON EFFECTS OF O&M TRAINING FOR VISUALLY IMPAIRED MALE ADULTS WITH THE TRADITIONAL GREEK CANE (KLITSA) AS A SUPPORT AND IDENTIFICATION CANE

Olga Goulia[1], Maria Tsanousa[1], Eytyhia Kapatou[1], Despoina Tzira[1], Alexandra Grigoriou[1], Georgios Stergiopoulos[1], Achilleas Rasoglou[1]

[1]Grevena General Hospital NHS Greece, Grevena, Greece

Purpose: The primary objective of the study conducted in 2019 was to evaluate the efficacy and safety of O&M training in the use of a cane that the Greek population is familiar with. The study has been extended for up to one year after training to assess whether the improvement of ambulation and quality of life continued long-term through COVID-19 social restrictions and lockdown.

Methods: Fourteen AMD elderly male participants with BCVA between 20/40 and 20/200, were asked to undergo O&M training and evaluate the usefulness of the specific type of cane. All participants agreed to the suggestion of using this type of cane and training was implemented two hours a week for four weeks. Before training, one month after it and post-lockdown the Greek 12-item Interview administered WHODAS 2.0 tool, was administered in person to all the participants.

Results: Before training all the participants reported severe or extreme difficulties in all the scales. Interesting results were observed after training and post-lockdown. All the participants reported no difficulty in standing for long periods such as 30 minutes, walking long distances outdoors, navigating unfamiliar areas or crossing a street. Before training twelve of them described joining in community activities as a major problem. After lockdown all of them stated that the difficulty was mild or none with the cane which also helped them maintain the 2m social distancing. Out of fourteen participants, eleven had an increase in performance, reporting satisfaction and none or mild difficulty in all activity domains. In contrast all participants reported that they were still severely emotionally affected by AMD and expressed worries about navigating through the 'new normal' in the pandemic.

Conclusions: The results of this study suggest that O&M training effects were maintained long-term despite the disruptions in everyday lives of individuals with visual impairments during the COVID-19 related lockdown. They also highlight the importance of O&M training in improving older patients' independent ambulation and its positive contribution to societal participation and quality of life overall during quarantine and post lockdown.

115 - P152

BRIDGING THE GAP: ADDRESSING INADEQUATE TRAINING IN CEREBRAL VISUAL IMPAIRMENT FOR ORIENTATION AND MOBILITY SPECIALISTS

Mindy Koehne[1], Kelly Lusk[1], Terry Schwartz[2]

[1]Clovernook Center for the Blind & Visually Impaired, Cincinnati, OH, USA; [2]Division of Pediatric Ophthalmology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

Purpose: Cerebral Visual Impairment (CVI) is the most frequent cause of bilateral visual impairment in children in the developed world. These children generally have little to no anterior visual pathway abnormality and therefore present with typical or nearly-typical eye exams. After a CVI diagnosis has been made, interventions of visual rehabilitation have been shown to improve patient quality of life. Cerebral visual impairment (CVI) significantly affects orientation and mobility (O&M) by impacting visual processing, motor coordination, and safety awareness. Individuals with CVI may struggle with spatial interpretation, depth perception, object recognition, and visual exploration. This can lead to difficulties estimating distances, recognizing routes, and visually coordinating movements. Safety risks increase due to impaired motion detection, reduced peripheral awareness, and slower reaction times. Visual field deficits, particularly in the lower field, can further complicate navigation. These challenges underscore the need for specialized orientation and mobility training to help individuals with CVI develop effective travel skills and strategies for safe, independent movement. Anecdotally, we know that O&M training and education programs often do not include enough information for these specialists to successfully support this population. Insufficient CVI training may result in incomplete assessment of the child with CVI and the inability to provide informed recommendations, both of which may have lasting effects on the quality of life.

Methods: This study employed a questionnaire targeted at O&M providers to assess the CVI-related training and education these specialists have been provided, and a separate questionnaire for university-based O&M clinical program directors to assess the CVI-related education and training their programs provide.

Results: Data collected indicates that while there is some instruction and training related to CVI for O&M providers, both providers and clinical program directors believe there should be more robust offerings both within pre-service university programs and in professional development settings for working professionals.

Conclusions: These results give us a better understanding of the CVI-related education and training that has been and continues to be given to O&M providers. Additionally, this new evidence will help us advocate for access to CVI education and training for all O&M specialists.

192 - P154

COMPENSATORY SKILLS ARE KEY TO MOBILITY

Jolanda Kremer[1], Paulien Zuidervaart[2]

[1]Royal Dutch Visio, Rehabilitation and Advice, The Hague, The Netherlands; [2]Bartimeus, Dienstverlening, Zeist, The Netherlands

Purpose: Mobility instructors and Occupational therapists Jolanda Kremer (Royal Dutch Visio) and Paulien Zuidervaart (Bartimeus) explain how a good understanding of compensatory skills can help a person to enhance his mobility.

Methods: Orientation and Mobility (O&M) instructors in The Netherlands use the model of Michon to specify compensatory skills with their clients. These compensatory skills are about interaction between environment and behaviour in traffic that aid visually impaired people to become more independent. In the presentation we explain the model of Michon and how the model is used to categorize various compensatory skills. We will also give an example of how the model can be used to enlarge mobility options of a person with a visual impairment.

Results: By specifying compensatory skills on the levels of 'Well prepared', 'Smart on the go' and Quick decisions', clients get a good insight in what they already use and what they can do to improve their mobility options. This presentation is a practical introduction on how to do this.

Conclusions: Research by Bart Melis-Dankers and Bart Jelijs [1, 2] shows that visually impaired cyclists have a lot of possibilities, when they use the right compensatory skills. In this research cycling behaviour of visually impaired people was observed, in order to see if safe travel was possible. They used the 'hierarchical model of the task of driving' by Michon to categorize the different levels of behaviour. In the research they found that compensatory skills are key to safe cycling. In our daily O&M practice we found that this way of looking at compensatory skills is not only suitable for drivers and cyclists, but for all (visually impaired) people in traffic. Compensatory skills are key to mobility!

References

1. Jelijs, B., Heutink, J., De Waard, D., Brookhuis, K. A., & Melis-Dankers, B. J. (2019). Cycling difficulties of visually impaired people. British Journal of Visual Impairment, 37(2), 124–139. https://doi.org/10.1177/0264619619830443
2. Jelijs, B., Heutink, J., De Waard, D., Brookhuis, K. A., & Melis-Dankers, B. J. M. (2018). Key factors for the bicycle use of visually impaired people: a Delphi study. Disability and Rehabilitation, 41(23), 2758–2765. https://doi.org/10.1080/09638288.2018.1476921

237 - P155

FALL RISK ASSESSMENT IN VISUALLY IMPAIRED: A SCOPING REVIEW OF QUESTIONNAIRE BASED TOOLS

Sunkanmi Arogbokun[1], Sandra Owusu[2], Lauren Wheeler[3], Elizabeth Barstow[4]

[1]Physical Therapy\Occupational Therapy, [2]School of Optometry, [4]Occupational Therapy, University of Alabama at Birmingham, Birmingham, USA; [3]University of Alabama at Birmingham, Birmingham, USA

Purpose: This scoping review aims to identify and evaluate existing questionnaire-based tools for assessing fall risk in individuals with visual impairments. The review seeks to consolidate current evidence, highlight gaps, and provide recommendations for improving fall prevention strategies for this high-risk population.

Methods: This scoping review follows the Joanna Briggs Institute (JBI) Methodology and PRISMA-ScR guidelines. Systematic searches were conducted in Embase, CINAHL, and PubMed, combining terms for visual impairment (e.g., "low vision," "glaucoma"), fall risk (e.g., "falling"), and questionnaire-based tools (e.g., "survey"). Searches in PsycINFO, Cochrane Library, and grey literature are ongoing. Studies of all designs focusing on questionnaire-based fall risk assessment tools for visually impaired populations will be included. Two reviewers will independently screen titles, abstracts, and full texts, resolving discrepancies through discussion or third-reviewer consultation. Data on study characteristics, populations, interventions, and outcomes will be extracted and analyzed descriptively.

Results: The review is expected to identify and evaluate existing questionnaire-based tools for assessing fall risk in visually impaired populations. Anticipated findings include the identification of tools, their applicability across individuals, and gaps in addressing unique challenges such as environmental hazards and fear of falling. The review will also highlight the need for tools that integrate both subjective and objective measures to improve the fall risk prediction in this population.

Conclusions: The review will consolidate evidence, inform targeted tool development, and advance fall prevention strategies to improve clinical practice and outcomes for this vulnerable group. Findings will be disseminated through peer-reviewed publications.

20 - P156

IMPLEMENTATION OF A LIMITED INDOOR MOBILITY SKILLS EDUCATION COURSE FOR PHYSICAL THERAPISTS

Joshua Robinson[1], Katelyn Jordan[2]

[1]Vanderbilt University Medical Center, Ophthalmology & Visual Sciences, Nashville, Tennessee, USA; [2]Brooks Rehabilitation, Jacksonville, Florida, USA

Purpose: In the USA, Certified Orientation and Mobility Specialists ("COMS") train individuals with blindness and low vision ("BLV") to navigate safely and independently. As BLV prevalence increases in the US, a gap widens between those needing COMS training and the limited number of available providers. In response, the Vanderbilt Eye Institute's Vision Rehabilitation Service (Nashville, Tennessee) partnered with the Department of BLV Studies at Salus at Drexel University (Philadelphia, Pennsylvania) to develop a continuing education course in limited indoor mobility skills for physical therapists ("PTs"). While PTs are experts in enhancing mobility and reducing activity limitations for their patients, the clinical education of PTs has historically included little training in screening for (and identifying) visual impairment.

Methods: Nine PTs at Brooks Rehabilitation (Jacksonville, Florida) who completed the continuing education course were surveyed immediately after course completion and again six months later. The surveys assessed practice area, motivations, confidence levels, skills learned and skill implementation when working with BLV patients.

Results: The surveyed PTs represented outpatient (n = 7) and inpatient (n = 2) practice settings. All had prior experience working with BLV patients, though only two had received any formal training in this area prior to the course. Five of nine were aware of specialized BLV service providers, such as COMS, prior to the course. Following course completion, all participants reported feeling either "totally comfortable" (n = 4) or "somewhat comfortable" (n = 5) in providing physical therapy interventions to BLV patients. Eight of nine reported making referrals to COMS and other specialized BLV service providers. Six of nine had incorporated new strategies into patient care and five of those six reported improved patient outcomes.

Conclusions: The continuing education course strengthens collaboration between COMS and PTs, enhancing care for BLV patients. These findings highlight the need for further efforts to meet growing patient needs.

43 - P157

PRACTICAL CONVERSATIONS ABOUT DRIVING

Linda Pang[1]
[1]*Kaiser Permanente, Optometry, Hesperia, USA*

Purpose: By providing driving rehabilitation, patients can learn how to compensate for their vision deficits. Driving rehabilitation specialists are skilled occupational therapists who undergo additional training in driver rehabilitation. Driving is important for people to take care of their errands and daily responsibilities, attend their medical appointments, interact with their community, engage with their loved ones, among many other tasks. Conversation about vision status for driving earlier before it becomes disabling. Make it a part of your regular low vision care: mild – promote independence in daily activities while also plant the seed in their heads, moderate visual impairment levels – as some of their activities become limited and need to be modified, same goes for driving. There may be certain driving situations, weather environmental conditions, time of day, construction or road hazards where they may not feel safe to drive, will need to limit driving, and find a transportation alternative.

Methods: Explore 3 cases. Each case will feature common scenarios encountered in everyday optometry practice, low vision interventions, and coordination of care to navigate responsible driving and discussions on driving cessation when necessary/appropriate.

Results: By listening to patients in their concerns and questions related to driving, the focus is patient-centered care to achieve more desirable outcomes. This poster will demonstrate practical approaches for how to manage the driving conversation and be most effective in communication during a standard low vision evaluation or general optometry exam.

Conclusions: As you introduce patients to transportation resources that are available in their community, they will be more knowledgeable, better equipped to access alternatives to driving, start to think about transportation alternatives earlier, and have a backup plan. When there are weather environmental conditions, road hazards, or if they are having a “bad day” with their vision and do not feel confident driving for that day, they will be familiar with transportation resources you provided and utilize those resources for their needs. Relieve their anxiety about how to get around their community, engage with their friends, family, and loved ones, get to and from their medical appointments, manage their errands and daily responsibilities.

53 - P158

QUESTIONNAIRES REGARDING VISUAL IMPAIMENT AND WORKING/COMMUTING

Junko Kamo[1], Naohiko Tanabe[2], Kenji Kashiwagi[3], Takeshi Sugahara[4]

[1]Ophthalmology, Kofu Kyoritsu Hospital, Kofu; [2]Ophthalmology, Tanabe Eye Clinic, Kai, Japan; [3]Ophthalmology, University of Yamanashi, Chuo, Japan; [4]Ophthalmology, University of Chiba, Chiba, Japan

Purpose: To ask visually impaired people about their transportation and work/commuting situations.

Methods: From October 2023, for 7 months, the participants were interviewed through mailing lists at Kofu Kyoritsu Hospital, Tanabe Eye Clinic, affiliated hospitals, departments of ophthalmology Yamanashi University, and Chiba University, and mailing lists of the Turtle Society(the organization to help the visually impaired).49 participants, 69% male, 9% in 30s, 23% in 40s, 28% in 50s, 21% in 60s, and 15% over 70s.

Results: The causes were retinitis pigmentosa 48%, glaucoma 14%, optic nerve disease 4%, and so on. The place of residence was Yamanashi 39%, Tokyo 15%, Hokkaido 10%, and Osaka 7%. Daily travel distance was less than 2km 32%, 2-5km: 27%, 5-10km: 18%, and 10-20km: 14%. In terms of transportation, 27% use a white cane on public transport, 22% walk with a white cane, 17% use a family member or friend's car, and so on. Vision in the better eye: 60% have less than 0.05, 15% have less than 0.1 to 0.05, and 14% have more than 0.7. Visual field: concentric constriction50%, homonymous hemianopsia15%,total blindness 7% and so on . 65% are employed, 25% are not, and 15% have retired. Difficulties with employment: 37% move around, 30% read and write, and 21% have relationships. Other free comments: I quit driving and couldn't continue working. In rural areas, transportation is not well developed, so if one cannot drive a car, the employment options are limited. Currently, I can still ride a bicycle, but I am worried about what to do when it snows. Commuting to work is more mentally tiring than physically. When something different from usual happens, such as construction work, it is difficult to accurately grasp the situation.

Conclusions: Many of the responses were from active members of Turtle Association, and 60% were employed. However, it is estimated that many people are on welfare and are confined to their homes. Particularly in rural areas, assistance with transportation is needed to continue working.

316 - P159

SPATIAL LOCALIZATION WITH VISION AND HEARING IMPAIRMENT: DISCREPANCIES BETWEEN PERCEIVED DIFFICULTY AND ACTUAL PERFORMANCE IN EVERYDAY TASKS

Prachi Agrawal[1], Nitin Rao[2], Anas Obaideen[2], Andre DeGrenier[3], Chris Bradley[1], Joseph Nemargut[4], Yingzi Xiong[1]

[1]Low Vision and Rehabilitation, Wilmer Eye Institute, Johns Hopkins Hospital, Baltimore, USA; [2]Public Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA; [3]Peabody Institute of The Johns Hopkins University, School of Music, Baltimore, USA; [4]School of Optometry, Université de Montréal, Montréal (Qc), Canada

Purpose: Vision and hearing are critical for locating objects and people at a distance, and impairments in these senses can hinder navigation. An individual's perceived ability to complete spatial tasks may not always align with actual performance, necessitating both considerations in rehabilitation. This study compares perceived difficulty and actual performance in everyday spatial tasks among individuals with vision (VI) and hearing impairments (HI).

Methods: Twenty-four participants (12 with VI, 16 with HI) completed 5 controlled (e.g., locating a smoke detector) and 6 dynamic environment tasks (e.g., judging traffic speed). Tasks followed an m-AFC design with one pre-defined correct answer among m alternatives and were performed under vision-only, audio-only, and audio-visual modalities. Following completion of each task, participants rated perceived difficulty on a 5-point Likert scale. Task performance was measured in d' units using latent variable signal detection theory. While perceived difficulty ratings were analyzed using method of successive dichotomizations to estimate person (ability) and item (task difficulty) measures in logits, linear regression compared person abilities and functional reserves (difference between person and item measures) across modalities and task conditions.

Results: VI participants performed worse than normal vision (d' = 0.47 vs. -0.53, $p = 0.014$) in vision-only tasks, with their perceived difficulty also reflecting this inferiority (1.89 vs. -0.55 logits, $p < 0.001$). In contrast, HI participants performed significantly worse in hearing-only tasks than normal hearing (d' = 0.62 vs. -0.24, $p < 0.001$), but their perceived difficulty was not significantly different (3.39 vs. 2.78 logits, $p = 0.48$). Under audio-visual conditions, perceived difficulty suggested higher functional reserve than vision-alone and hearing-alone for both static and dynamic tasks, indicating integration benefits. However, actual performance showed integration benefits in fewer tasks ($p < 0.001$), with least benefit in dynamic tasks ($p = 0.003$).

Conclusions: Perceived difficulties reflect VI impact on visual tasks but may not capture HI effects on auditory tasks or sensory integration in dynamic settings. Relying solely on perceived difficulties may be inadequate for rehabilitation strategies. Integrating perceived and actual performance is crucial for effective interventions to enhance spatial task performance and navigation in individuals with sensory impairments.

416 - P160

VISUAL IMPAIRMENT SEVERITY AND AUTONOMOUS VEHICLE ACCESSIBILITY

Jing Xu[1, 2], Kayla Shaw[2]

[1]Department of Ophthalmology, Harvard Medical School, Schepens Eye Research Institute of Massachusetts Eye and Ear, Boston, USA; [2]Envision Research Institute, Wichita, USA

Purpose: Autonomous vehicles (AVs) are viewed as a transformative mobility solution for the blind and visually impaired (BVI) community, but accessibility barriers and uncertainties in user interaction remain. We conducted a telephone questinniare to examine anticipated barriers, essential communication requirements, and interface preferences during different stages of AV interaction, and how these factors vary across the BVI spectrum.

Methods: The study included 32 individuals with total blindness, 31 with severe visual impairment (SVI), 30 with mild visual impairment (MVI), and 27 with normal vision (NV). Participants were queried on perceived challenges and critical information needs across six distinct stages of using AVs, as well as their preferences for interface modalities in diverse usage scenarios. Responses were analyzed and compared across participant subgroups based on visual ability levels.

Results: Across all groups, participants predominantly favored personal AV ownership or long-term subscriptions over ride-hailing services or public transit integration. The anticipated adoption of AVs increased with the severity of visual impairment (81% Blind, 65% SVI, 48% MVI, 19% NV, $p = 0.016$). Key perceived challenges varied by visual ability: all groups identified managing unexpected scenarios and locating destinations post-dropoff as major concerns. However, blind and SVI participants emphasized difficulty in identifying AVs upon arrival, whereas MVI and NV groups cited ride booking as a primary hurdle. Different priorities emerged in information needs: blind and visually impaired participants prioritized real-time environmental awareness through accessibility-driven interfaces (e.g., audio cues), while NV participants emphasized reassurance via visual notifications about safety and system functionality. Voice interaction (> 83%) and live human assistance (> 51%) were shared top preferences across all groups. Secondary choices varied: 44% of blind participants favored smartphones, while over 45% of other groups preferred touchscreens

Conclusions: AV adoption likelihood increased with the severity of visual impairment. Handling unexpected situations was universally seen as the most challenging aspect. Blind and SVI participants cited vehicle identification challenges, while MVI and NV groups highlighted difficulties with booking. Voice interfaces and live assistance were universally prioritized, but blind users favored smartphones versus touchscreens for others.

Support: Bosma Enterprises Low Vision Research Award

381 - P161

A RE-AUDIT OF REFERRALS TO THE ULSTER UNIVERSITY LOW VISION SERVICE IN NORTHERN IRELAND

Moyra Mcclure[1], Aoife Hunter[1]
[1]Ulster University, Optometry, Coleraine, United Kingdom

Purpose: Low vision service provision through the UK National Health Service is known to be beneficial for delivering holistic care. Referrals into a low vision service require detailed patient information to ensure a timely and appropriate appointment. In 2021, an audit was undertaken to evaluate the quality of referral letters into Ulster University low vision service. As part of the audit cycle actions, a webinar was delivered to clinicians undertaking referral from optometry practices and hospital eye clinics, including a referral template, providing guidance on low vision referrals. This re-audit completes the audit cycle with an evaluation of recent referrals and comparison to prior findings.

Methods: Data was collected retrospectively from August 2024 to January 2025, from referral letters into the Ulster University low vision service. Data gleaned included five themes, (i) patient generic information(E.g. address), (ii) referral reason, (iii) eyesight/diagnosis, (iv) appointment requirements and (v) referral source. Patient gender and age and referrer location were noted.

Results: Findings showed a 50% increase in referrals (n = 51), with more females (2025, 80%; 2021, 59%) and a mean patient age of 80 years. Referral source was clear; mainly hospital eye clinics (57%) or optometry practices (39%). Patient information was present for most areas including, name (100%), date of birth (100%), address (98%), and telephone (94%), in keeping with the prior audit. Few referrals (< 15%) stated living status or additional disabilities. An improvement in referral data was noted for referral reason (2025, 92%, 2021, 77%); distance visual acuity (2025 88%, 2021, 64%) and to a lesser extent, diagnosis (2025, 98%, 2021, 95%). A notable lack of data (< 20%) was provided on the theme “appointment requirements”.

Conclusions: Encouragingly, recent referrals showed more detail on “referral reason” and “visual acuity”. Improvements to referral quality should include more patient detail to help service providers prioritise appointments or offer an appropriate delivery mode, (face to face or telephone), such as “living alone” or “hearing loss”. To promote referral excellence, education to undergraduate/ postgraduate optometrists should include learning activities on low vision service referral. Low vision service providers should also promote the use of a low vision referral template.

554 - P162

ADVANCED STUDY PROGRAM (CAS) IN INTERPROFESSIONAL EDUCATION FOR INDIVIDUALS WITH LOW VISION

Kirsten Wahren-Krueger[1], Laemers Frank[2]

[1]Self-Employed, West Bloomfield, MI, USA; [2]Pädagogische Hochschule Heidelberg, Heidelberg, Germany

Purpose: A continuing education program for professional qualification in the field of Low Vision will be presented, which is offered by the Johann-Wilhelm-Klein-Akademie Würzburg in cooperation with the Professional School of the PH Heidelberg in Germany.

Methods: This is a part-time certificate program (CAS) and is primarily aimed at professionals from educational, therapeutic and other related fields who work with people with a visual impairment. The training is designed to develop a solid basic knowledge in the various areas of "Low Vision".

Results: The curricular content is presented, which is designed to enable students to work in the pedagogical field of low vision in particular, and the experiences with the part-time study program that has been in existence since 2018 are reflected.

Conclusions: The goal is to provide people with low vision with needs-based and individual support so that they can use their eyesight. Fortunately, after initial feedback, participants praise the strong practical relevance of the training and they appreciate being able to reflect on their own professional experience against the background of scientific theories. Likewise, facility managers report improved consulting activities and report an overall increased sense of responsibility among employees for their clients.

228 - P163

BRINGING LIGHT TO LIVES: BASEERA'S MISSION FOR VISION IN EGYPT

Mohammed Ammar[1]
[1]*Ophthalmology, School of Medicine, New Giza University, Cairo, Egypt*

Purpose: Baseera's "Mission for Vision" initiative in Egypt aims to improve eye health, rehabilitate visually impaired individuals, and promote educational and social integration. The project seeks to provide comprehensive eye care services, establish rehabilitation programs, and develop educational resources tailored to visually impaired individuals.

Methods: Baseera conducted 133,876 eye examinations across nine Egyptian governorates, medical convoys started for young individuals then expand to older individuals from the year 2020 till end of 2024 identifying individuals in need of specialized care. The organization established integrated rehabilitation centers and camps, trained ophthalmologists in low vision care, and provided adaptive educational support. By Conducting comprehensive eye exams for early detection of visual problems, Providing necessary treatments on-site and referring patients to partner hospitals for surgeries or advanced care and Distributing prescription glasses at no cost to those in need.

Results: 133,876 individuals were examined with 51.4% females and 48.6% males the most examined age group was from age 7 to 18 years, Out of the total eye examinations, 31,377 individuals required specialized eye care. Eight percent of them needed surgery while thirty four percent needed medical care and treatment. The rehabilitation program successfully supported 1,108 visually impaired individuals through twelve rehabilitation camps. The Braille printing house converted 59,930 pages into Braille, making essential information accessible.

Conclusions: Baseera's initiative has significantly impacted visually impaired individuals in Egypt by providing essential eye care, rehabilitation, and education services. The project highlights the importance of integrated approaches in addressing visual impairment, combining medical intervention, rehabilitation, and education to enhance quality of life. Further expansion of these efforts can improve accessibility and inclusion for visually impaired individuals nationwide.

268 - P164

DEVELOPMENT OF A PAEDIATRIC LOW VISION TEAM WITHIN THE CHILDREN'S DISABILITY NETWORK FRAMEWORK IN IRELAND

Audrey Farrelly[1]
[1]*ChildVision, Dublin 9, Ireland*

Purpose: The purpose of this presentation is to outline the development and implementation of a specialised paediatric low vision team (LVT), within the Children's Disability Network Team (CDNT) framework in Ireland. ChildVision, Ireland's National Education Centre for Blind Children, is actively enhancing its collaboration with children's hospitals nationwide to establish a more direct referral system to multidisciplinary teams (MDT). This initiative aims to streamline the process, ensuring that children with visual impairments receive timely and comprehensive care. ChildVision offers specific vision training and support to professionals working within CDNTs, Primary Care Teams (PCTs) and educational providers. This collaborative approach strengthens community-based services, allowing therapy and education to be delivered locally within the child's community through shared caseload management. Thereby ensuring that professionals within CDNTs and PCTs are equipped to address the unique needs of these children.

Methods: An MDT was established within the existing CDNT structure, incorporating specialists in paediatric low vision, rehabilitation, and therapy services. The team works collaboratively with other healthcare professionals, educators, and families to provide a holistic approach to low vision management. The framework includes early intervention, ongoing assessments, and individualised treatment plans tailored to each child's visual impairment. Key areas of focus include accessibility to resources, the effectiveness of team collaboration, and the overall impact on child development and quality of life.

Results: The development of the ChildVision LVT while still in its infancy within the CDNT framework has led to increased awareness and knowledge of low vision issues among healthcare professionals and caregivers. A significant amount of referrals directly from the National teams suggest improved early identification of visual impairments and timelier, targeted interventions. There has been positive feedback from professionals regarding the ease of access to a coordinated service, leading to better outcomes in visual and functional independence for children with low vision.

Conclusions: The integration of the ChildVision LVT within the CDNT framework represents a significant step forward in providing comprehensive, multidisciplinary care for children with visual impairments in Ireland. This approach fosters improved communication and collaboration among healthcare providers, leading to better-targeted interventions and outcomes for children with low vision.

93 - P165

EXPLORATION OF FACTORS INFLUENCING THE PARTICIPATION OF PRIMARY EYE CARE CLINICIANS IN LOW VISION SERVICES

Gemma Gould[1], Simon Read[2], Chris Dickinson[1], Robert Harper[1, 3]

[1]Faculty of Biology, Medicine and Health, The University of Manchester, Manchester, United Kingdom; [2]Cardiff University, Health and Care Research Wales, Cardiff, United Kingdom; [3]Optometry, Manchester Royal Eye Hospital, Manchester, United Kingdom

Purpose: Primary eye care clinicians currently represent a significantly underutilised resource in the provision of low vision (LV) services in the UK, yet they may be the ideal professional group to help resolve existing and predicted future issues around service capacity and accessibility. This study aimed to gain a theory-based comprehensive and detailed understanding of factors influencing the participation of UK primary eye care clinicians in LV services. Such an understanding could be used to inform the development of strategies aimed at increasing participation in LV service provision.

Methods: Using qualitative methodology, individual semi-structured interviews were conducted with a maximum variation sample of UK primary eye care clinicians and relevant stakeholders. Topic guides were based on the capability, opportunity, motivation – behaviour (COM-B) system. Thematic analysis was used to inductively code the data and identify themes, which were then deductively mapped to the theoretical domains framework. Relevant domains were then mapped back to the COM-B system and behaviour change wheel.

Results: Interviews were conducted with participants from the 4 UK nations and included optometrists, dispensing opticians, and a range of stakeholders including Consultant Ophthalmologists, an eye clinic liaison officer, a university low vision educator, and representatives of sight loss charities, social services, and organisations which support service planning and commissioning. Multiple interconnected barriers and enablers to participation in LV service provision were identified and mapped to the theoretical domains framework. Mapping back to the COM-B system and behaviour change wheel facilitated identification of potential interventions and policy changes aimed at increasing participation.

Conclusions: This study identified key determinants of UK primary eye care clinicians' participation in LV service provision, which relate to an individual's capability and motivation as well as the social and physical opportunities provided by primary care practice and the organisation of eye care and support services. This is the first time behaviour change theory has been applied to this area. Explicit use of behaviour change theory provides an evidence-based structured approach to developing interventions and suggesting policy changes to increase LV service provision in primary care to ultimately improve capacity and accessibility of services for patient benefit.

166 - P166

HUMAN RESOURCE AND INFRASTRUCTURAL DEVELOPMENT OF LOW VISION SERVICES IN NIGERIA

Adedayo Adio[1, 2]

[1]Dept of Ophthalmology, University of Portharcourt Teaching Hospital, Rivers State, Portharcourt, Nigeria; [2]The Lens Rehabilitation Center for the Blind (TLEC rehab Nig), Center for Sight, Portharcourt, Nigeria

Purpose: Vision impairment affects 289 million people worldwide. Many are not able to get improvement in vision despite advances in ophthalmic care and often face a lifetime of inequality in terms of access to education, health and employment. The Lens (re)Habilitation Foundation for the blind (aka TLEC rehab Nig) has over the years developed capacity to train eyecare workers(ECWs) to evaluate for low vision with hands-on exposure since its inception in 2018 in order to ensure we are able to offer assistance when required.

Methods: Attendance register and registration forms of applicants for the training course from 2018-2025 were examined to get information on numbers who registered, numbers who attended the course, numbers still in practice, 3 months after training, numbers who were able to refer to the base center for more evaluation and numbers who were able to integrate low vision care into their regular practice sustainably

Results: One hundred and eight (n = 108) ECW were taught basic low vision evaluation through a 1-day crash course, two through a 5-day crash course while 34 (including 2 staff from the Gambia) availed themselves of the comprehensive hands on 2-week training between 2018 and 2023. Each of the 5 day and 2 week trainees were given a basic kit. Three tertiary, 2 secondary centers and 8 private facilities (12 altogether) setup low vision clinics across the country and one in a West African country (The Gambia) after the training under our guidance, however, the acquisition of low-vision devices has been the rate-limiting step to practice take off. On average, TLEC rehab Nig has equipped each clinic to see up to 5-10 patients per week which has tremendously boosted the numbers who have access to low vision care in the West African subregion.

Conclusions: An initial report on the audit of the training activities of a regional tertiary rehabilitation center in Port Harcourt, Nigeria with a comprehensive program for low vision training to ensure all round preparedness for independent and productive living for persons living with severe visual impairment is presented.

236 - P167

INCLUSIVE DESIGN: INNOVATIVE ARCHITECTURAL SOLUTIONS FOR BARRIER-FREE LEARNING WITH AN WITHOUT VISUAL IMPAIRMENT

Simone Zaiser[1], Frederike Isenberg[1]
[1]Nikolauspflege, Stuttgart, Germany

Purpose: Nikolauspflege is currently undergoing a significant transformation with the construction of a new school building at its historic site in Stuttgart, set for occupancy in April 2025. The project aims to create a state-of-the-art educational facility designed for inclusive and barrier-free learning. It provides optimal access to education for all students - whether they have visual impairments, blindness, complex disabilities, or no disabilities at all. Central to the initiative is a commitment to strengthening self-esteem, ensuring full participation and promoting self-determination. Both the building and its outdoor spaces are conceived as inspiring environments that foster academic growth and community integration.

Methods: The development of the new school is a collaborative effort between architects and educational experts, ensuring that spatial design aligns with modern pedagogical principles. Students - especially those with visual impairments or blindness - are actively involved in the planning process through material sampling and iterative feedback sessions, allowing their perspectives to directly influence design decisions. In addition, experts in Orientation & Mobility (O&M), Low Vision, and Daily Living Skills (LPF) contribute to the creation of innovative, inclusive solutions. The project adheres to contemporary standards of accessibility, and sustainability. Key architectural measures include the design of a completely barrier-free building featuring tactile guidance systems, elevators, and flexible spatial configurations; the installation of smartboards, adaptive workstations, and digital assistance systems; and the integration of large glass facades and open learning areas to maximize natural light and transparency. Optimized acoustics, state-of-the-art lighting, a cloud-based digital infrastructure, accessible sanitary facilities, and a column-free auditorium further ensure a safe, supportive, and inspiring environment.

Results: The new school building will offer a modern, barrier-free educational setting that enhances physical accessibility and supports digital inclusion. It will provide flexible learning spaces that cater to individualized needs, foster teamwork, and embrace diversity, all while serving as a hub for community engagement.

Conclusions: More than merely an infrastructural endeavor, the new school at Nikolauspflege sets new benchmarks for sustainable, inclusive education. Its innovative architectural solutions demonstrate how thoughtful design can create a learning environment that meets diverse needs and promotes social inclusion, serving as a model for other institutions.

414 - P168

LIVING YOUR BEST, BOLD, BLIND AND VISUALLY IMPAIRED LIFE: HOW A PODCAST IS MAKING A DIFFERENCE AND CHANGING LIVES

Stephanie Jones[1], Brian Anderson[1], Kelly Lusk[1]
[1]Clovernook Center for the Blind & Visually Impaired, Cincinnati, OH, USA

Purpose: Empowering persons who are visually impaired to lead active, productive, independent lives is the mission of the Clovernook Center for the Blind & Visually Impaired (BVI). The BOLDLY BVI podcast, produced by Clovernook Center, helps fulfill this mission, in part, by interviewing prominent professionals and other notable people who are visually impaired to share their story, and by offering resources and helpful suggestions to consumers who are visually impaired, along with their families and friends. This podcast encourages viewers to live their best, bold, blind and visually impaired life.

Methods: The BOLDLY BVI podcast is produced on a bi-monthly basis and is shared via multiple channels. The creative team for BOLDLY BVI includes professionals with disabilities, featuring co-hosts who are visually impaired.

Results: Reviews and publicity for the BOLDLY BVI podcast have been overwhelmingly positive, and viewers have appreciated the honest and transparent stories on episodes that have been aired. The themes for the podcast episodes are evolving and have included such topics as adaptive sports and leisure activities, employment opportunities and possibilities, holiday shopping and activities, and the Ohio Regional Braille Challenge.

Conclusions: The BOLDLY BVI podcast not only empowers those who are visually impaired through its content, but also by being led and produced by people who are visually impaired and have other disabilities. Our philosophy is not just to tell others what can be done by those with visual impairments, but to show them by doing it.

117 - P169

MANAGEMENT OF PATIENTS WITH LOW VISION WITHIN AN OPHTHALMOLOGY DEPARMENT OF A HIGH COMPLEXITY GENERAL HOSPITAL INTEGRATED INTO A HEALTH NETWORK IN BUENOS AIRES, ARGENTINA

Betty Arteaga[1, 2], Celia Sanchez[1, 2], Natalia Mascheroni[1]

[1]Low Vision an Visual Rehabilitation Service, Hospital Italiano de Buenos Aires, Buenos Aires, Argentina; [2]Universidad Hospital Italiano de Buenos, Buenos Aires, Argentina

Purpose: The Italian Hospital of Buenos Aires is a non-profit civil association dedicated to comprehensive health care. Since 1853, it has provided medical care, trained undergraduate and graduate students, and carried out basic, clinical, and population research. Its Low Vision Rehabilitation Service is one of the few existing in Argentina.

The purposes of this study are:

1) Promote the care and proper management of low-vision patients within an ophthalmology department of a high-complexity general hospital integrated into a health network.
2) Inform about the organization of a Low Vision and Visual Rehabilitation Service within a highly complex hospital.

Methods: A retrospective statistical analysis was performed on the number of patients treated and the therapeutic interventions carried out by the low vision multidisciplinary service.

Results: Between November 2023 and November 2024, a total of 1145 consultations were realized for 553 patients. Our team is composed of a low vision specialized ophthalmologist for adults, a low vision specialized ophthalmopediatrician, visual rehabilitators, an optical technician, a psychologist, a socio-sanitary team, and an orientation and mobility teacher. On average, 1.5 medical consults and 2 visual rehabilitation consults per patient were conducted. 70.1% of the patients were female and 29.9% were male. The average age in adults was 86.74 years. The average age for pediatric patients was 8 years. These therapeutic interventions were performed in order of frequency: rehabilitation in reading, optical filters, certificate of visual disability, psychological support, orientation and mobility, and optical aids.

Conclusions: The possibility of having a low vision service within an ophthalmology department in a general hospital facilitates access to visual rehabilitation both for physicians and patients within a comprehensive medical care environment. It also allows the training of medical students and ophthalmology residents in low vision.

59 - P170

ONE-STOP LOW VISION RESOURCE PORTAL

Yin Mei Tin[1], Raphael Lim[1], Priscilla Lim[1], Ai Tee Aw[2], Poh Geok Pang[1]

[1]Allied Health Professional Department, [2]Department of Nursing Administration, Singapore National Eye Centre, Singapore Singapore

Purpose: The goal of this project was to develop a one-stop portal that provides easy access to essential social and healthcare related resources for low vision individuals. This initiative aims to empower low vision individuals to take a more self-help approach, reducing their reliance on healthcare professionals to connect them with the appropriate resources.

Methods: The one-stop resource portal was co-designed and co-developed by individuals with low vision, undergraduates from the School of Computing at NUS, and the SNEC LV research team. A survey was conducted in March 2024, involving 53 low vision individuals who were proficient in using technology.

Results: Among the 53 individuals with low vision (LV), 27.3% was between the ages of 45 and 54, while 20.5% was aged 55 or older. In terms of device usage, 41% accessed social media via mobile phones, and 21% used desktop PCs. When it came to online information access, 72.7% reported using the internet frequently. The most popular websites were entertainment-related, such as audiobooks and podcasts (30%), while 25% expressed interest in health and wellness topics. Some participants were also interested in assistive technology, financial schemes, and support groups within their communities. The complex layouts of many websites created challenges for individuals with low vision in navigating and accessing relevant information. Some individuals had difficulty fully perceiving the content. Many were unsure about the reliability of information posted on websites, and some were uncertain about which sites were most relevant to visit. Most participants used speech-to-text functions or voice commands to access information, while others adjusted font size, color, and style, or relied on magnifiers to read. Nearly all agreed that a centralized portal for social and healthcare-related information would be highly beneficial.

Conclusions: A new one-stop portal resource was developed for individuals with low vision and their caregivers. This portal offers direct links to reliable service providers' websites, streamlining access to essential information and reducing the time spent on referrals and searching for services. The benefits of this innovative portal include promoting dignity, enhancing independence, and boosting the self-worth of individuals with low vision.

543 - P171

REACHING FURTHER, INTEGRATING VISION REHABILITATION INTO THE NATIONAL EYE CARE STRATEGY IN CANADA

Jennifer Urosevic[1]

[1]*Vision Loss Rehabilitation Canada, Kitchener, Canada*

Purpose: The purpose of this presentation is to highlight the significance of vision rehabilitation as a key component of Bill C-284, the National Strategy for Eye Care Act. This legislation aims to develop a comprehensive national strategy to support the prevention and treatment of eye diseases, as well as vision rehabilitation, to improve health outcomes for Canadians. By emphasizing vision rehabilitation, the strategy seeks to enhance the quality of life for individuals experiencing vision loss, blindness, and Deafblindness, enabling them to regain or maintain independence, improve functional abilities, and fully participate in life.

Methods: The review employs a multi-faceted approach to assess the impact of vision rehabilitation services. This includes a review of existing literature, analysis of economic data, and evaluation of case studies. The methods focus on understanding the role of vision rehabilitation in promoting independence, reducing healthcare costs, and improving emotional and psychological well-being. Specialized interventions, such as orientation and mobility training, assistive technology, and home safety adaptations, are examined to determine their effectiveness in enhancing the quality of life.

Results: The findings indicate that vision rehabilitation services significantly improve the quality of life for individuals with vision loss by promoting independence and reducing healthcare costs through injury prevention. The study highlights the economic benefits of vision rehabilitation, noting that it mitigates the substantial financial burden of vision loss on the Canadian healthcare system and the broader economy. Vision rehabilitation also plays a crucial role in improving emotional and psychological well-being, reducing rates of depression and anxiety among individuals with vision loss.

Conclusion: Incorporating vision rehabilitation into the National Strategy for Eye Care is essential for addressing the needs of individuals with vision loss, blindness, and Deafblindness. The study concludes that vision rehabilitation not only enhances the quality of life for those affected but also provides significant economic benefits by reducing healthcare costs and increasing workforce participation. By prioritizing habilitation, early detection, rehabilitation, and equitable access, Bill C-284 can pave the way for a future where Canadians impacted by vision loss can live independent, fulfilling lives while contributing to a healthier and more sustainable healthcare system

267 - P172

THE FACILITATOR'S TOOLKIT: RAISING AWARENESS ABOUT VISUAL IMPAIRMENT

Polona Car Djurić1
[1]*Union of the Blind and Partially Sighted of Slovenia, Ljubljana, Slovenia*

Purpose: The Facilitator's Toolkit: Raising Awareness About Visual Impairment, developed by the Low Vision Working Group within the European Blind Union, aims to equip facilitators and professionals with practical tools to foster understanding, empathy, and inclusion for visually impaired individuals. This resource supports efforts to raise awareness and promote accessible practices in diverse settings.

Methods: The toolkit employs experiential learning techniques, including simulations and interactive activities, to help participants better understand the challenges faced by blind and partially sighted people. It provides structured workshops, practical skills training, and advocacy guidance tailored to educators, social workers, trainers, and facilitators. The activities are adaptable for use in educational curricula, leadership training, community programs, and visual awareness workshops.

Results: Through engagement with the toolkit, facilitators can deliver impactful learning experiences that enhance participants' empathy, knowledge, and ability to support visually impaired individuals. By integrating inclusive strategies and practical exercises, the toolkit fosters positive behavioral changes, improves accessibility awareness, and encourages advocacy for equal opportunities.

Conclusions: This toolkit serves as a valuable resource for professionals seeking to promote inclusion and accessibility for visually impaired people. By utilizing experiential learning and practical guidance, it empowers facilitators to create meaningful awareness-raising initiatives. The structured approach helps instill a deeper understanding of visual impairment, ultimately contributing to a more inclusive and supportive society.

480 - P173

WORKING ON INCLUSION: REFLECTION ON A COLLABORATIVE PROJECT BETWEEN CHILDVISION AND THE TECHNOLOGICAL UNIVERSITY DUBLIN (TU DUBLIN) SCHOOL OF PHYSICS, CLINICAL & OPTOMETRIC SCIENCES

Geraldine Neill[1], Joan Ryan[2]

[1]ChildVision, Research and Compliance, Dublin, Ireland; [2]Technological University Dublin, School of Physics, Clinical & Optometric Sciences, Dublin 7, Ireland

Purpose: ChildVision and TU Dublin School of Optometry collaborated on a pilot project to provide a shared learning experience for Pathways students and final year optometry students completing their Low Vision Rehabilitation and Environmental Optometry module. ChildVision's Pathways Programme is an educational and vocational initiative for young adults (18-23 years) with vision impairment and additional needs. Optometry students apply knowledge from the module to practice in teaching clinics in the National Optometry Centre (NOC). Optometry students had an opportunity to understand the diversity and impact of vision impairments and intellectual disability and Pathway students had an opportunity for a tailored vision rehabilitation assessment in a mainstream setting.

Method: The processes of inclusion provided the theoretical framework for the project's practice. The focus of its design, implementation and evaluation was to ensure that students and staff were prepared, able to make the clinics an inclusive and welcoming experience. This included a lecture to TU Dublin students on the potential impact of vision impairment and additional disabilities and visual tasks undertaken. Design of Vision Rehabilitation Assessment template for use in the clinics. Preparation of Pathways Key Workers to support students attending the clinic; NOC staff in providing access to the service and welcoming people with disabilities; and Pathways students who chose to attend the clinics.

Results: Pathways students obtained an up-to-date refraction and an individualised vision rehabilitation assessment. ChildVision staff received the assessment reports and recommendations to facilitate the development of vision skills training programmes and adaptation of visual tasks.

The optometry students became aware of the need for flexibility and deviate from established test routines to tailor testing to Pathways students' specific requirements.

Conclusions: Our ultimate goal is to encourage optometry students to incorporate low vision into their practice and welcome clients with diverse needs and abilities; and to encourage Pathways students to develop advocacy skills and confidence to access these services. The continuation of the shared learning project requires an enthusiastic lead person in each organisation to drive the process. Meticulous planning, education of all involved and evaluation are crucial. Inclusion takes effort, commitment and time, it doesn't just happen!

508 - P174

EVALUATION OF ISTENT INJECT TRABECULAR MICRO-BYPASS STENT IMPLANTATION WITH PHACOEMULSIFICATION IN CASES OF MILD-MODERATE PRIMARY OPEN ANGLE GLAUCOMA (POAG)

Alhumam Alkhusheh[1], Mohamed AbdelHady[2]

[1]Department of Medicine, [2]Department of Ophthalmology, Maidstone and Tunbridge Wells NHS Trust, Tunbridge Wells, United Kingdom

Purpose: The iStent inject® (second generation) is an example of a minimally invasive glaucoma surgery (MIGS) device being increasingly used in the management of glaucoma. It is a recent advancement in the field of glaucoma treatment and can be performed simultaneously with cataract surgery. The objectives of this study included to evaluate the change in Intraocular pressure (IOP), medication burden and to assess the safety profile of the implantation of the two second-generation iStent inject trabecular micro-bypass stents with concomitant phacoemulsification.

Methods: A data set of 102 eyes was generated of which underwent combined phacoemulsification and iStent inject implantation. This data set included information on preoperative and postoperative IOP, complications and numbers of glaucoma medications established.

Results: There was a reduction of 43.5% in mean IOP in the 102 eyes from a pre-op IOP mean of 22.0 ± 8.54 (mean ± standard deviation) to a post-op IOP of 12.4 ± 4.21 ($p < 0.001$). There was a reduction in mean number of medications in the overall cohort by 11.7% from 2.74 ± 1.15 Pre-Op to 2.42 ± 1.01 Post-Op ($p < 0.001$). 90 eyes (88.2%) had a reduction of ≥ 20% in IOP. No intraoperative complications were recorded, and 2 eyes (2.0%) developed cystoid macular oedema (CMO) postoperatively. There were no other adverse effects or complications reported.

Conclusions: Significant reductions in IOP and medication burden were identified in this cohort of 102 eyes. It has been observed to be a safe surgery with a high safety profile. The utilisation of this concomitant surgery could help reduce the number of follow up required for glaucoma patients compared to exclusively medical control or advanced glaucoma surgery as well as leading to significantly less theatre time.

Keywords: iStent inject, POAG, IOP, Phacoemulsifcation, CMO, Cataract, Medication Burden

559 - P175

MICROSECOND CYCLOPHOTOCOAGULATION IN GLAUCOMA IN EYES WITH GOOD VISION

Natalia Palarie[1, 2]

[1]Department of Ophthalmology, International Clinic, Orhei, Moldova; [2]Department of Biochemistry, Nicolae Testemianu State University of Medicine and Pharmacy, Chisinau, Moldova

Purpose: Transscleral diode laser microsecond pulse cyclophotocoagulation (μCPC) is a well-known method of treatment for advanced and refractory glaucoma, but it is not used routinely in eyes with good vision. This prospective study was conducted to evaluate the efficacy and safety of μCPC in eyes with refractory glaucoma and best corrected visual acuity (BCVA) better than 0,3.

Methods: This prospective interventional case series included 30 eyes with refractory glaucoma of 27 consecutive patients treated with TSCPC. BCVA varied from 0,3 to 0,5; mean IOP prior to procedure was 40 ± 12 mmHg. The 810 nm infrared diode laser was delivered at 2.0 W with an exposure time of 220-240 seconds (equivalent to 120-140 J) and a duty cycle of 33.3% over 270°-300° excluding 3 and 9 o'clock positions. A reduction in the number of antiglaucoma drops (AGD) and an IOP of 11-21 mm Hg at the last follow-up visit was defined as success. Patients were followed at baseline, week 1, month 1, 3 and 6 after the μCPC.

Results: A mean of 1.3 treatments were given per eye, with 8 eyes (26%) requiring retreatment at the 1st month of follow up. Mean IOP decreased to 26.5 ± 5.0 mmHg at 1 week, 20.0 ± 5.3 mmHg at 1 month, 19.7 ± 3.4 mmHg, 18.2 ± 2.7 mmHg at 6 months. The overall success rate was 84%. AGD were reduced from 2.0 ± 1.0 at baseline to 1.1 ± 1.2 at 1 month, to 1.7 ± 1.0 at 3 months and to 2.2 ± 1.2 at 6 months follow-up. No patient had hypotony. μCPC procedure failed in 3 patients with neovascular refractory glaucoma.

Conclusions: This study highlights μCPC as a rapid, effective, and safe treatment option for patients with refractory glaucoma who retain good visual acuity, demonstrating favorable outcomes over a 6-month period. Notably, intraocular pressure (IOP) reaches a stable reduction by the third month post-procedure. Importantly, the observed IOP control and preservation of vision suggest a potential improvement in patients' quality of life following the procedure.

213 - P176

THE CHANGING LANDSCAPE FOR GEOGRAPHIC ATROPHY FROM AMD - NEW TREATMENTS

Janet Sunness[1]

[1]*Hoover Low Vision Ophthalmology Services, Greater Baltimore Medical Center, Baltimore, USA*

Purpose: To describe how newly approved treatments for geographic atrophy modify the course of the disease and how they may impact visual function

Methods: Summary of literature

Results: Geographic atrophy is now the main cause of severe vision loss in AMD. In 2023, two new treatments were approved (Syfovre and Izervay). These both affect the complement system, reflecting a possible inflammatory pathway for GA progression. To date it has been shown that they both reduce the rate of enlargement of the atrophy by about 25%. However, the patient will not experience any visual improvement, only potentially reduce the rate of vision loss. There is not yet evidence that these agents will preserve foveal function. The treatments are administered by intravitreal injection at a one to two month interval. It will be difficult for the patient to determine how treatment may benefit them. The low vision provider who understands the treatment will be more knowledgeable, able to assess vision and potential visual loss and discuss these so that the patient may make a more informed decision.

Conclusions: With the new available treatments, and hopefully future treatments, there is the possibility of slowing scotoma enlargement, though the patient will not have any improvement in their current vision. This is important for low vision providers to understand.

441 - P177

TRANS-SCLERAL IONTOFORESIS FOR NON-INVASIVE OCULAR DELIVERY OF LUTEIN AS A PREVENTION STRATEGY IN PATIENTS WITH AGE-RELATED MACULAR DEGENERATION

Anna Caricato[1], Paolo Mazzei[2], Paola Menduno[1], Mariarosaria Giugliano[2], Carlo Cagini[2]

[1]Clinica Oculistica, Azienda Ospedaliera di Perugia, Perugia, Italy; [2]Clinica Oculistica, Università degli Studi di Perugia, Perugia, Italy

Purpose: Topical lutein application via scleral iontophoresis represents an innovative prevention strategy for patients with age-related macular degeneration (AMD). This approach aims to leverage lutein's antioxidant properties to slow disease progression and enhance visual outcomes

Methods: The Ophthalmology Clinic of the Azienda Ospedaliera di Perugia, University of Perugia, is testing the efficacy of this method. Scleral iontophoresis allows targeted and controlled delivery of lutein directly to the eye, improving its bioavailability and therapeutic impact. This advanced administration technique can ensure precise neurotrophic substance release, optimizing treatment

Results: Through a rigorous recruitment and follow-up protocol, the Clinic has obtained promising preliminary results. The findings indicate that this method could contribute to the preservation of the visual function in patients affected by AMD.

Conclusions: The use of topical lutein, combined with advanced delivery techniques like scleral iontophoresis, could be a valuable tool in managing AMD. This innovative approach could offer new therapeutic prospects for a condition that affects millions worldwide and remains one of the leading causes of vision loss in the elderly population.

283 - P178

A SURVEY ON PRESCRIBING TRENDS OF ANTI-GLAUCOMA MEDICATIONS FOR PRIMARY OPEN ANGLE GLAUCOMA MANAGMENT IN INDIA

Swapna Satyanandan[1], Sandhya Das[2]
[1]Ophthalmology, [2]Medical affairs and PV, Cipla, Mumbai, India

Purpose: In India, approximately 12 million people are affected by glaucoma, with medical therapy being the primary treatment option. This survey aims to assess glaucoma prevalence and prescribing patterns for Primary open Angle Glaucoma (POAG) management.

Methods: A cross-sectional digital survey was conducted among 115 physicians in North India using an online structured questionnaire. The survey captured data on glaucoma epidemiology and the prescription patterns of topical anti-glaucoma medications.

Results: Among the participating ophthalmologists, 56% reported POAG as the most frequently encountered subtype, followed by normal-tension glaucoma (26%) and angle-closure glaucoma (11%). Prostaglandin analogues (PGAs) were the preferred first-line therapy for 70% of physicians, with travoprost being the most prescribed (37%), followed by latanoprost (29%). For second-line therapy, 37% preferred carbonic anhydrase inhibitors (CAIs), with dorzolamide being the top choice (64%). Rho kinase inhibitors were the favoured third-line therapy among 31% of physicians, with ripasudil (57%) being the most prescribed. Fixed-dose combinations (FDCs) were mainly used as second-line therapy (73%), with brinzolamide-timolol being the most preferred (28%).

Conclusions: This survey highlights a strong preference among ophthalmologists for PGAs as first-line therapy and increasing adoption of FDCs. Efficacy remains the primary driver of prescribing decisions, with cost also playing a significant role. The use of newer agents like rho kinase inhibitors and triple-drug FDCs indicates evolving treatment strategies. Larger studies across various regions are needed to confirm these findings.

438 - P180

BARRIERS TO GLAUCOMA MEDICATION ADHERENCE IN THE UK AND INDIA: A QUALITATIVE STUDY

Deborah Bott[1], Ahalya Subramanian[1], David Edgar[1], John Lawrenson[1], Peter Campbell[1]

[1]Department of Optometry and Visual Scences, City St George's University of London, London, United Kingdom

Purpose: Adherence to long-term glaucoma medication is often poor, particularly in low- and middle-income countries. Sub-optimal adherence can lead to vision impairmet. Existing interventions to improve adherence have had limited success, partly due to a lack of strong theoretical foundations. Identifying key influences on medication adherence can inform the development of more effective, tailored strategies, thus preventing unnecessary vision impairment. This qualitative study explores the personal, social and environmental barriers to glaucoma medication adherence in patients from the United Kingdom (UK) and India, using the Theoretical Domains Framework (TDF) of behaviour change. The TDF is a validated framework, that integrates behaviour change theories to identify key influences on behaviour and guide the development of targeted interventions.

Methods: Patients diagnosed with glaucoma who were prescribed intraocular pressure (IOP)-lowering eyedrops were recruited through purposive sampling. Semi-structured interviews were conducted, recorded, and transcribed. Thematic analysis, incorporating both deductive and inductive approaches, was used to identify factors influencing adherence within the TDF framework. Data were managed using NVivo software.

Results: A total of 24 participants were interviewed (UK: n = 13, India: n = 11). Common barriers to adherence across both countries included lifestyle challenges, healthcare system issues, difficulties obtaining medication, forgetfulness and physical or visual impairments. However, notable differences emerged between the two settings. UK participants demonstrated greater confidence in self-managing their medication routine and obtaining repeat prescriptions. In contrast, adherence among Indian participants was more strongly influenced by family support and social networks.

Conclusions: Glaucoma medication adherence is influenced by a complex interplay of factors, with both shared and culturally specific barriers across the UK and India. Addressing these differences through targeted interventions may enhance adherence and help prevent avoidable sight loss.

285 - P182

CHILDREN'S EVERYDAY LIFE WHEN A PARENT HAS DEAFBLINDNESS - FROM THE PERSPECTIVE OF THE CHILDREN AND THEIR PARENTS

Agneta Anderzen Carlsson[1, 2], Karina Huus[3], Maria Björk[3], Ann-Sofie Sundqvist[4], Camilla Warnicke[1, 5, 6], Moa Wahlqvist[7, 8]

[1]Faculty of Medicine and Health, University Health Care Research Centre, Örebro, Sweden; [2]Faculty of Health and Social Sciences, Norway University of Applied Sciences, Elverum, Norway; [3]CHILD Research Group, Department of Nursing Science, Jönköping University, School of Health Sciences, Jönköping, Sweden; [4]School of Health Science, Faculty of Medicine and Health, Örebro, Sweden; [5]Social and Legal Sciences, School of Behavioural, Örebro, Sweden; [6]Institute for Interpreting and Translation Studies, Department of Swedish Langauage and Multilingualism, Stockholm, Sweden; [7]Faculty of Medicine and Health, Örebro University, Audiological Research Centre, Örebro, Sweden; [8]The Swedish National Resource Centre for Deafblindness, Lund, Sweden

Purpose: To describe children's everyday life when one parent has deafblindness — from the perspectives of the children and their parents.

Methods: Data were collected by individual semi-structured interviews with family members from 16 families (18 children, 14 parents with deafblindness and 6 non-deafblind parents). Here, the main results about the children's situation, from the three studies are jointly presented.

Results: Children said that they live an everyday life just like their peers. However, they also described a somewhat different life due to their parent's deafblindness. They felt a need to be there for their parent, helping or protecting them from harm. For example, they put away their toys and placed things in their right place to prevent the parent with deafblindness from stumbling and for them to easily find things. The parents with deafblindness appreciate this. Yet, they do not want their children's helpfulness to interfere with leisure time with friends. Children were sometimes emotionally affected by their parent's deafblindness, they described feelings of frustration, compassion and need for support. Some experienced financial strain due to the parent's disability. The parents with deafblindness were aware that the constant need for planning could be frustrating for the children. Likewise, parents recognized that it could be frustrating when the parent with deafblindness did not understand what the child communicated. With regards to support, the parents argued for support at school, and some wished for their children to have someone to talk to about the parent's deafblindness. The children agreed that some support with specific homework was needed at times, but emotional support was not often mentioned as important. However, support could be reached on daily basis by friends, and when in need of more support a counsellor could be at hand. Parents with deafblindness described a need to keep their children close by to safeguard the children, which could be difficult as the child grew older. This was not much mentioned by the children, nor by younger children or teenagers.

Conclusions: The children's everyday life was affected by the parent's deafblindness. When asked, parents and children highlight somewhat different aspects.

11 - P183

CONSENSUS ON THE FIRST VERSION OF THE WORLD HEALTH ORGANIZATION (WHO) INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF) COMPREHENSIVE CORE SET FOR DEAFBLINDNESS

Walter Wittich[1], Shirley Dumassais[1], Atul Jaiswal[1], Tosin Ogedengbe[1], Ricard Lopez[2], Sarah Granberg[3]

[1]School of Optometry, Université of Montréal, Montréal, Canada; [2]European Deafblind Network, Barcelona, Spain; [3]School of Health Sciences, Audiological Research Center, Örebro University, Örebro, Sweden

Purpose: The World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF) is a framework designed to conceptualize human functioning. Its coding system, however, is difficult to use, given the abundance of over 1,400 available codes. Therefore, Core Sets can be developed that focus on the unique characteristics of a specific disease or condition. Our team has completed the necessary studies to present the comprehensive Core Set for deafblindness.

Methods: In October 2024, 26 experts on deafblindness, individuals with lived experience of deafblindness, family members of persons living with deafblindness, health service and social service providers met in Salou, Spain. The purpose was to complete the process of finding consensus on the Core Set for deafblindness, based on the review of data collected over 4 predetermined phases: a systematic literature review, interviews/focus groups with persons living with deafblindness and their family members, a survey with experts in the field, and a multi-site clinical assessment study. All phases included data from 54 countries across the six regions of the WHO. The event provided accessible communication (e.g., visual and tactile sign languages, and AI live transcription).

Results: Throughout the 2-day event, 218 codes were agreed upon though consensus vote (75+%) from the over 1,400 codes available within the ICF, that best identify the functional priorities of individuals living with deafblindness. The first version of the comprehensive ICF Core Set for deafblindness is now available online https://doi.org/10.17605/OSF.IO/A942K

Conclusions: This first version of the comprehensive core set builds the foundation for the presentation of a brief core set, and the development of a plain-text and summary to be recorded in several signed languages. Once all preparatory studies have been published in peer-reviewed journals, the Core Sets will be submitted to the WHO ICF Research Branch for ratification and publication on their website. Next steps include the validation of the core sets and the development of specific core sets for children and youth living with deafblindness.

509 - P184

CYTOTOXICITY COMPARISON OF MARKETED PRESERVED VERSUS PRESERVATIVE-FREE BRIMONIDINE/TIMOLOL (BTFC)

Swapna Satyanandan[1], Sandhya Das[1]
[1]Cipla Ltd, Mumbai, India

Purpose: Assess cytotoxic effects of Brimocom-PF (Brimonidine/Timolol) versus preservative-containing BTFC formulations on ocular cells.

Methods: In vitro study on human corneal, conjunctival, and trabecular meshwork cell lines. Formulations were applied for 5 and 30 minutes, followed by a 24-hour recovery. Cytotoxicity was evaluated by cell viability and morphology. Eye irritation was tested using Episkin's SkinEthic™ HCE 3-D tissue model which is OECD guideline 439-compliant.

Results: Brimocom PF maintained the highest cell viability (>85%) across cell lines, outperforming preservative-containing formulations. Following 24-hour recovery, preservative-containing formulations caused notable morphological changes in corneal, conjunctival, and trabecular cells, while Brimocom PF-treated cells showed no changes. Brimocom PF was classified as non-irritant by Episkin's HCE model.

Conclusions: Brimocom PF showed minimal cytotoxicity, suggesting it as a safer option for long term use.

354 - P185

DEVELOPMENT AND UTILITY OF A REAL-TIME RECORDABLE AND SHAREABLE LOW VISION SIMULATOR APP

Yasushi Nakano[1]

[1]*Department of Economics, Keio University, Yokohama, Japan*

Purpose: Low vision simulation enhances understanding of visual experiences, supports mobility and reading training, and improves accessibility. However, traditional simulations are limited to real-time experiences and lack essential functions such as (1) logging visual experiences, (2) allowing others to observe simulated vision, and (3) sharing simulated vision beyond the real-time session.This study developed an iOS application based on the social model of disability, enabling both professionals and individuals with low vision to use it as a tool for requesting reasonable accommodations. The app allows users to record, save, and share their simulated visual experiences beyond real-time constraints.

Methods: The Low Vision Simulator app applies real-time image processing to camera feeds to simulate various visual experiences, including blur, glare, visual field constriction, central scotoma, and nystagmus. Users can adjust the intensity of each effect via sliders and combine multiple conditions for customised simulations. The app also includes features for recording still images, videos, and audio. It supports real-time sharing of simulated vision with other devices and allows external users to remotely adjust the visual settings, enabling a better understanding of the user's experience. Six participants with normal vision underwent visual acuity tests for performance evaluation under different simulation conditions. Additionally, 23 users participated in an assessment of the app's usability and effectiveness.

Results: Performance evaluation demonstrated that adjusting blur altered visual acuity from 0.47 to 1.57 logMAR, while adjusting glare changed visual acuity from 0.45 to 1.52 logMAR. A contrast polarity effect was observed in glare simulations, where visual acuity improved more with a black background than a white one. User evaluations showed that 95.7% found the app helpful. Besides its ability to reproduce various visual experiences, its recording, sharing, and remote control functions were highly rated, emphasising its practical value.

Conclusions: The Low Vision Simulator app enables real-time simulation, recording, sharing, and remote operation of different visual experiences. Performance evaluations confirmed significant changes in visual acuity and the contrast polarity effect. User feedback highlighted its effectiveness in improving understanding of low vision and supporting reasonable accommodations. This app is expected to be valuable in educational and professional settings.

234 - P186

DEVELOPMENT OF NEW TACTILE EDUCATIONAL MATERIALS FOR ART EDUCATION FOR THE VISUALLY IMPAIRED

Hiroshi Katoh[1], Mitsunobu Matsuo[1], Toshihiro Kanahori[1]

[1]Tsukuba University of Technology, Research and Support Center on Higher Education for People with Disabilities, Tsukuba, Japan

Purpose: MATSUO Mitsunobu, a sculptor, has proposed the concept of "INFORMART", which incorporates the idea of information into spatial art compositions, and has developed teaching materials for art college students based on polyhedral compositional units. He has also improved these teaching materials for the visually impaired by introducing tactile signs, as composition activities using units can also be done by touch. Since 2021, he has concluded a research collaboration with Tsukuba University of Technology to study the potential of his units as educational materials for the visually impaired. In this study, we examined the possibility of using his units in art education for the visually impaired.

Methods: In order to verify the effectiveness of the Matsuo Units as teaching aids for the visually impaired, creative activities were carried out by visually impaired students in China and Japan. In particular, in Japan, the original compositions created by the students were exhibited at a public art museum with the names that students had given them and the intentions behind their creations. In addition, the students' evaluations of the activities and the audience's evaluations were also collected.

Results: In the educational practice for visually impaired students in Japan and China, the promotion of artistic creative activity and verbal expression activity through tactile sensation was observed. In particular, the practice in Japan showed that creative activities using these units by exhibiting and publicizing students' works in a public museum also contributed to the visually impaired students' sense of self-accomplishment and symbiosis.

Conclusions: This new teaching material has been shown to promote artistic and creative activities, self-expression, and abstract language expression activities by students with visual impairments. In the future, we plan to use social media to create a platform for publicly displaying and preserving their works.

189 - P187

DEVELOPMENT OF PROFESSIONAL COMPETENCES IN THE FIELD OF DEAFBLINDNESS AT THE NIKOLAUSPFLEGE STUTTGART (GERMANY)

Maren Marx[1], Tanja Renz[1]
[1]Nikolauspflege, Stuttgart, Germany

Purpose: The multidisciplinary continued educational project hand in hand was initially established in 2021 at Nikolauspflege Stuttgart (Germany). It aimed to develop professional competences in the field of deafblindness in the sectors early childhood and school. Nikolauspflege is a leading center for individuals with multiple disabilities and visual impairments in the region Baden-Württemberg. Before the project began, the screening tool IKI TAU was developed at the University of Education in Heidelberg to improve the identification of children and young adults with deafblindness. Individuals with deafblindness require specialized support in communication, information access, orientation, and mobility. To provide these services effectively, Nikolauspflege's staff needed specialized training.

Methods: The Hand in Hand project developed the Multiplier Training Deafblindness program, designed based on semi-structured interviews with employees. The curriculum covers deafblind-specific topics, including developmental aspects and (tactile) communication methods, combining expertise from visual impairment education with considerations for hearing loss. Following the program's implementation, an online survey and qualitative interviews were conducted to evaluate its effectiveness.

Results: In the first training cycle, 26 employees were successfully trained as deafblind multipliers. Evaluations confirmed the benefits of tailoring the training to employee needs. Feedback was positive, highlighting the value of national and international speakers in enhancing training quality. Additionally, findings indicated areas requiring further depth and refinement for the next cycle.

Conclusions: As the identification of deafblind individuals increases, so does the need for trained professionals. The Multiplier Training Deafblindness program addresses this by equipping employees with specialized skills to improve their work with individuals with deafblindness, ultimately enhancing their quality of life.

97 - P188

DRY EYE DISEASE AND DIGITAL EYE STRAIN: A SURVEY-BASED STUDY ON PRACTICE PATTERNS AND LUBRICANT SELECTION

Roseline Patel[1], Sandhya Das[2]
[1]Ophthalmology, [2]Medical affairs and PV, Cipla, Mumbai, India

Purpose: Dry eye disease (DED) and digital eye strain (DES) have become increasingly prevalent with the rise in digital device usage. This study aims to assess the prevalence, risk factors, and practice patterns for managing DED, focusing on ophthalmologists prescribing preferences for artificial tear substitutes.

Methods: A cross-sectional survey was conducted among 85 ophthalmologists (cornea specialists and general ophthalmologists) across India using an online structured questionnaire. The survey captured data on DED prevalence, common risk factors, symptoms, and treatment preferences, including lubricant selection criteria. Descriptive statistics were used for analysis.

Results: Prevalence & Risk Factors: 77.65% of ophthalmologists reported diagnosing DED patients with digital device use as a major risk factor. A rise in paediatric cases of DED due to screen exposure were noted. Diagnostic & Management Trends: The majority of ophthalmologists (87.3%) reported always prescribing tear substitutes for DES-related DED. Lubricant Preferences: Polyethylene glycol/Propylene/ Hydroxy propyl guar formulations were the most preferred artificial tears, chosen for their viscosity, longer retention time, and preservative-free options with majority reporting negligible side effects.

Conclusions: DED associated with DES is an emerging public health concern. Artificial tear substitutes remain the cornerstone of management, with PEG/PG/HP-guar formulations being the preferred choice. Understanding regional prescribing trends can help optimize treatment strategies. Increased awareness and accessibility to advanced formulations are essential for enhancing patient outcomes.

91 - P189

DYNAMIC NEUROPATHOPHYSIOLOGICAL CHANGES IN CHARLES BONNET SYNDROME

Jasleen Jolly[1, 2], Natalie Assaf[3], Bethany Higgins[4], Jane Aspell[5], Elizabeth Michael[6]

[1]Jolly Vision Science, Cambridge, United Kingdom; [2]Department of Optometry and Vision Science, Melbourne University, Melbourne, Australia; [3]Vision and Eye Research Institute, [5]Department of Psychology, Anglia Ruskin University, Cambridge, United Kingdom; [4]City University, London, United Kingdom; [6]University of Cambridge, Cambridge, United Kingdom

Purpose: Charles Bonnet Syndrome (CBS) affects people with any kind of vision loss and manifests as visual hallucinations which appear real, but patients have insight that they are not real. Developing an understanding of the dynamic neuropathophysiology of the hallucinations can help identify us identify the cause of CBS as well as potential treatment targets. Alpha power has been widely investigated as a neural mechanism for controlling visual function, but it is unknown how this may contribute to the spontaneous emergence of hallucination episodes over time. Here, we investigated whether alpha power fluctuations may be associated with the onset of visual hallucinations in CBS.

Methods: Six participants who experienced frequent CBS hallucinations underwent electroencephalography (EEG) recordings followed by questionnaires about the hallucinations experienced during the recording session. The onset and offset of hallucinations were indicated by button press responses. A minimum of five hallucinations were captured during the recording session. Occipital alpha power was compared at the onset and offset of the self-reported hallucination periods.

Results: EEG data showed a change in alpha power from pre- to post- button press at the onset of a reported hallucination. This was specific to the onset (vs offset), suggesting a relationship between alpha power dynamics and the change in visual experience. No similar dynamics were observed at other sites with well-characterised alpha sources, or within the theta or beta range.

Conclusions: This small-scale study highlights a potential role for alpha power in the regulation of visual experience in CBS patients. These data suggest that investigation of endogenous, large-scale neural dynamics may provide mechanistic insight into the momentary neural states associated with hallucination onset.

490 - P190

EVALUATION OF AN ADAPTIVE SPORT & RECREATION PROGRAM FOR USA INJURED MILITARY PERSONNEL WHO ARE LIVING WITH A VISION IMPAIRMENT: IMPACT ON HEALTHY LIFESTYLE BEHAVIORS

Molly Whitney[1], Laurie Malone[2], Alexandra McBrayer[3], Sarah Lowell[4], Laura Griggs[1], Laura Dreer[1]

[1]Ophthalmology & Visual Sciences, [2]Occupational Therapy, [3]Health Policy & Organization, Birmingham, [4]Health Care System, University of Alabama at Birmingham, Birmingham, USA

Purpose: To examine the impact of an adaptive sport and recreation program on improving health promoting behaviors among USA military personnel who are living with a vision impairment (VI).

Methods: The sample included a total of N = 40 military personnel living with a VI. Average age of participants was 39 years old (SD = 11.84) and more than half of the participants were male (82.5%), Caucasian (67.5%), and retired (62.5%). Average time since injury was approximately 8 and a half years and 55% sustained an eye-related injury during combat. Participants attended one of the Lakeshore Foundation's Lima Foxtrot Programs for Injured Military (Operation Night Vision). At the weekend long program, participants were exposed to adaptative activities and equipment related to sports and recreation (e.g., rock climbing, scuba diving, archery, tandem bicycling). Activities were supervised by trained recreational therapists. Prior to attending Operation Night Vision, participants completed a comprehensive battery of health-related measures including the Health-Promoting Lifestyle Profile II (HPLP II) and again at 2-months post-program. The HPLP II measures the extent to which individuals engage in a range of healthy lifestyle behaviors and includes the following subscales: health promotion, health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. A paired samples t-test was conducted to determine the impact of Operation Night Vision on military attendees' health behaviors 2-months post-program.

Results: Significant differences were observed between pre- and post- program scores on several lifestyle behaviors critical to healthy living: health promotion [$t(39) = -2.234$, $p = .016$], health responsibility [$t(39) = -1.817$, $p = .038$], and physical activity [$t(39) = -2.127$, $p = .020$]. Trends approaching significance were observed for the following subscales: nutrition [$t(39) = -1.666$, $p = .052$], interpersonal relations [$t(39) = -1.625$, $p = .056$], and stress management [$t(39) = -1.650$, $p = .053$].

Conclusions: Operation Night Vision appears to have a positive impact on promoting healthy lifestyle behaviors, health responsibility, and physical activity among military personnel with VI's. Positive trends were also observed for other aspects of healthy living not necessarily the focus of the program (e.g., nutrition, interpersonal relationships and stress management). These data offer support for the beneficial role of adapted sport and recreational activities for miliary personnel living with a VI.

96 - P191

EXPRESSIVE AND RECEPTIVE COMMUNICATION STRATEGIES WHEN CONDUCTING REMOTE RESEARCH WITH INDIVIDUALS LIVING WITH DEAFBLINDNESS

Norman Robert Boie[1], Leda Kamenopoulou[2], Peter Simcock[3], Meredith Prain[4], Shirley Dumassais[1], Walter Wittich[1]

[1]École d'Optométrie, Montreal, Université de Montréal, Canada; [2]University College London, London, United Kingdom; [3]Birmingham City University, Birmingham, United Kingdom; [4]Able Australia, Surrey Hills, Australia

Purpose: The inclusion of individuals with deafblindness in research has made considerable progress with accessible remote methods that gained traction during the Covid-19 pandemic. Communication can be facilitated through automated or manual captioning and transcription as well as through multi-user screen displays for sign-language interpreters. Cloud-based videoconferencing (e.g., Zoom or Teams) eliminates the need for travel, which can be its own barrier to research participation for individuals with sensory difficulties. However, such methodological approaches for qualitative data collection (e.g., interviews or focus groups) remain relatively new, and little research has explored their logistics, challenges and benefits. The purpose of this study was to describe the formats, barriers and facilitators of expressive and receptive communication adaptation during videoconferencing with deafblind participants.

Methods: Individual remote interviews with 11 participants (3 men, 8 women) were conducted using the Zoom platform, by one of two researchers experienced in the field of deafblindness. Participants were living with various diagnoses and severities of congenital, early-onset, or adult-acquired deafblindness. The interviews were part of global deafblindness studies on education, employment, and identity. Qualitative descriptive analysis focused on the logistics and process of conducting interviews, with specific attention on expressive and receptive communication strategies and accommodations.

Results: Expressive communication modalities included spoken, as well as visual and tactile sign language, which was interpreter mediated. Receptive communication modalities included listening to spoken language with or without the help of cochlear implants, or amplified volume using hearing aids, access to simultaneous automated captioning, tactile cues, and speech/lip reading. Given the global context of data collection, interpreters were at times involved to facilitate communication with the researcher into either French or English.

Conclusions: Conducting remote qualitative research with deafblind participants is a viable alternative to in-person data collection. Some preparation is required to facilitate the process. Researchers need a basic understanding of the different types of deafblindness. They need to be well organized, flexible, and be open to adapting to the unique and varied requirements of each participant. Practical limitations, such access to the internet and connection stability, must be considered, especially with participants in areas with fewer resources.

178 - P192

GLOBAL NORTH-SOUTH REPRESENTATION IN ACTION: THE ICF CORE SETS FOR DEAFBLINDNESS AS A MODEL FOR INTERNATIONAL COLLABORATIVE RESEARCH

Shirley Dumassais[1], Tosin Ogedengbe[1], Xin Yi Li[2], Maya Saini[3], Sarah Granberg[4], Walter Wittich[1]

[1]École d'Optométrie, Université de Montréal, Montréal, Canada; [2]Concordia University, Montréal, Canada; [3]McGill University, Montréal, Canada; [4]Örebro University, School of Health Sciences, Audiological Research Center, Örebro, Sweden

Purpose: Currently, 31 International Classification of Functioning, Disability and Health (ICF) Core Sets have been developed to address a variety of health conditions. Although Core Sets are designed to be applicable across the globe, their development rarely includes the recommended data collection from all six World Health Organization (WHO) regions across the four required preparatory studies. Here, we present the approach taken in the development of ICF Core Sets for deafblindness, combined hearing and vision impairment, has taken to achieve such global representation. We then explore differences in ICF code distributions between high-and low-resourced regions.

Methods: The development of ICF Core Sets for deafblindness successfully achieved international representation from both the high-resourced Global North (GN) and the low-resourced Global South (GS) through extensive networking across local, national, and international organizations advocating for individuals with deafblindness. Additionally, the engagement of key stakeholders, such as policymakers and political figures, played a crucial role in securing participation from diverse regions. Here, we present data from the qualitative study (GN n = 33, GS n = 39) and the expert survey (GN n = 65, GS n = 40), with at least five participants recruited from each of the six WHO regions for both studies.

Results: Using chi-squared analyses, we examined regional differences between the GN and GS across the four ICF domains: environmental factors, activities and participation, body structures, and body functions. The only domain that showed significant differences in both studies was the environment. In the GN, characterized by predominantly individualistic and high-resourced countries, assistive technology and social services were more frequently identified as key environmental factors. In contrast, in the GS, where societies tend to be more collectivistic and have fewer resources, community support and interpersonal relationships played a more prominent role.

Conclusions: These findings underscore the importance of global collaboration in data collection when developing tools intended for standardized and universal use such as ICF Core Sets. The differences in environmental factors between the GN and GS in the case of deafblindness highlight how local contexts and societal factors shape experiences of disability and functioning across the world.

165 - P193

MEASURING FUNCTIONAL INDEPENDENCE, DEPRESSION AND COGNITION IN ADULTS WITH DEAFBLINDNESS: FEASIBILITY AND SCORE ANALYSIS

Shirley Dumassais[1], Hamidreza Aminparvin[1], Atul Jaiswal[1], Tosin Ogedengbe[1], Meredith Prain[2], Ricard Lopez[3], Walter Wittich[1]

[1]Université de Montréal, Montréal, Canada; [2]Able Australia, Surrey Hills, Australia; [3]European Deafblind Network, Barcelona, Spain

Purpose: Deafblindness, the combination of vision and hearing impairments, presents unique challenges that can impact daily functioning, mental health, and cognition. However, there is currently limited empirical research examining how effectively existing assessment tools capture the experiences of this population. Therefore, this study aims to evaluate the feasibility and applicability of commonly used standardized clinical measures in assessing functional, emotional, and cognitive outcomes in adults with deafblindness.

Methods: This study represents the fourth study of an ongoing initiative to develop International Classification of Functioning, Disability, and Health (ICF) Core Sets for deafblindness. Its primary objective is to identify the most common challenges experienced by individuals with deafblindness, as documented in healthcare settings. Participants were recruited from multiple regions across the World Health Organization. Two clinical researchers, either an occupational therapist or a speech-language pathologist, administered three of the most used assessment tools for this population, as identified in the scientific literature: the Lawton-Brody Instrumental Activities of Daily Living Scale, the Center for Epidemiologic Studies Depression Scale and the Mini-Mental State Examination.

Results: The study included 29 participants (Meanage = 47.29, Rangeage = 20-75, n women = 15). Regarding activities of daily living, participants demonstrated higher levels of functional independence in activities such as using the telephone, managing laundry, and taking medication. However, tasks related to public transportation, shopping, and daily household chores, required greater assistance and support. As for depression, 48% of our sample indicated a high risk for clinical depression. Reporting scores on cognitive function is challenging with our sample as not all participants could successfully complete some of the sub-tasks of the Mini-Mental State Examination such as the sentence writing task and the object naming task.

Conclusions: By systematically evaluating the feasibility and outcomes of these measures, this study aims to contribute critical data to the development of standardized assessment frameworks, ultimately informing the refinement of ICF Core Sets tailored to the unique needs of individuals with deafblindness. However, our study highlights limitations in accurately collecting data on the cognitive status of adults living with deafblindness.

133 - P194

MULTISENSORY ARCHITECTURE FOR ENHANCED URBAN INCLUSIVITY

Rolf Lund[1]

[1]*Eikholt National Resource Center for Deafblindness, Research and Development, Drammen, Norway*

Purpose: This research explores how multisensory architecture can improve urban accessibility for individuals with dual sensory impairment (DSI). Traditional accessibility standards often fail to address their complex needs, leading to exclusion. By directly engaging with individuals with DSI, we aim to bridge this gap and inspire architects to design more inclusive cities. A key principle is maximizing natural multisensory architectural materials to enhance orientation and mobility in public spaces. Variations in volume, rhythm, size, and shape of buildings, vegetation, and terrain serve as navigation aids by:

- Supporting recognition
- Marking a change of direction
- Directing gaze and movement
- Indicating stopping points (waypoints)
- Creating guiding lines through transitions in form and texture

Methods: Using the gap model, we highlight the mismatch between individual capabilities and environmental demands. A co-creation approach ensures individuals with DSI contribute to solutions addressing wayfinding, signage, lighting, acoustics, and sensory design. Understanding sensory input is essential:

- Distance information: sight, hearing, smell
- Nearby information: touch, taste, balance
- Overview: sight, hearing
- Fragmented information: touch, balance
- Limited information: hearing, smell, taste
- Influence (partial control): sight, touch, taste
- No influence: hearing, smell

Results: Pedestrian-centered design enhances accessibility through multisensory interventions like tactile paving, audible signals, and textured surfaces. Strategic use of architectural forms improves wayfinding, while digital tools further support navigation.

Conclusions: By integrating multisensory design principles, urban planners can create inclusive environments that foster independence and safety for individuals with DSI. The Universal Design Idea Book advocates for prioritizing multisensory accessibility, ensuring urban spaces are engaging, functional, and inclusive for all.

66 - P195

OCULAR MANIFESTATIONS OF RHEUMATOID ARTHRITIS

Ekaterina Bryantseva[1]
[1]*Surgut Regional Clinical Hospital, Surgut, Russian Federation*

Purpose: To present a clinical case demonstrating the comprehensive manifestations in a patient diagnosed with rheumatoid arthritis (RA) and its subsequent low vision rehabilitation.

Methods: A retrospective review was conducted, during which the patient's 2-year history was analyzed. A comprehensive review of relevant literature.

Results: Patient S., a 39-year-old female, presented to the ophthalmologist with complaints of decreased vision in the right eye, decreased visual acuity in the left eye, tinnitus, occipital and temporal headaches, and pain and swelling in small and medium joints, accompanied by morning stiffness. Her medical history revealed visual disturbances starting following a COVID-19 infection. She also reported pain in the shoulder, elbow, wrist, knee, and small hand joints. A diagnosis of RA was established, and pulse therapy with glucocorticosteroids was initiated. BCVA was light perception only (OD) and 20\200 (OS). The anterior eye segment was unremarkable. Optical discs were pale. Critical flicker fusion frequency (CFF) was unrecordable (OD) and 26 Hz (OS). While methotrexate therapy led to a reduction in joint pain and overall improvement in well-being, the ocular symptoms persisted. Notably, the patient underwent blepharoplasty in another clinic one year after the diagnosis of RA. A follow-up ophthalmological examination revealed a decline in visual acuity, corneal opacities, pigment deposition on the anterior lens capsule, and vitreous floaters, potentially indicative of previous keratitis. Epiretinal membrane and retinal thinning were observed in the macula. Due to poor tolerance of methotrexate (nausea, vomiting), the rheumatologist recommended continuous leflunomide therapy. The ophthalmologist additionally recommended assistive devices, including a white cane, a magnifying glass with illumination, an audio book reading device, and an electronic handheld video magnifier, to assist with low vision rehabilitation.

Conclusions: This case highlights the progressive nature of RA with significant ocular involvement, possibly manifesting as concomitant keratoconjunctivitis or kerato-uveitis. Interdisciplinary collaboration between rheumatologists and ophthalmologists is essential for further complications. Furthermore, the potential impact of prior blepharoplasty on the progression of ocular surface disease and overall visual outcome in patients with RA warrants further investigation. Although it remains unclear whether the blepharoplasty contributed to, or was unrelated to, the observed ocular deterioration.

290 - P196

ORVIS: A REPERTOIRE OF MEASURES AVAILABLE IN FRENCH THAT ARE RELEVANT TO VISUAL IMPAIRMENT

Norman Robert Boie[1], Sylvie Cantin[2], Walter Wittich[1]

[1]École d'Optométrie, Université de Montréal, Montreal, Canada; [2]Institut Nazareth et Louis-Braille of CISSS de la Montérégie-Centre, Longueuil, Canada

Purpose: ORVIS [Outils pour la Réadaptation de la VISion] facilitates the provision of measurement tools with proven validity and fidelity. These tools must be available in French, and be suitable for use with the visually impaired population, by researchers or by practitioners. They must enable functional, perceptual, cognitive and psychological assessment of the population concerned.

Methods: The ORVIS infrastructure lists tools that correspond to these criteria and publicizes them via an electronic platform. The home page presents the mandate and organization of the directory, and offers access to the data sheets, a glossary, a link to a page devoted to tags for interpreting coefficients, and a list of ORVIS papers. The tools are organized into categories inspired by the International Classification of Functioning, Disability and Health. The directory lists more than 50 tools, presenting their characteristics, components and metric properties as documented in the scientific literature. It can also provide a brief description of the tool and a reference to a file listed in a reliable external source. ORVIS data sheets are available free of charge online and are fully accessible to the visually impaired. The directory is guided by an advisory committee, which oversees orientations, tool selection criteria, the form and content of the sheets, and the communication plan.

Results: The ORVIS directory, specific to the visually impaired clientele, increases the accessibility of information on valid instruments for researchers and clinicians active in the fields of visual impairment and rehabilitation in the French-speaking world. The tools it contains encourage the production of quality studies, as well as improved management of vision rehabilitation users, and their autonomy and social integration. Statistics compiled using Google Analytics between November 1, 2015, when the directory went online, and October 31, 2024, attest to almost 130,000 page views by nearly 88,000 visitors, around half of whom are located in France.

Conclusions: ORVIS can be accessed at https://reseauvision.ca/actuelles/wittich/. Its files comply with the Quebec government's standard on accessibility for people with and without disabilities. This repertoire is funded by the Vision Sciences Research Network and the Institut Nazareth et Louis-Braille of CISSS de la Montérégie-Centre.

279 - P197

PROBLEM-BASED LEARNING IN MEDICAL EDUCATION FOR STUDENTS WITH VISUAL IMPAIRMENTS: INFORMATION AND COMMUNICATION TECHNOLOGY UTILIZATION AND THE ROLE OF ORAL DISCUSSION

Momoko Kayano[1], Satoshi Ayuzawa[2], Erika Matsuda[2], Hinata Sakuraba[3], Sachie Suoh[2]

[1]Graduate School of Technology Science, [2]Faculty of Health Sciences, [3]Center for Integrative Medicine, Tsukuba University of Technology, Tsukuba, Ibaraki, Japan

Purpose: Amma, shiatsu, massage, and acupuncture/moxibustion have a long history as occupations for individuals with visual impairments in Japan, collectively referred to as "Riryo." Students in Riryo education are required to learn both Western and Oriental medicine. Tsukuba University of Technology is the only national university in Japan that accommodates both students with visual impairments and with hearing impairments, where students with visual impairments learn to pursue national qualifications in Riryo. The university has a unique medical center where doctors, physiotherapists, and acupuncturists collaborate in integrative medicine. Students also participate in clinical training at this center, which requires sufficient practical and clinical knowledge, as well as cooperativeness. To address this, we introduced problem-based learning (PBL) in medical education starting in 2020. It was the first attempt to incorporate it into Riryo education for students with visual impairments.

Methods: PBL was conducted using "case scenarios" in accordance with methods commonly employed in medical schools. The PBL sessions were held in a specialized room equipped with resources and round tables to facilitate group discussions. Each student had a PC and/or tablet device connected to Wi-Fi, with accessibility support features such as enlarged text, black-and-white inversion, and screen reader. The scenarios were sent sequentially via email and read aloud to share the clinical history. Students used the internet to gather information to solve the problems, and discussed the scenarios in small groups. The results of their discussions were presented via text through a web conferencing system rather than using a concept map on a whiteboard.

Results: PBL was successfully implemented for students with visual impairments. They enjoyed the oral discussions aimed at solving the problems using ICT, even without a visual concept map. A questionnaire administered after the PBL sessions indicated that students were more proactive in their learning compared to traditional lecture.

Conclusions: Acquiring knowledge through active engagement in discussions is an essential aspect of active learning, and this is achievable for students with visual impairments. Further research is needed to develop relevant skills, clarify the effectiveness of this method, and assess its educational impact on students with visual impairments in Riryo.

114 - P198

SKILLS, THOUGHTS, ACTIVITIES, RESPONSIBILITIES: CREATING AND EVALUATING THE STAR KIT EMPLOYABILITY HOME PROGRAM FOR CHILDREN WITH BLINDNESS OR LOW VISION

Natalie Kaine[1, 2], Anne Honey[1], Chris Chapparo[1], Julianne Challita[1]

[1]Faculty of Medicine and Health, The University of Sydney, Camperdown, Australia; [2]Vision Australia, Client Services: NSW/ACT Children and Young People Team, Epping, Australia

Purpose: Children with full vision start learning about job roles from as young as 3 years through incidental visual learning (Hartung et al., 2005; Wolffe, 2014). Children with blindness or low vision (BLV) risk missing out on acquring similar understanding about work (Ely & Ostrosky, 2018) which can compromise their employability in the future. The STAR Kit, an employability home program for children with BLV and their parents, was created and evaluated as part of a doctoral research project, conducted through The University of Sydney. This paper will demonstrate the STAR Kit, and outline evaluation design and findings.

Methods: The study aimed to: understand impacts of the STAR Kit program on beliefs and aspirations about future employment; investigate changes in drivers of behaviour for participating in employability-building tasks; and gather perspectives of participants about the STAR Kit. Tenets from Theory of Planned Behaviour (Ajzen, 2008, 2019) were applied to design and evaluate the STAR Kit. A mixed methods approach was used, including an experimental cross-over design and a qualitative descriptive design. Ten families of children with BLV (5-11years) were recruited to participate. Families were allocated to Group A or Group B to determine when they completed the STAR Kit program. Data were collected via four interviews. SPSS software was used to analyse group and individual quantitative data via statistical and descriptive visual analysis; NVivo software was used for inductive content analyses of interview transcripts for the qualitative component.

Results: Results of statistical group analyses did not demonstrate significant effectiveness of the STAR Kit program, however visual analysis showed several repeated patterns of change amongst participants, indicating the STAR Kit program made an impact for them. Qualitative analyses indicated the STAR Kit program had positive outcomes for children and parents.

Conclusions: Findings demonstrated the importance of starting employment preparations at an early age and taking a family centred approach. This includes providing parents with information and strategies they need to support their child or young person with BLV to prepare for future employment, designing programs to fit into family life; and taking measures to address family readiness for employability programs.

442 - P199

TEMPERATURE AS A CIRCADIAN TIMING QUEUE INDIVIDUALLY IMPAIRED

Danny Ball[1]

[1]*Institute of Cognitive Neuroscience/Institure of Ophthalmology, Psychology and Language, London, United Kingdom*

Purpose: Temperature may act as a circadian timing cue in visually impaired individuals. Damage to the retina can disrupt light reaching the central circadian clock, the regulator of daily cycles in physiology and behavior, such as the sleep-wake cycle. As a result, circadian rhythms can drift, disrupting sleep, as light is the primary cue used by the clock to align its phase with the Earth's 24-hour rotation. However, in a pilot study, we demonstrated that an individual with childhood glaucoma aligned their rest and activity cycles with the ambient temperature cycle, influencing sleep timing and quality. Therefore, we have been exploring the feasibility of using temperature as an intervention to help regulate circadian rhythms in the visually impaired.

Method: Ring the PPIE sessions, sleep and circadian dysfunction emerged as a common theme among participants, who expressed that, in many cases, sleep disruption was more debilitating than the visual impairment itself. Participants were also asked to keep sleep diaries to gain better insight into their sleep patterns, which were used to inform discussions. Room temperature was identified as an important factor for good sleep among our participants. As part of the study, we discussed the feasibility of using temperature control systems to regulate sleep and circadian rhythms. The equipment was tested by our participants and used to help design the intervention protocol. During the intervention pilot, each participant was asked to wear an activity watch to gather an understanding of their rest and activity cycles. During the two-week intervention, room temperature was manipulated using temperature control systems that mimic natural fluctuations in environmental temperature. Subjective measures of sleep were also recorded.

Results: Pilot data appear promising and open the prospect of wider empirical testing aimed at using temperature as a regulator of circadian rhythms and, consequently, sleep in the visually impaired.

Conclusions: Given that circadian dysfunction is particularly prevalent in the visually impaired population and is associated with adverse health outcomes, such as cardiovascular disease and cognitive decline, interventions using temperature to mitigate circadian disruption may hold potential.

452 - P200

THE IMPACT OF SIGHTED GUIDE ACTIVITY ON PERCEPTIONS OF LOW VISION AND ATTITUDES TO DISABILITY

Ashley Deemer[1], Rachelle Lin[1], Patrick Yoshinaga[1], Wayne Heidle[1]
[1]Marshall B. Ketchum University, Fullerton, USA

Purpose: The purpose of this study is to evaluate the impact of sighted guide training sessions on knowledge and attitudes toward visual impairment.

Methods: The voluntary training sessions were open to all employees of Marshall B. Ketchum University, which consists of three health profession programs: optometry, pharmacy, and physician assistant studies. The training sessions were conducted by members of the optometry low vision department and consisted of a 10-minute presentation and demonstration, 30 minutes of sighted guide practice, and a 10-minute debrief. Participants were asked to complete a survey before and after the activity to gauge their experience and confidence interacting with individuals with vision impairment and/or blindness, their knowledge of sighted guide, and attitudes to disability.

Results: A total of 29 attendees participated in the activity (15 faculty members, 4 administrators, and 10 clinic staff members). 24 participants (83%) completed both the pre- and post-surveys. Before the activity, 66% of survey participants reported some experience interacting with individuals with vision impairment and/or blindness. When asked, "How would you rate your current ability to provide sighted guide?" 82.8% of participants reported their ability as none or basic (41.4% and 41.4% respectively), 13.8% intermediate, and 3.4% proficient. After the event, 29.2% rated their ability as basic, 25% intermediate, 37.5% advanced, and 8.3% proficient. In reference to attitudes toward disability, when responding to the statements "When I am with a person with low vision/blindness, I do not know how to treat them" and "I feel uncomfortable when I am beside a person with low vision/blindness," improvements were seen after the event with fewer participants reporting they agreed or strongly agreed with the statements.

Conclusions: Even among health care professionals with experience interacting with visually impaired patients and community members, participating in the 50-minute training session led to improved self-reported ability to provide sighted guide and increased comfort interacting with individuals with low vision. This activity may be a cost-effective way to promote health equity and encourage an inclusive campus and clinic environment.

49 - P201

USING THE ICF CHECK-LIST IN THE FUNCTIONAL ASSESSMENT OF INDIVIDUALS LIVING WITH DEAFBLINDNESS

Walter Wittich[1], Tosin Ogedengbe[1], Atul Jaiswal[1], Shirley Dumassais[1], Ricard Lopez[2], Meredith Prain[3]

[1]School of Optometry, Université de Montréal, Montreal, Canada; [2]European Deafblind Network, Barcelona, Spain; [3]Able Australia, Surrey Hills, Australia

Purpose: Individuals with deafblindness benefit from interdisciplinary care but often lack access to appropriate health and social services. This gap may stem from limited understanding of how deafblindness affects functioning. The World Health Organization's (WHO) International Classification of Functioning, Disability, and Health (ICF) Core Sets aim to describe functioning in complex health conditions using a biopsychosocial approach.

Methods: This is the final preparatory study towards developing ICF Core Sets for deafblindness, focusing on identifying key functional barriers and facilitators. Conducted in a global multi-centered clinical setting, the cross-sectional study included 29 individuals with deafblindness across WHO's six regions. Participants underwent clinical evaluations using the ICF checklist, assessing body structures, functions, activity limitations, participation restrictions, and environmental factors. Responses were recorded using ICF qualifiers and analyzed with descriptive statistics.

Results: The most affected body structures were the eye and ear (s2), leading to impairments in seeing (b210) and hearing (b230). Significant difficulties were reported in listening (d115), interpreting non-verbal messages (d315), and driving (d475). Environmental factors played a dual role: 16 categories were facilitators (e.g., immediate family, e310), four were barriers (e.g., climate, e225), and 12 served as both (e.g., people in positions of authority, e330).

Conclusions: Professionals must go beyond the medical perspective to evaluate and manage individuals holistically. Understanding the complexity of deafblindness is essential for effective referrals, management plans, and overall well-being.

85 - P202

"THIS SENSE OF NOT FEELING WHOLE": A QUALITATIVE ANALYSIS OF MENTAL WELLBEING IN ADULTS WITH INHERITED MACULAR DISEASE

Rachael Canavan[1], Marc Tibber[2], Tessa Dekker[1], Michael Crossland[1]

[1]UCL Institute of Ophthalmology, London, United Kingdom; [2]UCL Research Department of Clinical, Education and Health Psychology, London, United Kingdom

Purpose: Young people with vision impairment have reduced mental wellbeing relative to those with better vision, but the reasons for this are not fully understood. Further, there is a limited evidence base for the effectiveness of emotional support currently offered to this population, and provision of such support is often inconsistent and disjointed. Consequently, we used qualitative interviews to explore the mechanisms that limit and support wellbeing in adults who acquired vision impairment in adolescence and to explore the barriers and facilitators to accessing support with the ultimate aim of developing recommendations, strategies and resources to improve the wellbeing of people who lose vision at this age.

Methods: Purposive sampling was used to recruit adults with inherited macular disease and vision impairment from a hospital low vision clinic. All participants completed an online semi-structured interview comprised of open-ended questions to examine the impact of vision impairment on daily life, particularly at the time of diagnosis, focusing on mental wellbeing, activities to promote wellbeing and opinions on available support. Interviews were recorded, anonymised, transcribed and analysed independently by two researchers. Reflexive thematic analysis was used to develop themes and sub-themes using a hybrid a posteriori (inductive) and a priori (deductive) approach.

Results: Eleven interviews were undertaken and analysed. Mean participant age was 51.3 years (sd: 19, range: 20 - 77 years). Two superordinate themes were developed: 'impact of vision impairment' and 'support received'. Four subthemes were identified within the 'impact of vision impairment' theme: emotional, societal, practical and medical. Two subthemes were developed within the 'support received' theme: self-support (e.g., humour, resilience, adaptation and relaxation) and support from others (such as mentoring, arts, practical help and support groups).

Conclusions: Multiple factors associated with vision impairment, which participants linked to reduced mental wellbeing, were identified. Participants also identified many internal and external support strategies to promote their wellbeing. These findings will contribute to the development of a package of interventions which can be offered to young people with vision impairment in the future.

125 - P203

BEYOND LOW VISION OPTICS TO PSYCHOSOCIAL SUCCESS

Bennett McAllister[1]
[1]*Western University of Health Sciences, Eye Care Institute, Pomona, California, USA*

Purpose: Patient success in Low Vision Rehabilitation is too often associated only with utilization of appropriate optics. While properly chosen optical devices are essential for low vision success, they are frequently found to be insufficient. The purpose of this abstract is to emphasize and demonstrate that true success in low vision is meeting patients' needs for functional independence and quality-of-life improvement.

Methods: In order to appreciate the current thinking on the psychosocial factors involved in successful patient care, it is important to view how the concepts came about. Therefore, a short review of theories of the human mind will be presented and how they led to modern thinking on human behaviour. In addition, a look at the gap between hard sciences and the humanities with ideas for developing a bridge between them is elucidated along with some side trips looking at Grief Processing and Multiple Intelligences as they are deemed necessary.

Results: Low Vision Rehabilitation is a field where the connection between practitioner and patient is paramount especially in considering meeting patient needs for enhanced quality of life. For years this was conceptualization either misunderstood or insufficiently addressed, but with the tools from the fields of psychology and human behaviour in addition to optics, it is found that it is possible to increase both patient and practitioner satisfaction.

Conclusions: It is clear that low vision rehabilitation involves a deep knowledge of optics. Given that, however, it is also clear that optics only take one so far in caring for visually impaired patients. In the context of psychology and human behaviour, we find the keys to applying optical science to our human patients with the goals of improving functional independence and quality of life.

470 - P204

COMPARISON AND ANALYSIS OF VISUAL FUNCTION UNDER DIFFERENT LUMINANCE CONDITIONS IN ADULTS WITH ANXIETY SYMPTOMS

Wen-Ling Chang[1], Pei-Chan Teng[1], Yi-Wen Tseng[1], Fu-Chun Chang[1, 2], Ching-Ying Cheng[1, 2]

[1]Department of Optometry, [2]Department of Ophthalmology, Chung Shan Medical University Hospital, Taichung, Taiwan

Purpose: Anxiety is a common psychological condition that may affect both the autonomic nervous system and visual function. While luminance is essential for vision, the relationship between anxiety and visual performance under low-luminance conditions remains understudied. This purpose of this study investigated visual function under different luminance levels in adults with anxiety symptoms, incorporating relevant ocular physiological factors.

Methods: Forty-one participants aged 20–35 were divided into an anxiety group (n = 21) and a control group (n = 20) based on Beck Anxiety Inventory (BAI) scores. Assessments included the Low Luminance Questionnaire (LLQ) and a series of visual function and ocular physiological examinations conducted under photopic and mesopic conditions. Parameters measured included pupil diameter, corneal topography, refractive error, macular pigment optical density, tear film quality, best-corrected visual acuity (BCVA), oculomotor, heterophoria, vergence, accommodation, stereopsis, color vision, contrast sensitivity, and photo-stress recovery time. Statistical analysis was performed using IBM SPSS Statistics 18.

Results: The two groups exhibited significant differences in pupil size, corneal aberration, tear film stability, visual acuity, oculomotor performance, vergence function, and accommodative response, as well as LLQ total scores. In the non-anxiety group, pupil size showed greater sensitivity to luminance changes and a stronger correlation with corneal aberration, along with more stable ocular responses. Conversely, the anxiety group showed reduced tear film quality influenced by a broader range of factors. Under mesopic conditions, anxiety group reported diminished subjective visual performance, decreased acuity, and impaired oculomotor coordination. Increased vergence effort was required to compensate for insufficient accommodation, suggesting an adaptive mechanism for maintaining image clarity.

Conclusion: Anxiety may alter ocular physiology and impair visual function, particularly under low-luminance conditions. These findings underscore the importance of considering psychological factors in visual assessments and low-vision research.

Keywords: anxiety, luminance, mesopic, visual function, ocular physiology

62 - P205

ENHANCING PARTICIPATION OF ONE-YEAR-OLD CHILDREN WITH VISUAL IMPAIRMENT AND ADDITIONAL DISABILITIES THROUGH BODILY-TACTILE EARLY INTERVENTION

Sini Peltokorpi[1], Saara Salo[2], Anne Nafstad[3], Paul Hart[4], Minna Laakso[2]

[1]University of Turku, Turku, Finland; [2]University of Helsinki, Helsinki, Finland; [3]STATPED, Oslo, Norway; [4]Sense Scotland, Glasgow, United Kingdom

Purpose: Children with visual impairment and additional disabilities (VIAD) may show less responsiveness and involvement in early interactions with their parents than typically developing children. This could be due to their challenges in accessing visual information related to their parents' expressions. Similarly, parents may not detect their children's subtle and atypical expressions. These challenges may prevent children with VIAD from using their full developmental potential and compromise emotional relationships with their parents. This study explored the effects of bodily-tactile early intervention, which aimed to foster children's participation through increased accessibility.

Methods: The participants were four children with VIAD and their mothers. The home-based intervention focused on the mothers, who were introduced to bodily-tactile play routines including touch and movements, communicative functions of touch and other strategies to support their children's participation. The video data from four baseline, eight intervention and three follow-up sessions were analyzed with the bodily-tactile coding procedure, multimodal conversation analysis and Emotional Availability Scales.

Results: During the intervention, the mothers increased their use of the bodily-tactile modality in early social play routines and in different communicative functions. They began to anticipate actions through the sense of touch and use tactile signs. The reciprocity in interactions increased, which was related to changes in the mothers' interactive behavior. The mothers began to create more time and space for their children's turn-taking. They also noticed more of their children's movements and gestures through touch. In this way, the children obtained more resources for participation through their bodily actions. The children were emotionally more available to their mothers during the intervention, which was shown by their increased responsiveness and involvement.

Conclusions: The results suggest that the positive changes in the children's participation were related to the increased accessibility of interactions through the bodily-tactile modality and the changes in their mothers' interactive behavior.

383 - P206

EXPLORING THE IMPACT OF VISUAL FUNCTION, DEPRESSION, AND ANXIETY ON SOCIOEMOTIONAL WELL-BEING IN LOW VISION PATIENTS

Micaela Gobeille[1], Phillippa Dorling[1], Melissa Ngo[1], Bianca Guzman[1], Sonaina Merchant[1], Alexis Malkin[1], Nicole Ross[1, 2]

[1]New England College of Optometry, Boston, USA; [2]Northeastern University, Boston, USA

Purpose: To explore associations between clinical intake questionnaires for depression/anxiety, socioemotional well-being (SEW) and visual function (VF) in low vision patients.

Methods: Before low vision rehabilitation, patients (n=73) self-reported their depression/anxiety symptoms using the 4-item Patient Health Questionnaire (PHQ-4) and their visual ability using the NEI VFQ-25c. Rasch analysis was applied to NEI VFQ-25c for SEW and VF subscales. Simple and multivariate regressions explored associations between SEW and VF person measures, PHQ-4 total score, and clinical/demographic data.

Results: Patients had a mean age of 62.3 (SD = 17.2) years, mean better eye BCVA of 0.56 (SD = 0.44) logMAR, and mean contrast sensitivity (CS) of 1.23 (SD = 0.41) logCS. Functionally significant visual field loss was documented in 48%. Mean PHQ-4 total score was 2.45 (SD = 2.79), with 37% of patients screening positive for depression (n = 11) and/or anxiety (n = 18). SEW was significantly independently associated with VF ($R2 = 0.33$, $p < 0.001$), PHQ-4 ($R2 = 0.23$, $p < 0.001$) and CS ($R2 = 0.22$, $p < 0.001$). A multivariate regression explained 41% of variance in SEW, with significant associations between SEW and PHQ-4 ($p = 0.003$) as well as VF ($p < 0.001$). While CS was significantly associated with SEW ($p = 0.048$), inclusion only explained an additional 2% of variance. Nonsignificant variables included age ($p = 0.77$), gender ($p = 0.38$), cognitive status ($P=0.98$), presence of a visual field defect ($p = 0.30$), and VA ($p = 0.997$). Subanalysis of patients with a PHQ-4 total score ≥ 3 (n = 27) revealed that SEW was not significantly associated with VF ($R2 = 0.14$, $p = 0.051$), but was independently significantly associated with PHQ-4 ($R2 = 0.28$, $p = 0.004$) and CS ($R2 = 0.53$, $p < 0.001$).

Conclusions: In patients screening positive for depression and/or anxiety, socioemotional well-being was associated with PHQ-4 total score but not visual function, while socioemotional well-being was associated with both variables when all patients were included. Findings suggest that PHQ-4 and SEW may each contribute unique information when administered to low vision patients.

247 - P207

EXPLORING THE INTEGRATION OF MENTAL HEALTH SERVICES AND VISION REHABILITATION SERVICE DELIVERY

Ashley Shaw[1], Claire Sira[2]

[1]Vision Loss Rehabilitation Canada, Quality Performance and Standards, Kitchener, Canada; [2]Vision Loss Rehabilitation Canada, Victoria, Canada

Purpose: To explore the relationship between mental health and participation in vision rehabilitation, provide mental health services that improve clients' engagement with vision rehabilitation, and to evaluate the impact of integrated mental health services.

Methods: A 1-year pilot program was delivered in the province of British Columbia. The program integrated behavioural health psychology services into the vision rehabilitation service delivery model using a stepped care approach. Clients identified through mental health screening during intake received assessment and individualized treatment, with the objective of empowering them to begin working toward their vision rehabilitation goals. The psychologists also supported the interdisciplinary vision rehabilitation team through consultation on specific cases, and identification of appropriate external resources where needed.

Results:

- Over 9 months, 164 clients participated in behavioural health assessment or treatment visits.
- Pre and post-intervention data for 86 clients showed decreased anxiety (42 clients), decreased depression (36 clients), and increased life satisfaction (42 clients).
- Clients who found their vision loss emotionally challenging were likely to participate more fully in orientation and mobility training when they had also accessed mental health services.
- Vision rehabilitation staff reported that consulting with the behavioural health specialists increased their comfort when discussing mental health issues with clients, and helped to address clients' mental health and vision-related problems.

Conclusions:

- The inclusion of Mental health screening at intake provided an improved understanding of the characteristics and needs of vision rehabilitation clients across Canada.
- Clients' perception of the emotional challenge of vision loss is a good eligibility criterion for integrated mental health services.
- The integration of mental health professionals into vision rehabilitation service improves client engagement with rehabilitation goals, and enhances specialists' capacity to support clients.

483 - P208

INTENSITY ORDER ILLUSION IN DEVELOPING SENSORY SUBSTITUTION DEVICES

Ivan Makarov[1], Nashmin Yehaneh[2], Hafliði Ásgeirsson[2], Runar Unnthorsson[2], Árni Kristjánsson[1]

[1]School of Health Sciences, Faculty of Psychology, [2]School of Engineering and Natural Sciences Industrial Engineering, Mechanical Engineering and Computer Science, University of Iceland, Reykjavik, Iceland

Purpose: Sensory substitution devices are a promising avenue for assisting individuals with low vision by converting visual information into tactile stimuli. For such systems to be effective, we must first understand how spatial information is interpreted. In the haptic intensity order illusion, people tend to mislocalize the second of two sequential vibrotactile stimuli depending on their relative intensity: when the second stimulus is stronger than the first, it is more likely to be perceived as occurring above the first, and vice versa when the second is weaker. This bias an occur even when both stimuli are delivered at the same physical location. Previous work did not disentangle whether the illusion was driven by changes in amplitude, frequency, or both. In this study, we aimed to isolate the crucial factors causing the illusion, using equipment that allows independent control of these parameters.

Methods: We conducted a controlled psychophysical experiment using Lofelt L5 actuators, which support separate manipulation of amplitude and frequency. Participants received two sequential vibrotactile stimuli on their lower back and were asked to report whether the second was above or below the first. Stimulus parameters were varied in a fully factorial design, crossing amplitude (weak vs. strong) and frequency (100 Hz vs. 200 Hz), with spatial direction, randomized across three positions (above, below, or same). Responses were analyzed using a three-way ANOVA and post-hoc t-tests.

Results: We successfully replicated the intensity order illusion using equipment suitable for wearable haptic applications. Crucially, the results showed that the illusion is driven entirely by changes in amplitude, while frequency had no significant effect.

Conclusions: These findings have direct implications for sensory substitution systems for low vision that rely on vibrotactile feedback to convey spatial information. If amplitude increases are interpreted as upward motion, then modulating amplitude to encode other variables—such as intensity, urgency, or signal type – may unintentionally introduce spatial mislocalizations. Designers must take this bias into account to ensure reliable, interpretable tactile communication for users with low vision.

194 - P209

LIVING WITH USHER SYNDROME: A PHENOMENOLOGY STUDY

Danial Bohan[1], Xuanyu Chen[1], Inez Hung[1], Yan Hong Chow[1], Siew Seang Ong[1]
[1]National University Hospital, Singapore, Singapore

Purpose: Usher syndrome is an inherited condition and the most common cause of dual sensory impairment (visual and hearing). This study aimed to investigate the lived experience of a young patient living with Usher syndrome in the Singapore context.

Methods: The single interpretive phenomenological study asked: What is the lived experience of Usher syndrome? The participant is a 33-year-old male who has Usher syndrome with advanced visual field loss and moderate hearing impairment. Ten semi-structured interviews were conducted and the audio data was recorded and transcribed. The interpretive phenomenological analysis framework was used to analysed the data.

Results: Seven emergent themes of coping with dual sensory impairment, seeking social support, maintaining vision and health, living with a disability, making social adjustments, uncertain employment and seeking hope through religiosity with three overarching themes of preserving the self, developing a new identity and negotiating the future were identified.

Conclusions: The study identified key themes surrounding Usher syndrome as a lived human experience. It explored its complex relationship between self and identity, profound effect on the appraisal of future, and the unique role of religiosity. The results support the need to broaden the care, support and services for patients with Usher syndrome in Singapore.

327 - P210

PERCEPTUAL LEARNING OF A CROWDING TASK: TRANSFER BETWEEN DIFFERENT ECCENTRICITIES IN THE VISUAL FIELD

Tina Plank[1], Elena von Perponcher[1], Daniel Kett[1], Mark Greenlee[1]
[1]Experimental Psychology, University of Regensburg, Regensburg, Germany

Purpose: Visual crowding refers to the impairment of recognizing peripherally presented objects flanked by distractors. Exhibiting a "critical distance" between target and flankers, crowding effects can be reduced by perceptual learning. In this study, we were interested in whether training in a crowding task in one eccentricity of the visual field (here: 6.5° VA) transfers to another (here: 13° VA). Moreover, this transfer effect was tested on two different axes: at an angle of 25° to the vertical meridian as in the training, and at an angle of 25° to the horizontal meridian. Macular degeneration leads to central vision loss (CVL) and often to the use of eccentric fixation at the so-called preferred retinal locus (PRL) on intact peripheral retina. In cases of disease progression this PRL must shift to more eccentric positions. Therefore, it is of interest, whether performance enhancements through visual training can transfer to greater eccentricities.

Methods: 29 normally sighted participants (18-30 years) trained a crowding task in the upper left and right quadrant (target positioned at 6.5° eccentricity, 25° from the vertical meridian) over three sessions. The task was to recognize the orientation of a Landolt-C, flanked by distractors (same sized rings without a gap). Before and after training participants were additionally tested in the same task with target stimuli positioned at 13° eccentricity at two axes (25° from the vertical/horizontal meridian).

Results: We found an overall significant learning effect at the trained eccentricity of 6.5° VA (difference in hit rate:0.2, SE:.02, $p < .001$). Learning also partially transferred to the higher eccentricity (13° VA), both on the same axis (difference in hit rate:0.16, SE:.02, $p < .001$) and on the other axis (difference in hit rate:0.13, SE:.02, $p < .001$).

Conclusions: Our exploratory study investigated transfer effects of perceptual learning of a crowding task at one eccentricity in the visual field to another location. We found that learning effects transferred significantly to greater eccentricities. The results may have implications for training measures in eccentric viewing for patients with CVL, indicating that improvements in visual tasks at one eccentricity may rather easily transfer to other eccentricities in case of disease progression.

473 - P211

PERSONAL WAYFINDING PREFERENCES REGARDING CUE USE AND STRATEGY CHOICE IN PEOPLE WITH VISUAL IMPAIRMENTS

Dominique Blokland[1], Nathan Van der Stoep[1, 2], Maartje Van Loef[1], Albert Postma[1], Krista Overvliet[1]

[1]Utrecht University, Experimental Psychology, Utrecht, The Netherlands; [2]TNO, Human Machine Teaming (Defense, Safety, & Security), Den Haag, The Netherlands

Purpose: People with visual impairments (VIPs) can participate in orientation and mobility (O&M) training to learn how to navigate to their chosen target locations. During O&M training, personal wayfinding preferences with regards to cue use and wayfinding strategy choice are taken into account. However, there is still unclarity about which preferences shape VIPs' wayfinding experiences and how. In this study, we therefore mapped which wayfinding preferences are present in the VIP population and we created an overview of the main factors influencing these preferences as well as their interconnections.

Methods: Qualitative interviews were conducted with 11 Dutch VIPs with various diagnoses, severity of impairment, and types of navigational aids. Thematic analysis was carried out to identify main themes in the data describing what topics are most important to our sample in terms of what they spoke about, how often, and in which ways.

Results: We formulated four main themes describing self-reported cue use and strategy choice: Sensory modalities, Knowledge, Other people, and Smartphone use. We found that VIPs tend to prefer one of the following strategies: a strategy with a focus on hearing (e.g., acoustics), a focus on haptics (e.g., natural guiding lines), a focus on sight (e.g. contrasts), or a combination of cues from multiple sensory modalities. Personal preferences also varied based on a need for independence (e.g., amount of preparation for the journey), energy management (e.g., frequency of asking for help), level of confidence (e.g., attitude towards making errors), and situation-dependent navigational goals (e.g., orienting oneself, identifying tripping hazards, or following a path).

Conclusions: We conclude that VIPs have wayfinding preferences regarding which senses they use and how much they rely on existing knowledge, smartphone applications, and help from others. To supplement the current findings on VIPs' wayfinding preferences, interviews with 10 O&M trainers have been conducted. In an upcoming large-scale study, we will develop a quantitative survey to examine how individual characteristics correlate with the preferences we mapped. This survey could then be used by O&M trainers as a systematic instrument to measure a client's navigational preferences aiding them in personalizing the training.

333 - P212

THE EFFECT OF GROUP REHABILITATION ON COPING MECHANISMS AND MOOD IN LOW VISION INDIVIDUALS

Ursa Muznik[1], Eva Skrlec Velkavrh[1], Neza Mastnak[1]
[1]University Medical Centre Ljubljana, Eye Hospital, Ljubljana, Slovenia

Purpose: Low vision significantly influences daily functioning and emotional well-being, often leading to increased stress, anxiety, and depression, which can negatively affect overall quality of life. To cope with the challenges associated with visual impairment, individuals must use effective coping mechanisms. Group rehabilitation, in addition to providing practical skills training, fosters social support, shared experiences, and diverse perspectives, which have been shown to enhance coping strategies and improve psychological well-being in other patient populations. This study aims to evaluate the impact of a structured group rehabilitation program on mood and coping mechanisms in individuals with low vision. Specifically, we seek to determine whether participation in such a program can help reduce emotional distress and improve adaptation to visual impairment.

Methods: Participants diagnosed with low vision are enrolled in a structured group rehabilitation program consisting of 10 sessions. The program includes training in the use of low vision devices, orientation and mobility, activities of daily living, communication skills, problem-solving strategies, emotional coping techniques, and social services counselling. Mood and coping orientation are assessed before and after participation using the Clinical Assessment of Depression questionnaire (CAD) and the Coping Orientation to Problems Experienced Inventory (Brief-COPE). The study analyses changes in participants' mood and coping strategies following the intervention.

Results: The results of this ongoing study will be presented in a forthcoming congress. Preliminary findings are expected to provide insights into the psychological benefits of group rehabilitation for individuals with low vision.

Conclusions: This study aims to contribute valuable knowledge for developing targeted group rehabilitation programs to support individuals with low vision. By addressing emotional distress and fostering adaptive coping strategies, structured group rehabilitation may play a critical role in enhancing quality of life and psychological well-being in this population.

357 - P213

THE EFFECTS OF BOTH FREE AND FIXED VIEWING DISTANCE ON READING PERFORMANCE IN PARTICIPANTS WITH SIMULATED LOW-VISION

Kazuhito Ujima[1], Mai Imazu[2], Nobuyuki Nagai[3]

[1]Hiroshima University, Academy of Hiroshima University (Graduate School of Humanities and Social Sciences), Higashi-Hiroshima, Japan; [2]Tokyo Metropolitan Katsushika School for the Blind, Elementary Department, Tokyo, Japan; [3]Miyagi University of Education, Specialist Degree Course, Graduate School for Teacher Training, Advanced Program for Professional Teacher Education, Sendai, Japan

Purpose: Visual function assessment for people with low vision is commonly conducted at a fixed viewing distance. However, a few studies using continuous text in traditional Chinese and Japanese Kanji have indicated that viewing distances are shorter under free-viewing conditions compared to fixed conditions (Huang, Kakizawa, & Hisham, 2019; Nakano, Yamamoto, & Arai, 2011). The purpose of this study is to examine the effects of both free and fixed viewing distances on CPS.

Methods: This study recruited 5 adults in Japan (M age = 24.8 years, SD = 3.9) with normal vision and a corrected visual acuity of 0.1 logMAR or higher. A total of 36 reading charts were prepared, tailored to the reading level of 6th-grade elementary school textbooks in Japan. These charts were divided into four groups, each containing characters in nine sizes, ranging from 2 to 14 mm in height, incremented in 0.1 logUNIT steps. Optitrack motion capture markers were placed on the left and right sides of the forehead, the tip of the nose, and the four corners of the tablet. Participants read aloud from a tablet screen under two conditions: strong blur (1.7 logMAR) and mild blur (0.8 logMAR). The distance between the tablet and the participants' faces was measured using motion capture, and the visual angle of letter height was calculated based on the average viewing distance per chart. The study employed a two-factor, within-participants factorial design. The two factors were viewing distance (free vs. fixed) and visual acuity filter (strong vs. mild blur).

Results: A two-way ANOVA with CPS as the dependent variable revealed a significant interaction. Specifically, under the severely low vision condition, CPS in the free vision condition was significantly greater than in the fixed vision condition.

Conclusions: CPS was assessed under both free and fixed viewing distance conditions using precise 3D motion capture to measure viewing distance. The findings demonstrated a notable difference in CPS between free and fixed viewing conditions.

26 - P214

THE IMPACT OF VISUAL IMPAIREMENT ON YOUTH CAREER CHOICES

Aline Leavy[1], Lucien Panchaud[2]

[1]Psychology, Université de Lausanne, Lausanne, Switzerland; [2]Fondation Asile des Aveugles, Santé Communautaire, Lausanne, Switzerland

Purpose: This study explores the career choice process of visually impaired youths (VIY), focusing on how their disability, social support, and educational access influence their aspirations and choices. Using Amartya Sen's capability approach, the study analyses how functional and contextual constraints impact VIY's freedom to choose and achieve their desired professions.

Methods: Fifteen visually impaired youths (aged 16–22) were interviewed using a semi-structured guide. Participants were enrolled in secondary or tertiary education in Switzerland and were insured under Swiss disability insurance. Interviews were complemented with quality-of-life assessments using the NEI-VFQ-13 tool. Data was analysed through inductive content analysis and triangulation, comparing objective and subjective visual impairment with career decision-making processes.

Results: Four career choice profiles emerged:

1. Free Career, Positive Disability Experience: Youths with minimal constraints and high coping ability freely chose their careers.
2. Constrained Career, Positive Disability Experience: Participants adapted their career goals to their disabilities but remained satisfied with their choices.
3. Free Career, Negative Disability Experience: Youths with mild impairments reported fewer career constraints but struggled with dissatisfaction or indecision.
4. Constrained Career, Negative Disability Experience: Participants felt limited by their impairments, reporting dissatisfaction and forced career compromises. Education level, quality of life, and coping strategies significantly shaped these experiences.

Conclusions: VIY face systemic limitations in career choice due to functional, legal, and safety constraints tied to visual impairment. Positive coping strategies and higher education levels enhance career freedom, while negative perceptions of disability and lower educational attainment exacerbate limitations. Social and policy-level support mechanisms must prioritize expanding VIY's capabilities to improve career outcomes and reduce constraints.

75 - P215

CLINICAL ASSESSMENT OF READING SPEED

Keziah Latham[1], Hikmat Subhi[1]
[1]Anglia Ruskin University, Cambridge, United Kingdom

Purpose: Reading speed is an important functional outcome measure in low vision assessment but can be time consuming to formally assess in clinical settings. This study provides a preliminary evaluation of how well clinician judgments of reading fluency and patient ratings of reading ability reflect measured reading speed.

Methods: Participants were audio-recorded reading normal polarity MNREAD card charts under standard conditions. Maximum reading speed (MRS; wpm) was calculated as the mean of all reading speeds above the critical print size, which was determined by inspection. A clinician (HS) listened to recordings and judged whether they considered the MRS to represent a reading speed that was fluent or not. A sub-set of participants was asked to rate their perceived ability to undertake sustained reading tasks.

Results: Data was available for 91 people with self-reported vision impairment. Mean age 66 (SD 16) yrs, range 18-96yrs; 45 female, 46 male. Primary causes of vision loss were macular degeneration (33), glaucoma (23), retinitis pigmentosa (17), other (21). Mean reading acuity was +0.30 (SD 0.31) logMAR, range -0.20 to 1.11logMAR. MRS was judged to be fluent for 69 people, and not for 22. ROC analysis of clinician judgments provided an AUC of 0.91, a cut-off for maximum sensitivity at 60wpm, and an optimum fluency cut-off (Youden J 0.69) of 118wpm. With this 118wpm cut-off, clinician judgments of fluency had sensitivity of 96% and specificity of 57%, with 81% of people correctly allocated. For the subset of 35 people who rated their perceived ability, 27 reported ability to do sustained reading while 8 could not. AUC was 0.80, with a cut-off (Youden J 0.75) of 60 wpm.

Conclusions: An experienced clinician was able to dichotomously judge fluency of MRS, with speeds 118wpm or more consistently sounding fluent and those <60wpm not. Patient perception also indicated MRS > 60 wpm was needed for sustained reading. Benefits and limitations of including reading speed within low vision assessment will be discussed.

499 - P216

READING EFFICIENCY, BINOCUALR VISION, AND VISUAL PERCEPTION

Pin-Hsuan Chen[1], Hsin-Yun Huang[2, 3], Wen-Ling Chang[1], Ting-Yu Liu[1], Ching-Ying Cheng[1, 4]

[1]Department of Optometry, [4]Department of Ophthalmology, Chung Shan Medical University, Taichung, Taiwan; [2]Department of Ophthalmology, Mennonite Christian Hospital, Hualien, Taiwan; [3]Eye Health Promotion Centre of Eastern Taiwan, Hualien, Taiwan

Purpose: Reading is a critical channel for getting information, involving complex interactions among psychological, visual, phonological, and cognitive processes. The purpose of this study was to investigate binocular vision, visual perception, and reading efficiency among young adults who experience difficulties in reading.

Methods: Twenty participants aged 20–35 with reading complaints were recruited using a near visual function questionnaire. Based on reading comprehension scores, participants were divided into Good Reading Efficiency (GRE) and Poor Reading Efficiency (PRE) groups. Binocular visual function, visual perception (MVPT and peripheral perception), and reading performance were assessed and compared using IBM SPSS Statistics v.25.

Results: The PRE group demonstrated significantly poorer performance in accommodation, vergence, contrast sensitivity, and stereopsis compared to the GRE group. While no significant difference was found in phoria and eye movement. However, further analysis of vertical vergence indicated that the PRE group may have poorer vertical oculomotor coordination at near. In terms of visual perception, the PRE group showed lower performance in both peripheral perception and the Motor-Free Visual Perception Test (MVPT), with significant differences observed in figure-ground discrimination and visual closure, indicating challenges in assessing the use of parafoveal vision, contextual inference, and saccade during reading.

Conclusion: Reduced binocular visual function and visual perceptual abilities may hinder the development of efficient reading skills. These findings highlight the importance of visual assessments in addressing reading difficulties among young adults.

Keywords: Reading Efficiency, Binocular Vision, Visual Perception

373 - P217

READING SPEED AND LEXICAL ABILITY OF CHILDREN: IMPLICATIONS FOR ASSESSING READING PERFORMANCE IN CHILDREN WITH LOW VISION

Nobuyuki Nagai[1], Kazuhito Ujima[2], Mai Imazu[3], Hironaka Kumagai[4]

[1]Miyagi University of Education, Sendai, Japan; [2]Hiroshima University, Higashi-Hiroshima, Japan; [3]Tokyo Metropolitan Katsushika School for the Blind, elementary department, Tokyo, Japan; [4]Shiogama Second Elementary School, Shiogama, Japan

Purpose: To assess reading performance in children, such as their reading speed or print size, it is necessary to consider their developmental stage. This consideration is crucial for differentiating whether reading difficulties stem from visual impairment or low language ability. To develop an educational method for evaluating the reading ability of children with low vision, we investigated the relationship between lexical ability and reading speed in sighted elementary school children.

Methods: The participants were students in the second to sixth grade at one elementary school. There were 55, 59, 76, 60, and 65 participants from the second to sixth grade, respectively. Reading stimuli were created using vocabulary from the Japanese language textbooks for each grade. The reading assessment app readingDL (Hiroshima University Ujima Laboratory) was used to display the text on a tablet device (Apple iPad) and to record the audio. The measurement time was approximately 20 min, during which reading stimuli were presented successively. We also administered the Kyoken Reading Test (Toshobunka), an evaluation test of Japanese reading ability, and calculated scores for lexical ability.

Results: The average reading speeds (characters per minute, cpm) for second through sixth graders were 189.1, 199.7, 254.8, 298.8, and 306.6, respectively. The Pearson correlation coefficients between reading speed and lexical ability scores for second through sixth graders were 0.794, 0.702, 0.568, 0.401, and 0.227, respectively. However, the correlation coefficient was statistically significant only for the second to fourth grades.

Conclusions: The results suggest that reading speed is influenced more strongly by lexical ability in the lower grades. It is therefore essential to assess students' reading ability using the vocabulary they are familiar with. By contrast, the lack of correlation between lexical ability and reading speed in the upper grades could be attributed to the presence of children who have high lexical ability in the slower reading speed group. It is considered that factors other than lexical ability, such as increasing complexity of texts as students progress through grades, significantly impact reading performance in the upper grades of elementary school.

162 - P218

SHEET MUSIC FOR LOW VISION - A SIMULATION STUDY

Natsuki Toguchi[1], Momoka Nakagawa[1], Kuranishi Kiara[1], Koichi Oda[1]
[1]Dept. of Communication, Tokyo Woman's Christian University, Tokyo, Japan

Purpose: Music lovers with low vision face difficulties in reading sheet music. This study aims to find methods of providing appropriate magnification of sheet music to meet individual needs by applying a technique similar to MNREAD reading measurement.

Methods: A number of test sheet music were generated in the form of three measures with 24 eighth notes in C major, spanning two octaves from G to H. A special care was taken to equalise ease of reading among music. Twenty female students with normal vision and sufficient fluency in playing musical instruments at first sight participated. They were asked to read test music and play her instrument as fast and precisely as possible, starting with sufficiently large music and its size was reduced in 0.1 log step until no single note was readable. Playing time and errors were recorded and resulting playing speed function was analysed according to procedure of MNREAD reading test. Participants repeated measurements with normal vision and simulated low vision: decimal visual acuity 0.2, 0.1, visual field restrictions of 2.4 and 1.2 degree. MNREAD measurement was also administered and key indices such as RA, CPS, and MRS were compared.

Results: The playing speed against musical notation size showed two-limbed function similar to MNREAD reading function. Repeated measures ANOVA for the simulated low vision condition on RA, CPS, and MRS showed statistically significant main effect, replicating clinical observation that visual impairments significantly affect readability of sheet music. Correlation analysis showed a strong correlation between two CPSs for musical notation and for letters.

Conclusions: The results strongly suggest that there is CPS for reading sheet music with which we could provide suitable magnification for individuals with low vision. Furthermore, MNREAD reading measurements are likely to correctly estimate the CPS of musical notation. For real sheet music has many more features such as accidentals and note length differences including dots, and our results are based on simulated low vision rather than actual patients, further studies are needed.

170 - P219

SPORTSWEAR FOR LOW VISION - A SIMULATION STUDY

Misaki Sato[1], Yurina Baba[1], Ayuko Zama[1], Koichi Oda[1]
[1]Dept. of Communication, Tokyo Woman's Christian University, Tokyo, Japan

Purpose: There has been very little study on the design of sportswear that is easy to watch for persons with low vision. This study investigated how sportswear's contrast affects movement identification in simulated low vision.

Methods: The stimuli were twelve 5-second video clips of an animated person wearing clothes of 3 different contrast, i.e., 0.1, 0.05 and 0.025 against white background, performing 4 different body motions, generated with VRoidStudio, a 3D modelling software. The person subtends 6 degrees of visual angle on the computer screen, except one observing condition where it was 24 degrees. In a dark room, twelve undergraduate students with normal vision participated under five simulated low vision conditions: normal vision, two reduced visual acuities, and two restricted visual fields. Occlusion foils and a cone with the top cut off were used to simulate low vision. The task was to identify body movements in 20 trials and to rate visibility on a five-point scale.

Results: Two-way ANOVA was performed for both correct identification rate and subjective visibility with independent variables of visual condition and stimulus contrast. Statistically significant main effects were found for two independent variables in both ANOVA results. In short, the severer the vision impairment, or the lower the contrast, lower the performance. It was also noted that at contrast as low as 0.1 participants performance was relatively good in many conditions.

Conclusions: Higher contrasts of sportswear against the background positively affect visibility of other's body motion in up to 0.1 contrast range. Human perception of body motion is considered to be quite resilient to low vision, for 0.1 contrast is unusually low. However, we observed longer response time needed for degraded conditions, which we could not measure in this study.Recent technological advancement such as Deepfake would allow us to customise sportswear contrast of video streams in the near future.

359 - P220

THE EFFECTS OF LOW VISION ON READING PERFORMANCE IN ARABIC

Balsam Alabdulkader[1], Alhanouf Alghannam[1]
[1]Optometry and Vision Science, King Saud University, Riyadh, Saudi Arabia

Purpose: This study aimed to establish normative data for Arabic reading performance among individuals with simulated low vision using the Balsam-Alabdulkader-Leat (BAL) reading acuity chart.

Methods: A Bangerter filter with a density of 0.1 was used binocularly to simulate vision impairment. This simulation's effects on near visual acuity and Pelli-Robson contrast sensitivity were examined. Reading performance was assessed by measuring maximum reading speed, reading acuity (RA), and critical print size (CPS), using three versions of the Balsam-Alabdulkader-Leat reading acuity chart. Seventeen normally sighted young adults participated, undergoing tests under both normal and simulated conditions.

Results: The simulation of low vision resulted in an average reduction of near vision by 0.7 ± 0.12 logMAR and contrast sensitivity by 0.85 ± 0.13 logCS. Reading performance measures without a simulator were as follows: maximum reading speed was 167 SLWPM, CPS was 0.40 logMAR, and RA was -0.02 logMAR. With the simulated low vision, maximum reading speed decreased to 148 SLWPM, CPS increased to 0.62 logMAR, and RA decreased to 0.42 logMAR. Paired t-tests revealed highly significant differences in maximum reading speed, CPS, and RA (all $p < 0.001$).

Conclusions: The study demonstrates that low vision significantly impairs reading performance in Arabic, similar to effects observed in other languages. These findings highlight the critical role of adaptive technologies and personalized reading aids in mitigating the challenges posed by low vision. Additionally, they provide a foundation for future studies on reading performance in Arabic.

1020 - P221

ETIOLOGIES OF BLINDNESS AND LOW VISION AMONG UGANDAN UNIVERSITY STUDENTS AND BARRIERS TO SUPPORT SERVICES UTILISATION: A CROSS-SECTIONAL STUDY

Elizabeth Amuge[1,2], Godfrey Wanok[3,4], Anguyo Dralega[5,6], Ritah Nakyambadde[6], Naomi Nsubuga[5]

[1]Makerere University Health Services, Makerere University Hospital, Kampala, Uganda; [2]Deanery of Clinical Sciences, College of Medicine and Veterinary Medicine, MSc Primary Care Ophthalmology (Online Learning) Programme, [3]Advanced Care Research Centre (ACRC) Academy, [4]Robert O Curle Ophthalmology Suite, Institute of Regeneration and Repair, The University of Edinburgh, Edinburgh, United Kingdom; [5]Allied Health Department, Makerere University College of Health Sciences, Kampala, Uganda; [6]Med Optics Vision Center, Kampala, Uganda

Purpose: This study aimed to assess the primary causes of blindness and low vision (BLV) among students and examine the utilization of university support services at the two largest public universities in Uganda. Despite policies promoting inclusive education, gaps remain in awareness, accessibility, and implementation of support structures. This study identified barriers to service utilization and explored factors influencing students' access to available support.

Methods: A quantitative, community-based cross-sectional study was conducted with 44 participants aged 19-44. Data collection involved comprehensive eye examinations and low vision assessment. Interviewer-administered questionnaires were used to identify barriers to university support utilization. Data analysis was performed using STATA 13 software, employing univariate and multivariate logistic regression to determine relationships between study variables. Results were interpreted using descriptive statistics and presented through pie charts, tables, and graphs.

Results: Only 15.9% of the participants were female. This may indicate a gender disparity in access to university education for visually impaired students. Corneal opacities (16%) and optic atrophy (16%) were the leading causes of low vision and blindness. The overall braille literacy level was 81.82%, while the braille gap was 41.70%. Awareness of university support services had a significant positive relationship with utilization. However, key barriers included financial constraints in acquiring braille machines and other essential devices (89.53%) and inadequate implementation of support services by university staff (85.90%).

Conclusions: There is need to increase access to higher education for students with BLV through increased sponsorship. Access to braille technologies is a crucial indicator of effective university support. Addressing financial barriers, enhancing awareness, and improving institutional implementation through staff training are critical steps toward fostering an inclusive educational environment for students with BLV.

Keywords: barriers, blindness, low vision, students, university support, utilization

1015 - P222

WORK PARTICIPATION IN PEOPLE WITH VISUAL IMPAIRMENT: A CONCEPT MAPPING STUDY

Ruth van Nispen[1], Richard Daniels[1], Alessio Barras[2], Nicolas Ruffieux[2], Jan Hoving[3]

[1]Ophthalmology, [3]Public and Occupational Health, and Research Center for Insurance Medicine, Amsterdam UMC, Amsterdam, Netherlands; [2]Pédagogie Spécialisée, Université de Fribourg, Fribourg, Switzerland

Purpose: Despite re-integration programs and supportive legislation, employment rates in people with visual impairments (VI) have been low in the past decades. This study aims to explore factors that influence work participation of persons with VI from a professional and their own perspectives.

Methods: Through concept mapping and purposive sampling, we collected insights on factors influencing work participation from patients with visual impairment (VI) and professionals in two high-income countries. Initially, key stakeholders (76 VI patients and 25 professionals) from the Netherlands and Switzerland identified relevant items, which were later rated for importance and grouped (61 VI patients and 47 professionals) into conceptually related themes.

Results: Participants provided 105 distinct vision-related items which were mapped into nine thematic concepts. From highest to lowest importance these concepts were: personal competences and self-awareness; conditions for workplace adjustments; mobility/commuting and ICT; support and awareness working environment; organizations, regulations and expertise; personal development and social environment/network; professional support for work; physical workplace; task performance. On a scale from 1 (not important) to 5 (very important), the importance score ranged between 3.6 and 4.3, suggesting that all concepts were found to be relatively important. Subgroup differences were found between persons with VI and professionals, severity of VI and patient nationality, with largest differences seen in the importance of the concept 'professional support for work.'

Conclusions: This study presents a consensus-based framework encompassing a wide range of key factors crucial for understanding work participation among persons with VI. It emphasizes the need for multifaceted strategies at the individual, organizational, and societal levels to promote sustainable employment, guiding the development and refinement of interventions, questionnaires, guidelines, and policies.

1017 - P223

INFECTIOUS KERATISIS AFTER USING COSMETIC LENS : ABOUT A CASE

Sara Ettouri, Samia Zamzami, Arab Lamiaa, Laftimi Zyad, Daghouj Ghizlane, Loubna El Maaloum, Bouchra Allali, Asmaa El Kettani

Pediatric Ophthalmology Department, 120 August Hospital, Casablanca, Morocco

Purpose: The objective of this work is to highlight the importance of raising awareness and educating people about hygiene and maintenance rules in order to avoid serious ocular complications

Methods: We report the observation of a 27-year-old patient, with no particular history, who presented to the emergency department for a painful red eye with redness and intense photophobia evolving for 5 days. The interrogation revealed the notion of wearing cosmetic lenses for 10 days Poor compliance with conservation rules with the notion of night wearing was noted

Results: The ophthalmological examination objectified in OD: a VA at 6/10, conjunctival hyperaemia. The cornea is the site of 3 epitheliostromal abscesses at 5 o'clock - 6 o'clock - 7 o'clock millimetre. The rest of the clinical examination is unremarkable. Examination of the lenses and maintenance fluid could not be performed. The ocular echo did not reveal intravitreal echoes. The patient was put on a broad-spectrum antibiotic therapy based on hospital-prepared fortified eye drops (Ceftazidime + Vancomycin) at a rate of one hourly drop for 48 hours combined with hexaamidine (Desomedine) at a rate of 8 drops per day. The course was marked by the regression of inflammatory and infectious signs.

Conclusions: Infectious keratitis on cosmetic lenses is potentially serious and can affect the visual prognosis. The prevention of infectious complications involves raising awareness and educating wearers about the handling and maintenance of these lenses.

1029 - P224

OBESITY, LIFESTYLE BEHAVIORS, AND HEALTH AMONG ADULT PATIENTS LIVING WITH PROGRESSIVE EYE DISEASES: IMPLICATIONS FOR HEALTH AND HEALTH PROMOTION

Laura Dreer[1], Laura Griggs[1], Molly Whitney[1], Alexandra McBrayer[2], Marissa Locy[1], Laura Rogers[3]

[1]Department of Ophthalmology and Visual Sciences, [2]Department of Health Policy & Organization, [3]Department of Medicine, Birmingham, University of Alabama at Birmingham, USA

Purpose: To examine: (1) the prevalence rate for obesity and other weight classifications among adults with progressive eye diseases and (2) the relationships between perceived vision severity, lifestyle behaviors, health, sleep quality, pain, depression, number of falls, control over health, and sociodemographic factors.

Methods: The sample consisted of N = 191 patients who were diagnosed with a progressive eye disease and being managed in a specialty eye care clinic at an academic medical center. Average age of participants was 68 years old (SD = 12.04), and 61.8% female. Participants completed a one-time battery of biopsychosocial questionnaires and were assessed in-clinic for their height and weight to determine objective body mass index scores and weight classifications. Bivarate correlations were conducted to evaluate the relationships between perceived vision severity (National Eye Institute Visual Functioning Quesitionnaire-25; NEI VFQ-25 item), perceived health (NEI VFQ-25 item), lifestyle behaviors (Health Promoting-Lifestyle Profile II), sleep quality (Pittsburgh Sleep Quality Index), depression severity (Patient Health Questionnaire 9-item), pain severity (Brief Pain Inventory), perceived of control over health, number of falls, and sociodemographic variables. Significance was based on $p<.05$.

Results: A significant proportion of the sample met problematic weight classifications as defined by the Centers for Disease Control (52% were “obese”; 29.3% “overweight”; .5% “underweight”); only 17.3% were classified as “healthy weight”. Patients reported living with an average of 8 chronic health conditions (SD = 3.03). Better perceived vision scores were related to higher general health scores (r = .265) and perceived control over health (r = .209), health responsibility (r = .165), spiritual growth (r = .311), interpersonal relations (r = .221), nutrition (r = .150), and higher income (r = .182). In contrast, poorer perceived vision scores were significantly related to higher depression severity scores (r = -.190), number of medications being taken (r = -.165), greater pain severity (r = -.154), and poorer sleep quality (r = -.154). Though non-significant, a trend was observed between better vision and stress management (r = .131, p = .07) and for poorer vision scores and greater number of falls (r = -.139, p = .054).

Conclusions: A significant proportion of patients living with progressive eye diseases struggle with obesity and being overweight. The findings also demonstrate a link between vision, health, and lifestyle habits; all of which have implications for health/wellness efforts for this population.

1046 - P225

PLASTIC ARTS, EDUCATION AND VISUAL HEALTH. PROMOTING POSITIVE ATTITUDES IN UNIVERSITY STUDENTS TOWARDS THE VISUALLY IMPAIRED

Juan Carlos Fernández del Alamo[1], Cristina Herrero Villoria[1], María Teresa del Alamo Martín[2,3], Rubén Cuadrado Asensio[3,4], Rosa María Coco Martín[3,4]

[1]Department of Didactics of Experimental Sciences, Social Sciences, and Mathematics, [2]Department of Sociology and Social Work, Faculty of Education and Social Work, [3]Instituto Universitario de Oftalmobiología Aplicada (IOBA), [4]Department of Surgery, Ophthalmology, Otorhinolaryngology and Physiotherapy, Faculty of Medicine, University of Valladolid, Valladolid, Spain

Purpose: Plastic Arts can be an appropriate educational strategy to improve observational and diagnostic skills, as well as to foster empathy and resilience, and to teach communication of future health-related professionals. The purpose of this study was to design and to develop a teaching innovation planning to deepen university students into the knowledge of social problems faced up by visually impaired people that lead them to social exclusion, and to explain the feelings, opinions and strategies they could use to avoid them.

Methods: Prospective, non-experimental and descriptive study. The study sample consisted of students from the Fourth year of the Degree in Medicine at the University of Valladolid Four working sessions in Ophthalmology course were realized. Visual Thinking was the technique followed, focused to learn to think. Three artworks were specially selected for the participants were exhibited. After viewing each work, the classroom discussed: student's emotions, possible society's interpretations and strategies to follow to achieve social inclusion for visually impaired people.

Results: All the students stated the need to use resources and support to prevent patients with visual diseases from being the object of ridicule and mockery, especially at an early age. The 76% indicated the convenience of working in collaboration with psychology and/or social work professionals to: prevent bullying, reduce guilty feelings that may arise in parents who transmit hereditary eye diseases and address stereotypes, myths and negative social messages towards visually impaired people.

Conclusions: Plastic Arts are an effective teaching approach to encourage though and positive attitudes among university students towards visually impaired people.

1048 - P226

INTERDISCIPLINARITY AND EMPATHY TOWARDS VISUALLY IMPAIRED. COLLABORATION LABORATORY FUTURE OPTOMETRY AND SOCIAL WORK PRACTITIONERS

María del Henar Pérez Curiel[1], María Teresa del Alamo Martín[1,2], Rubén Cuadrado Asensio[2,3], Rosa María Coco Martín[2,3]

[1]Department of Sociology and Social Work, Faculty of Education and Social Work, [2]Instituto Universitario de Oftalmobiología Aplicada (IOBA), [3]Department of Surgery, Ophthalmology, Otorhinolaryngology and Physiotherapy, Faculty of Medicine, University of Valladolid, Valladolid, Spain

Purpose: Vision rehabilitation involves many professionals: ophthalmologists, optometrists, visual rehabilitation technicians, social workers, occupational therapists, and other professionals, working as multidisciplinary teams. In multidisciplinary teams each person works in parallel focusing on their own objectives but with little direct relationship between there. Whereas, in an interdisciplinary team they work collaboratively towards a common goal. Therefore, vision rehabilitation services must work as interdisciplinary teams. The purpose of this study was the design, and development of a laboratory for training Optometry students and Social Work students in interdisciplinary work sharing knowledge, experiences, skills of both disciplines focusing on rehabilitation of visually impaired.

Methods: Descriptive, non-experimental study. The study sample consisted of students from the Optometry Degree and the Social Work Degree at the University of Valladolid. Two learning sessions were designed: - Problem-based learning strategy: Vision-related issues were addressed together: visual function, the difficulties faced by visually impaired in their daily lives (functional ability and psychosocial needs), the supports and resources for people with low vision, emotion management skills and interview skills. Visually impaired patients from the Castilla y León Retina Association collaborated in the sessions. - Simulation-based learning: The students experienced the difficulties of visually impaired in their daily lives by means of glasses simulating eye pathologies.

Results: The students stated that they improved their knowledge about pathologies causing visual impairment, about psychosocial needs and how to address them together. All of them showed their satisfaction with the activity for having allowed them to interact with visually impaired and with students from other degrees, training communication skills and achieving a better understanding of visually impaired and their families.

Conclusions: Collaborative participation in laboratories between students from different grades is effective in developing competences and skills that foster interdisciplinarity and empathy towards visually impaired people.

VISION2025FLORENCE

ISLRR