4th OPTOMETRY SCIENTIFIC CONFERENCE

ARTIFICIAL INTELLIGENCE IN OPTOMETRY: COMMITMENT TO EXCELLENCE

12 - 13 AUGUST 2023
BANGI RESORT HOTEL

OPTOMETRY SERVICE
MINISTRY OF HEALTH MALAYSIA

PPOM
PERSATUAN PASCASISWAZAH OPTOMETRIS MALAYSIA

4th OPTOMETRY SCIENTIFIC CONFERENCE

Optometry Scientific Conference is a platform for optometrist from all over the country to keep abreast of new finding in researches as well as to exchange and share their experiences. It also provide a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Optometry.

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WELCOME ADDRESS BY THE DIRECTOR GENERAL OF HEALTH MALAYSIA

Assalamualaikum w.b.t
Salam Sejahtera & Salam Malaysia Madani

It is my great pleasure and honor to warmly welcome all of you to the remarkable 4th Optometry Scientific Conference 2023. We are privileged to have such a distinguished gathering of experts, researchers, and practitioners from the field of optometry and artificial intelligence.

We recognize the significance of this conference and the tremendous potential that artificial intelligence holds in revolutionizing the landscape of eye care. We are committed to fostering innovation and embracing technological advancements that can enhance patient outcomes, improve accessibility, and streamline healthcare services.

Artificial intelligence has emerged as a powerful tool that empowers healthcare professionals with new insights, diagnostic capabilities, and personalized treatment options. In the field of optometry, AI-driven solutions have the potential to transform the way we detect, diagnose, and manage ocular conditions, enabling us to provide a higher standard of care to patients.

This conference provides a unique opportunity for us to come together and exchange knowledge, share best practices, and engage in thought-provoking discussions that pave the way for groundbreaking advancements. The theme of this conference, "Artificial Intelligence in Optometry: Commitment to Excellence," encapsulates our shared vision of leveraging AI to enhance precision, efficiency, and patient-centric care.

I would like to express my deepest appreciation to the organizing committee for their unwavering dedication and hard work in putting together this conference. Their commitment to excellence is evident in the diverse program and the seamless coordination of this event. Thanks to their efforts, we have a platform to explore the transformative potential of AI in optometry.

I wish you all a productive and inspiring conference. May the discussions, knowledge sharing, and collaborations that take place here lead to breakthroughs that positively impact the lives of patients and advance the field of optometry.

Thank you.

DATUK DR MUHAMMAD RADZI BIN ABU HASSAN

MESSAGE FROM DIRECTOR OF ALLIED HEALTH SCIENCES DIVISION, MINISTRY OF HEALTH, MALAYSIA

Assalamualaikum w.b.t
Salam Sejahtera & Salam Malaysia Madani

Congratulations and well done to the Optometry Profession Ministry of Health Malaysia for successfully organizing the 4th Optometry Scientific Conference.

The chosen theme is Artificial Intelligence (AI) In Optometry: Commitment To Excellence. This theme is relevant considering that AI technology has already widely used especially in developing countries covering various fields including health and is very popular right now.

AI is not something new, its development has always been interesting. The Optometry profession's efforts in exploring and applying AI is an interesting development for the country because it is necessary for the health sector to be in its best level along with the modern technology.

AI has an important role to play in the healthcare offerings of the future. I am confident that this AI application will be able to help the optometrists to focus more time for higher priority tasks. In addition, the use of AI technology is very important in completing complex tasks to save time and energy. The greatest challenge to AI in these healthcare domains is not whether the technologies will be capable enough to be useful, but rather ensuring their adoption in daily clinical practice.

Finally, I hope the profession of optometry will continue to strive empowering the healthcare sector by implementing AI technology to optimize the services at the ministry`s facilities.

Thank you.

PUAN HAJAH FARINA BINTI ZULKERNAIN

MESSAGE FROM HEAD OF OPTOMETRY PROFESSION, MINISTRY OF HEALTH, MALAYSIA

Assalamualaikum w.b.t
Salam Sejahtera & Salam Malaysia Madani

It is an honour to welcome all of you to this momentous event the 4th Optometry Scientific Conference 2023. We can explore the convergence of two dynamic fields that hold the potential to shape the future of eye care.

As the field of optometry continues to evolve, embracing AI technologies has become increasingly vital. The intersection of AI and optometry holds great promise for revolutionizing vision care, diagnosis, treatment, and research. By harnessing the potential of AI, we can improve patient outcomes, enhance accessibility to eye care, and make significant strides in preventing vision loss.

Our theme for this conference, "Artificial Intelligence in Optometry: Commitment to Excellence," underscores our commitment to excellence and the visionary individuals who strive to push the boundaries of knowledge and innovation. Together, we recognize the power of artificial intelligence to enhance precision, efficiency, and patient outcomes in optometry practice.

This conference is not just an academic exercise; it is a catalyst for change. It is a platform for us to forge new collaborations, nurture existing partnerships, and collectively pave the way for a future where the integration of AI and optometry becomes the gold standard in eye care.

I would like to express my deepest gratitude to our distinguished speakers, esteemed participants, and dedicated organizing committee who have worked tirelessly to make this conference a reality. Your unwavering commitment to excellence and your passion for advancing the frontiers of knowledge inspire us all.

Finally, to all the participants, I encourage you to seize every opportunity this conference presents. Engage in discussions, share your experiences, and challenge existing paradigms. Let us leave here with new insights, actionable strategies, and a renewed commitment to driving positive change in our respective fields.

Thank you.

PUAN SITI HAMIZA BINTI ABDUL HALIM

MESSAGE FROM ORGANIZING CHAIRPERSON

Assalamualaikum w.b.t
Salam Sejahtera & Salam Malaysia Madani

On behalf of the Organizing Committee 4th Optometry Scientific Conference (OSC) 2023, it is my pleasure to welcome all of you from around the world to participate in 4th OSC 2023 on 12-13 August 2023 at the Bangi Resort Hotel, Selangor Malaysia. This conference is jointly organized by Optometrists Ministry of Health, Malaysia and the Association of Malaysian Post-graduate Optometrist.

The theme of this conference, 'Artificial Intelligence in Optometry: Commitment to Excellence,' underscores our collective dedication to providing exceptional eye care and embracing the transformative potential of artificial intelligence. We firmly believe that by integrating AI technologies into optometry practice, we can revolutionize the way we diagnose, treat, and manage ocular conditions, ultimately improving the lives of countless individuals worldwide.

Over the years, we have witnessed extraordinary advancements in both optometry and artificial intelligence, and this conference serves as a platform to explore the synergies between these two dynamic domains. Our shared vision is to leverage the power of AI to unlock new frontiers in eye care, enhancing precision, efficiency, and patient outcomes.

This year we aim to take the conference to greater height to the international level. We have planned exciting scientific programmed and have invited outstanding international and local speakers who will guarantee an enjoyable and fruitful conference. This also will be a platform for optometrist from institutions and organizations all over the world to put fourth their researches for oral and poster presentations. We hope you will find time to build up network, renew old ties with your peers, forge new friendships and share ideas. Hopefully, these two days conference will stimulate your mood in doing research and make research valuable and enjoyable.

I would like to thank all the committee members for their great work and effort to make this conference success. A special gratitude to all the authors, reviewers and the delegates for their contributions and participation. The conference will not be succeeded without your expertise and active participation. A special thanks to all the sponsors, your strong support and contribution is the essence in making this conference success. Finally, this is a continuation of first, second and third OSC. Hopefully there will be many more researches on next OSC conferences.

In closing, I extend my warmest welcome to all of you once again. May this conference be a source of inspiration, innovation, and lasting connections. Let us seize this opportunity to collectively shape the future of AI in optometry, ensuring that optometry care becomes the cornerstone of our profession.

Thank you.

DR ASMAH BINTI AHMAD

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CONFERENCE SCHEDULE
DAY 1: 12TH AUGUST 2023 (SATURDAY)

7.30 - 8.00 am	Registration
8.00 - 8.15 am	Welcoming Remarks
8.15 - 9.00 am	Plenary 1: *Myopia Management Using Contact Lenses* Prof. Dr. Bariah Mohd Ali
9.00 - 10.30	Opening Ceremony
10.30 - 11.00 am	Tea Break / Booth Visit / ePoster Viewing
11.00 - 11.30 am	Symposium 1: *Explainable Artificial Intelligence in Optometry* Assoc. Prof. Dr. Mohd Zulfaezal Che Azemin
11.30 - 12.00 pm	Symposium 2: *Not All the Orthokeratology Are Created Equally* Ms. Jess Ooi Yuin Wen
12.00 - 12.30 pm	Symposium 3: *Artificial Intelligence in Optometry Research* Ms. Syarifah Faiza Syed Mohd Dardin
12.30 - 2.00 pm	Lunch Break / Booth Visit / ePoster Viewing
2.00 - 2.30 pm	Symposium 4: *Current Updates on Biometry and Artificial Intelligence Based on IOL Formula* Dato' Prof. Dr. Khairidzan Mohd Kamal
2.30 - 3.00 pm	Symposium 5: *Education for Visually Impaired Pupils* Ms. Alya Qasdina Ng Ai Lee
3.00 - 5.00 pm	Oral & Poster Presentation
5.00 pm	Tea Break & Adjourn

CONFERENCE SCHEDULE
DAY 2: 13 TH AUGUST 2023 (SUNDAY)

8.15 - 8.30 am	Housekeeping Announcement
8.30 - 9.00 am	Plenary 2: *The Practical Pearls in Perimetry* Dr. Nuttamon Srisamran
9.00 - 9.30 am	Plenary 3: *Optimizing Glaucoma Imaging* Dr. Nuttamon Srisamran
9.30 - 10.00 am	Symposium 6: *Retinal Structure and Perfusion in Response to Acute Traumatic Brain Injury* Dr. Noor Haziq Saliman
10.00 - 10.30 am	Tea Break / Booth Visit / ePoster Viewing
10.30 - 11.00 am	Plenary 4: *Myopia Management Best Practice & Latest Innovation* Ms. Guroshana Mohanadason
11.00 - 12.00pm	Symposium 7: *Exploring the Benefits of Virtual Reality in Collaborative Vision Therapy for Complex Visual Disorder* Mr. Stanley Tien Tong Keat
12.00 - 12.30 pm	Prize Giving Ceremony
12.30 - 1.00 pm	Closing Ceremony
1.00 pm	Lunch & End of Conference

PLENARY SPEAKER'S PROFILE

PROF. DR. BARIAH MOHD ALI
Professor
Optometry and Vision Science Program,
Research Centre for Community Health,
Faculty of Health Science, UKM

Dr. Bariah is a Professor at Faculty of Health Science, UKM. She obtained her Optometry degree from UKM and PhD from UNSW Australia. Her working experience spans over 30 years and was fundamental in the development of specialty contact lens clinic in the faculty. Her research interests include keratoconus, Orthokeratology and myopia control and published and presented her research findings locally and internationally. Dr. Bariah was admitted as a Fellow by the Association of Malaysian Optometrist (FAMO) in 2008, British Contact Lens Association (FBCLA) in 2012, Malaysia Academy of Optometry (FAOM) and American Academy of Optometry (FAAO) in 2019. In 2020, she received the prestigious IACLE Contact Lens Educator's Award for Asia Pacific region. Dr. Bariah also hold the post President of Malaysia Academy of Optometry and senate representative in UKM Board of Directors.

DR. NUTTAMON SRISAMRAN
Glaucoma Consultant
Phyathai 1 Hospital, Bangkok, Thailand

Dr. Srisamran is a glaucoma consultant at Department of Ophthalmology at Phyathai 1 Hospital, Bangkok, Thailand. She was clinical instructor of the Department of Ophthalmology, Faculty of Medicine at Thammasat University and Hospital, Pathum Thani, Thailand for ten years and of Faculty of Optometry, Rangsit University, Pathum Thani, Thailand for five years. Currently, she continues serving as invited faculty of Sadguru Netra Chikitsalaya, Chitrakoot, Madhya Pradesh, India and visiting lecturer at Vietnam National Institute of Ophthalmology, Hanoi, Vietnam.

Apart from glaucoma diagnosis and treatment, her special clinical interests include perimetry and related devices, glaucoma progression, pediatric glaucoma, and intraocular pressure.

PLENARY SPEAKER'S PROFILE

MS. GUROSHANA MOHANADASAN
Education & Professional Service Executive
EssilorLuxottica

Ms. Shana is a highly skilled optometrist with experience spanning over a decade in both the retail and corporate sectors in Malaysia. With six years of expertise as an optometrist in the retail industry, she has honed her craft and developed a deep understanding of customer needs and Eyecare solutions.

Building upon her successful career in retail, Ms. Shana transitioned into the corporate realm, where she served as an Education and Professional Affairs Executive for four years. In this role, she demonstrated exceptional organizational and communication skills, collaborating with professionals to enhance their knowledge and expertise.

Recognizing her passion for training, Ms. Shana joined Carl Zeiss Sdn. Bhd. in 2019 as a Professional Affairs Specialist. In this capacity, she conducted over 100 training sessions, empowering Eyecare Professionals with comprehensive knowledge of products and instruments. Additionally, she played a pivotal role in assisting more than 100 ECPs during ZEISS's Effective Myopia Management Workshops, making a tangible impact on the industry.

Driven by her desire to explore new opportunities, Ms. Shana joined EssilorLuxxotica in March 2023 as an Education and Professional Service Executive. In her current role, she takes charge of training Eyecare Professionals in the Central Region, leveraging her expertise to equip them with the latest advancements in the field.

With her extensive experience, unwavering dedication, and commitment to professional development, Ms. Shana is a valuable asset to the Eyecare industry. Her passion for education and ability to connect with professionals make her an exceptional speaker who can inspire and empower audiences.

SYMPOSIUM SPEAKER'S PROFILE

ASSOC. PROF. DATO' DR. KHAIRIDZAN MOHD KAMAL
Associate Professor
IIUM Eye Specialist Clinic, Kulliyyah of Medicine,
Department of Ophthalmology,
International Islamic University Malaysia

Dato' Dr. Khairidzan is currently Associate Professor in Department of Ophthalmology in the Faculty of Medicine, International Islamic University Malaysia (IIUM). He is also the present Director of Cornea, External Disease and Refractive Surgery Services at IIUM Eye Specialist Clinic, Kuantan. Dr. Khairidzan spent a year as an Adjunct Clinical Instructor and International Fellow in Cornea, External Disease and Refractive Surgery at the UCLA in 2008. Dr. Khairidzan has published a number of articles in scientific journals and made over 300 other scientific presentations. In addition to receiving 7 awards from the IIUM for quality research, he also won the Best Poster award at the Malaysia Singapore Ophthalmology Joint Meeting in 2009 and Malaysia Ophthalmology-Optometry joint meeting 2018. He contributes his expertise on the Malaysia Dry Eye Advisory Board and directly supervised a number of PhD and Masters candidates in the external disease and refractive surgery research works. He was part of Asia Pacific Association of Ophthalmology Leadership Development Programme in 2010. He is the recipient of Malaysia Society of Ophthalmology Achievement Award and Asia Pacific Association of Cataract and Refractive Surgery Certified Educator Award in 2018. He has also been appointed as Council Member of International Society of Refractive Society (ISRS) for year 2021. He was awarded best teacher award (Murabbi) by Kulliyyah of Medicine in 2022.

ASSOC. PROF. DR. MOHD ZULFAEZAL CHE AZEMIN
Associate Professor
Kulliyyah of Allied Health Sciences
International Islamic University Malaysia

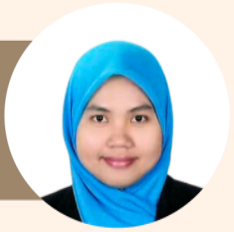
Dr. Mohd Zulfaezal Che Azemin is a highly qualified biomedical engineer with a Master's degree from Monash University and a Ph.D. from RMIT University. His Ph.D. research focused on using the Fourier Fractal Dimension technique to examine grayscale retina images for stroke risk prediction. As an Associate Professor at the Kulliyyah of Allied Health Sciences, he teaches courses on optics, visual optics, ophthalmic instruments, health informatics, and digital image processing. With notable publications in prestigious journals like IEEE Transaction on Medical Imaging, he has expertise in applying machine learning to analyse retina and pterygium images. He has secured over RM2 million in research grants and actively contributes as a reviewer for journals and conferences.

SYMPOSIUM SPEAKER'S PROFILE

MS. JESS OOI YUIN WEN
Regional Professional Affair Manager
Menicon (M) Sdn Bhd

Ms. Jess Ooi is an optometrist with 10 years of experience under clinical and corporate background in Malaysia. Back in 2012, she first joined Vista Eye Specialist as a clinical optometrist with the opportunities to practice primary eye care examinations including pediatric eye care, operating ophthalmic instruments and result analysis. She joined Oculus (M) Sdn. Bhd as a professional service specialist in 2016. She is specializing in gas permeable (GP) contact lens fitting consultation and technical support, including Orthokeratology and Rose K2 lens fitting. She is also a products trainer in seminars, workshops and give lectures for universities. Currently she is working with Menicon as a regional professional affair manager overseeing Southeast Asia market, to provide trainings to eye care practitioners and assist in cases troubleshooting.

MS. SYARIFAH FAIZA SYED MOHD DARDIN
Optometrist
Ministry of Health Malaysia



Ms. Syarifah Faiza obtained her B.Optom (Hons) from Universiti Kebangsaan Malaysia (UKM) and later completed her MSc. (Investigative Ophthalmology and Vision Science) from the University of Manchester, UK. In addition to her clinical works and technical contributions for profession development via various committees including National Optometry Technical Committee and Glaucoma Shared-Care Committee, Ms. Syarifah Faiza also actively involve in clinical and quality improvement research. She is now pursuing her doctorate degree at UKM in myopia research. Her current research focusses on myopia control, defocus and peripheral refraction as well as eyeball dimension in myopic children.

DR. NOOR HAZIQ SALIMAN
Senior Lecturer
Faculty of Health Sciences
Universiti Teknologi MARA (UiTM)

Dr. Noor Haziq Saliman currently serve as a Senior Lecturer in Optometry at UiTM Puncak Alam. His research interest lies in the area of ophthalmic imaging, spanning from cornea to retina, as a potential surrogate biomarker in health and diseases. Dr. Noor Haziq read his Bachelor of Optometry and MHSc (Optometry) degrees from UiTM and UKM, respectively. He completed a PhD at The University of Manchester UK, and afterwards employed as a Research Associate in the same institution. In 2020, Dr. Noor Haziq was appointed as a Research Fellow at the University of Birmingham & Queen Elizabeth Hospital Birmingham UK, investigating the longitudinal changes of visual functions and retinal structure in patients who suffer from traumatic brain injury (TBI).

SYMPOSIUM SPEAKER'S PROFILE

MS. ALYA QASDINA NG AI LEE
Academic Lecturer
Visual Needs Unit
Special Education Department
Institut Pendidikan Guru Kampus Ilmu Khas

Ms. Alya Qasdina Ng Ai Lee is a special education teacher who is now pursuing a PhD in Special Education at Universiti Pendidikan Sultan Idris (UPSI) under HLP 2020. From 2021 to 2022, she was assigned as the Resident Expert, SEAMEO SEN (South East Asia Ministers of Education Organisation Special Education Needs). She worked with field experts to improve the quality of special education programmes throughout Southeast Asia. In 2015-2018, she worked as the Desk Officer for the Malaysian Ministry of Education (MOE) in Putrajaya. She managed and evaluated the implementation of special education programmes in national schools, as well as providing teachers with technical assistance in establishing necessary accommodations and adaptations for visually impaired students. Simultaneously, she worked at SMPK Setapak in Kuala Lumpur, Malaysia, from 2010 to 2015, and in Special Education Integration Programme (PPKI) for learning disabilities from 2008 to 2010 again in 2018 to 2020. She collaborated closely with special education students to develop their academic and social abilities, while also adapting and modifying learning materials to match the students' specific requirements. She has experience in curriculum development and instructional support for special education students, as well as skills in tactile sensitivity enhancement for pupils with visual impairments. She is very proficient in braille transcription and serves on a braille textbook technical group. She published articles in peer-reviewed journals and also served as a textbook writer for Basic Skills for Individual with Visually Impaired. She also received the Best Video Award in VIC2022, for [Pre-Braille Skills Module]. She was also selected as one of the finalists for the Best Special Education Teacher Award, Selangor, in 2020.

MR. STANLEY TIEN TONG KEAT
Neuro Developmental & Behavioral Optometrist
Sun Time Vision Specialist

Biography

Mr. Stanley Tien with a strong interest in neuro-developmental and behavioural optometry. He holds a Diploma of Dispensing Optician (FBDO) ,a Bachelor of Science (Hons) in Optometry from the University of Wales (Cardiff, UK),Master degree in clinical optometry & Vision therapy . He is one of two optometrists in Asia to have achieved specialist qualifications in vision development, vision therapy, and rehabilitation. Mr. Stanley is board certified by several international organizations, including the International College of Optometrists in Vision Development, FCOVD, and the Australasian College of Behavioural Optometry, FACBO. Fellow in Neuro-Optometric Rehabilitation Association (FNORA) and Fellow of College of Syntonic (FCSO). He provides evaluation and treatment for various visual disorders associated with brain injury, ADHD, Autism, and more. Mr. Stanley's work has been published in a scientific article and he has been invited to speak at TEDx and join the Opening Eyes Global Faculty Advisory Board of Special Olympics.

PLENARY ABSTRACT

Myopia Management Using Contact Lenses

Prof. Dr. Bariah Mohd Ali
Faculty of Health Science, Universiti Kebangsaan Malaysia

The prevalence of myopia is increasing extensively worldwide, with the number of people with myopia in 2020 is predicted to be 2.6 billion and is expected to increase to 4.9 billion by 2050. Those with higher degree of myopia are more susceptible to sight threatening problems such as glaucoma, cataract and myopia maculopathy. Thus, finding suitable intervention is crucial. Currently, there is a rapidly expanding interest to slow myopia progression in children and teenagers using multiple approaches including spectacle lens, contact lenses and pharmaceutical agents such as atropine or pirenzepine. Nevertheless, despite concerns about its safety, contact lenses have shown to be effective in controlling myopia progression in children. This presentation focuses on evidences from randomized clinical trials that demonstrate the efficacy of contact lenses in myopia management in children and teenagers. Eye care practitioners should be aware of the various contact lens designs available for myopia control as well as their risks and benefits.

The Practical Pearls in Perimetry

Dr. Nuttamon Srisamran
Glaucoma Consultant
Phyathai 1 Hospital, Bangkok Thailand

Glaucoma is a group of diseases of the optic nerve characterized by specific pattern of progressive loss of optic disc and visual function. The damage first occurs in retinal ganglion cells (RGCs) and their axons which run in retinal nerve fiber layer (NFL) to make up optic nerve. However, RGC loss especially in early stage cannot be seen on routine slit-lamp examination as well as NFL defects which are difficult to identify by clinical examination or even red-free fundus photography.

Perimetry is a standard method to assess the visual field function or status of visual pathway by systematic measuring all areas, both central and peripheral vision giving not only the boundary of area that one can see but also the sensitivity of visual system to deliberated stimuli at each location.

Theoretically, glaucomatous visual field (VF) damage initiates in mid-periphery and involves central region in advanced stage. Over past four decades, there is strong evidence showing that early and earliest glaucomatous damage can also occur at central/macular area. Many types of central visual dysfunction have been identified in early stages of glaucoma consisting of color vision defects, abnormalities of contrast sensitivity, and VF defects within 10 degrees of fixation.

In static automated perimetry, points of 24-2 VF test pattern are spaced every 6 degrees and only 4 points fall within central 8 degrees whereas 10-2 pattern with 2 degrees grid determines same area with 44 points. Focusing on only 8 or 10 degrees can underestimate other VF defects which are outside and oftentimes central VF damage seen on 10-2 test is also missed with 24-2 strategy. Furthermore, current glaucoma management recommendations require more frequent VF testing. Is there any method (s) that can ideally evaluate both central and peripheral VFs effectively at the same time in faster manner? C24-2 or 24-2C?

PLENARY ABSTRACT

Optimizing Glaucoma Imaging

Dr. Nuttamon Srisamran
Glaucoma Consultant
Phyathai 1 Hospital, Bangkok Thailand

Glaucoma is a progressive chronic optic neuropathy which causes atrophy of the optic nerve head (ONH), the death of retinal ganglion cells (RGC) and their axons, and irreversible visual field (VF) losses. Although major risk factor in glaucoma is elevated IOP values, it has been suggested that glaucoma is a multifactorial disease and such glaucomatous changes in ONH and ongoing VF defects are also detected in the eyes with normal tension.

Diagnosis of glaucoma is based on characteristic morphological changes of the ONH and retinal nerve fiber layer (RNFL) associated with permanent VF loss. A variety of structural and functional testing methods have been developed to assist in glaucoma detection. Reliable, repeatable, and reproducible tests of optic nerve and RNFL structures are very essential in diagnosing early glaucoma and detecting slowly progressive nature of disease. The expeditious advancement of technology has amplified and enriched lots of diagnostic methods in glaucoma evaluation. In the past, several imaging technologies had been invented and employed, such as confocal scanning laser ophthalmoscopy (CSLO), scanning laser polarimetry (SLP), optical coherence tomography (OCT), the retinal thickness analyzer (RTA), and optical coherence tomography angiography (OCTA). The device fundamentals, reproducibility, source of error or variability, ability to distinguish normal from glaucomatous eyes, strengths and limitations of each tool present sensitivities and specificities differently in both clinical studies and daily practice.

The image acquisition offers visualization and ability to objectively quantify many diagnostic parameters of posterior segment structures in various regions. The high-resolution anatomic features of glaucomatous ONH such as anterior and posterior lamina cribrosa surfaces, Bruch's membrane-retinal pigment epithelium complex and its termination within ONH border, tissue of Elschnig, and scleral canal opening including circumpapillary RNFL and macula regions also enable clinicians to have solid holistic diagnostic approach yielding more confident diagnostic decisions including more effective glaucoma treatments.

Myopia Management Best Practice & Latest Innovation

Ms. Guroshana Mohanadason
Education & Professional Service Executive
Essilor Luxottica

EssilorLuxottica is at the forefront of myopia management best practices and the latest innovations in the field. With a deep commitment to addressing the growing global myopia epidemic, the company offers cutting-edge solutions that prioritize the long-term eye health of individuals.

Myopia or nearsightedness, is a widespread vision condition affecting millions of people worldwide. EssilorLuxottica recognizes the importance of tackling this issue comprehensively and has developed a range of innovative strategies to effectively manage and control myopia progression.

The speaker will be delivering a presentation on "Myopia Management Best Practices & Latest Innovations." In this presentation, she will discuss the comprehensive approach taken by EssilorLuxottica to address the global myopia epidemic. The speaker will cover several key points, including:

1. Understanding the Myopia Epidemic: The speaker will provide an overview of the growing prevalence of myopia worldwide, highlighting the need for effective management strategies.
2. Early Intervention: Emphasizing the importance of early intervention, the speaker will discuss the significance of early detection and diagnosis of myopia. They will explore the benefits of proactive measures in managing myopia progression.
3. Best Practices for Myopia Management: The presentation will delve into the best practices recommended by EssilorLuxottica for managing myopia. This will include evidence-based strategies and approaches that eyecare professionals can adopt to effectively control and slow down myopia progression.
4. Innovative Technologies and Products: The speaker will showcase the latest innovations in myopia management developed by EssilorLuxottica. They will highlight advanced spectacle lenses and contact lenses specifically designed to provide clear vision while addressing myopia progression.

SYMPOSIUM ABSTRACT

Explainable AI in Optometry

Assoc. Prof. Dr. Mohd Zulfaezal Che Azemin
Kulliyyah of Allied Health Sciences, International Islamic University Malaysia

In this talk, we will explore the integration of Explainable AI (XAI) methods in optometry to address the challenges posed by the lack of transparency and interpretability in AI algorithms. We will discuss the benefits of XAI in improving diagnostic accuracy, treatment efficacy, and patient care. By incorporating techniques such as feature importance analysis, saliency mapping, and rule extraction, optometrists will be able to gain deeper insights into AI-driven predictions and recommendations, fostering trust and acceptance of AI technologies.

We will delve into various XAI techniques applicable to optometry, highlighting their strengths and limitations. We will explore recent advancements in XAI research, focusing on their implications for enhancing the interpretability of AI algorithms in tasks such as refractive error assessment, pterygium, and retinal image analysis.

Practical considerations of adopting XAI in optometric practice, including data privacy, regulatory requirements, and interdisciplinary collaboration, will be discussed. We will address potential challenges such as algorithmic bias and accountability, while emphasizing the need to strike a balance between interpretability and predictive performance.

In conclusion, this talk will emphasize the urgent need for research and development in Explainable AI within the optometry field. We will advocate for collaborative efforts to establish standardized guidelines, best practices, and evaluation metrics for XAI in optometric applications. By doing so, we can harness the full potential of AI technologies in optometry while ensuring transparency, accountability, and ethical practices in patient care.

Not All The Orthokeratology are Created Equally

Ms. Jess Ooi Yuin Wen
Regional Professional Affair Manager
Menicon Co., Ltd

Have you ever been confused when it comes to choosing the appropriate types of Ortho-K products for your practice or patient? Although most Ortho-K lenses share the same fundamental shape and resultant relationship to the cornea, lens designs can be distinguished and differ by how the lenses fit. There are two primary methods of fitting Ortho-K lenses: empirical and diagnostic lenses. For empirical fit, topography scans are used in combination with design software to simulate a diagnostic lens fitting on the eye and to calculate custom-designed lenses. Diagnostic fit is the traditional way, where it needs hands-on lens handling so we can see the fluorescein pattern of lens fit before deciding the final parameters. Apart from choosing different fitting methods based on the practitioner's preference or the patient's needs, there are on-label vs. off-label options when it comes to prescribing ortho-k lenses. Myopia control was a topic that emerged rather unexpectedly. It was first discovered that we could potentially control myopia progression optically in the mid-2000s. Although products were approved for myopia correction, there were no approved products with a myopia control indication at that time. In recent years, as myopia control gained momentum, there have been some products that have received official regulatory approval for myopia control and are considered as on-label. With the above, it will give you an idea for practitioners to choose products that they believe to be equally safe and effective.

SYMPOSIUM ABSTRACT

AI in Clinical Research

Ms. Syarifah Faiza Syed Mohd Dardin
Optometrist
Ministry of Health Malaysia

Artificial intelligence (AI) has now revolutionised clinical research by accelerating and streamlining several components of the research process. The speaker will share how AI can facilitate the research process in a variety of ways, especially when it comes to navigating the enormous body of scientific literature using machine learning, natural language processing algorithms, effective information extraction to suggest tailored recommendations, which can save time and increase productivity. Furthermore, the development of AI-powered writing tools can enhance the quality and clarity of research writing by providing a range of skills that can assist a busy optometrist or clinician to expedite the research process. The speaker will also share the importance of developing and utilising AI abilities, particularly for the younger optometrist to enable them to remain competitive so they can contribute to advancements and shape the future of clinical research despite the demanding day in managing actual clinical works. However, everyone must understand and be aware of both the advantages and disadvantages of AI. While AI has many advantages, it also has drawbacks especially in algorithm bias, human contextual understanding, and nuanced interpretation. Therefore, all optometrists should strengthen our domain expertise and research experience to effectively use AI tools and extract meaningful conclusions from it. The most importantly, to use AI with the utmost integrity. In conclusion, AI has the potential to facilitate clinical research, increase productivity, and drive optometry healthcare advancements.

"Current Updates on Biometry and AI Based on IOL Formula"

Assoc. Prof. Dato' Dr. Khairidzan Mohd Kamal
IIUM Eye Specialist Clinic, Kulliyyah of Medicine
Department of Ophthalmology
International Islamic University Malaysia

The advancement of ocular biometry, intraocular lens (IOL) formulas, and artificial intelligence (AI) has brought significant breakthroughs in the field of ophthalmology. Ocular biometry, which involves measuring eye parameters, has seen remarkable progress with the introduction of cutting-edge imaging technologies like optical coherence tomography (OCT). These advancements have improved the accuracy of measurements, leading to more precise IOL power calculations and better refractive outcomes in cataract and refractive surgeries.

Furthermore, the development of sophisticated IOL formulas has revolutionized the field. Traditional formulas have been refined and new ones have emerged, incorporating advanced mathematical models and data analysis techniques. These formulas take into account factors such as corneal curvature, axial length, and anterior chamber depth, enabling surgeons to select the most suitable IOL for each patient's unique needs. As a result, patients experience improved visual outcomes and reduced dependence on corrective lenses.

The integration of AI has further elevated the field by harnessing the power of data analysis and machine learning. AI algorithms can process large amounts of patient data, identify patterns, and refine predictive models for better surgical planning and postoperative management. AI-powered imaging analysis assists in the detection and diagnosis of ocular diseases, enabling early intervention and improved treatment outcomes.

In conclusion, the advancement of ocular biometry, IOL formulas, and AI has revolutionized ophthalmology. Enhanced biometry techniques and precise IOL calculations have significantly improved surgical outcomes, while AI algorithms have enabled more personalized and data-driven decision-making. This convergence of technology holds great promise for the future, leading to even more precise measurements, better IOL selection, and enhanced patient care.

SYMPOSIUM ABSTRACT

Education for Visually Impaired Pupils

Ms. Alya Qasdina Ng Ai Lee
Academic Lecturer
Visual Needs Unit
Special Education Department

Pupils with visual impairments generally enrol in school as early as age 4, under the Special Education Code of Practise (2015). Children around Malaysia can participate in special education programmes offered by the Malaysian Ministry of Education. These include Special Education Schools (SPK), Special Integration Programmes (PPKI), Inclusive Education Programmes (PPI), Home Schooling, and Private Schools. All educational courses implement the teaching and learning processes in line with the national educational philosophy and the national curriculum. The Zero Reject Policy (BPKhas, 2018) was implemented in response to the demand for "education for all," and it has produced a learning environment that is accommodating to the special education needs of all students with disabilities. The educational system continues to uncover the potential of visually impaired pupils wherever they are.

Retinal Structure and Perfusion in Response to Acute Traumatic Brain Injury

Dr. Noor Haziq Saliman
Faculty of Health Sciences
University Teknologi MARA (UiTM)

Traumatic brain injury (TBI) is broadly defined as an alteration to brain function or other evidence of brain pathology caused by an external force. Globally, 10 million people are affected by TBI per year, with reported incidence rate of 106 per 100,000, and was estimated may exceed other types of neurological disease as the major cause of death and disability by 2030. Impact of TBI typically manifests with reductions in visual acuity, colour vision, pupil reactivity and visual field in the affected eye, which mimics the classical description of traumatic optic neuropathy (TON). However, the assessment and monitoring of the visual manifestations in TBI using standard visual function tests may be challenging for clinicians. Notwithstanding these, optical coherence tomography (OCT) allows evaluation of the retina at near-histological resolution, detecting subtle neurodegenerative changes in retinal layer at the cellular level. Alongside this, a related imaging modality such as OCT angiography (OCTA) enables the visualisation of vascular flow in the retinal microstructure. In view of these, the talk will present and discuss the application of OCT in assessing retinal structure and neuronal loss (i.e., retinal nerve fibre layer and ganglion cells layer), as well as OCTA in imaging vascular changes, in evaluating the modifications of macular perfusion, potentially predict neurodegeneration of TBI.

SYMPOSIUM ABSTRACT

Exploring the Benefits of Virtual Reality in Collaborative Vision Therapy for Complex Visual Disorders

Mr. Stanley Tien Tong Keat
Neuro Developmental & Behavioral Optometrist

Virtual reality (VR) has emerged as a powerful tool for enhancing visual skills, such as stereopsis, binocular vision, and depth perception, particularly for patients with complex visual disorders. VR provides a controlled environment where patients can engage in exercises that promote the development of these skills. One of the key benefits of VR is its ability to provide three-dimensional visual cues, which are critical for the development of stereopsis and binocular vision. Such cues improve depth perception and enable patients to perceive and interact with objects more realistically.

Combining VR with home-based amblyopia protocols and computer-based amblyopia protocols has shown to be effective in motivating amblyopia patients to complete their therapy sessions. Amblyopia is a condition where one eye has weaker vision than the other, and it often responds well to vision therapy. By incorporating VR into home-based and computer-based protocols, patients can benefit from more personalized and targeted therapy, leading to better outcomes.

VR can also be used to develop oculomotor vision therapy, which focuses on improving eye movements and coordination. By using VR, patients can perform eye exercises that help to strengthen their eye muscles and improve their ability to track moving objects. VR provides an immersive environment for these exercises, which allows patients to better visualize and track moving objects.

Another advantage of using VR in vision therapy is that it can improve eye-hand coordination development. Eye-hand coordination is critical for daily activities such as writing, drawing, and sports. VR exercises require patients to use their visual and motor skills together, which can help to improve their eye-hand coordination. These exercises can be customized to each patient's needs, making them more effective than traditional exercises.

In summary, VR has the potential to revolutionize vision therapy by providing a more engaging and immersive experience for patients. By integrating VR into therapy protocols, patients can benefit from personalized and targeted therapy, leading to better outcomes. VR can enhance depth perception development, home-based and computer-based amblyopia protocols, oculomotor vision therapy, and eye-hand coordination development. As technology continues to advance, VR is likely to become an even more valuable tool in the field of vision therapy.

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Universiti Kebangsaan Malaysia

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ORAL PAPER ABSTRACTS

ASSOCIATION BETWEEN SOCIOECONOMIC CHARACTERISTICS AND VISUOSPATIAL ABILITIES IN PRESCHOOL CHILDREN: RESULTS FROM THE BLOCK DESIGN TEST

Mohd Izzuddin Hairol[1,3], Mahadir Ahmad[1,2], Naufal Nordin[1], Lik Yong Ng[3], and Sumithira Narayanasamy [1,3]
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PURPOSE: Children's ability to visualize and spatially construct objects is often reflected in the Block Design Test (BDT) performance, which is also a predictor of their future mathematical achievements. This study investigates the association between various socioeconomic characteristics and BDT performance in a sample preschool children.
METHODS: A total of 428 children (mean age: 5.94±0.24 years) attending public and private preschools were recruited. BDT was a subtest from the Wechsler Preschool and Primary Scale of Intelligence-Fourth Edition (WPPSI-IV) and the Wechsler Intelligence Scale for Children-Fifth Edition (WISC-V), for the 5- and 6-year-olds, respectively. Participants viewed printed two-dimensional designs displayed on the workbook and reproduced them by arranging cubes with red, white, and half-red, half-white faces. Each trial was timed. BDT raw scores were obtained in the standard manner and converted into scaled scores using the age-appropriate normative tables in the Administration and Scoring Manual. Socioeconomic characteristics were obtained using a parent-report questionnaire. Multiple linear regression was used to test if socioeconomic characteristics significantly predicted BDT scores.
RESULTS: Overall, the mean BDT scaled score was 9.61±2.81, within the norms of the tests (10±3). Participants from higher income households, attended private preschools, enrolled before age six, and whose parents had bachelor's degrees or higher had significantly higher BDT scores (all $p<0.05$). The overall regression was statistically significant ($R2=0.052$, $F(1,321)=17.45$, $p<0.001$. Enrolment in private preschools was positively associated with higher BDT scores ($\beta=1.327$, $p<0.001$).
CONCLUSIONS: BDT scores, as a measure of visuospatial abilities, were higher for children from higher income households, attended private preschools, enrolled before age six, and whose parents had tertiary education. Private preschool enrolment significantly predicted higher BDT scores.

KUALA LUMPUR CHILDREN REFRACTION SURVEY: THE PERSPECTIVE OF EYE CARE PRACTITIONER

Nur Hafiza Mokhtar[1]*, Effendy Bin Hashim[2], Nurulain Mat Zin[3], Mahani Mohd Salleh[4], Aziimah Awang Abd Rahman[5], Nabilah Mohd Yussuf [6], Ungku Noor Aqilla Ungku Hassan[7], Hussein Waheeda-Azwa[8].
[1]Hospital Kuala Lumpur, [2]Ministry of Health Malaysia (Optometry Officer), [3]Hospital Sultan Ismail Petra, Kuala Krai, [4]Hospital Putrajaya, [5]Hospital Sultanah Nur Zahirah, Kuala Terengganu, [6]Hospital Sultanah Aminah, Johor Bahru, [7]Hospital Pakar Sultanah Fatimah, Muar, [8]Department of Ophthalmology, School of Medical Sciences, University Sains Malaysia

PURPOSE: Myopia is the leading cause of distance refractive errors globally and refraction is the main technique used by eye care practitioners (ECPs) to measure refractive errors. The practice of refraction by ECPs has not been fully explored in Malaysia and this study explores their views on the perceived barriers and facilitators encountered when engaging in refraction for children, particularly the use of cycloplegia and the strategies to improve eye services.
METHODS: As part of the qualitative study from the Kuala Lumpur Children Refraction Survey, twenty semi-structured interviews that were conducted on purposively selected participants from the two hundred and twenty-two respondents were analyzed. Recorded interviews were transcribed automatically using an Artificial Intelligence Software "Otter.ai" before being transferred to another Software "Taguette.org" to facilitate coding. Peer debriefing was conducted among the researchers to verify and validate the transcription, coding and theme. Thematic Analysis was used to explore and interpret patterned meaning across datasets to identify the key barriers and strategies ECPs adopted to enhance refraction when working with children.
RESULTS: Five overarching themes were identified related to the ECPs and their patient-client relationship in refraction. The first reflects the barriers to accessibility to eye care for children, considering the lack of access to cycloplegic drugs. The second discusses the level of cooperation and responses by children across different ages. The third reiterates the approach in handling refraction for those children and the fourth talk about the legislative barrier imposed on using cycloplegic drugs. The final theme considers public awareness and recommends strategies to improve service.
CONCLUSIONS: By using qualitative design to explore the views of ECPs towards the current model of children refraction in Malaysia, these findings can inform the future intervention to raise awareness and enhance eye care services. Further research is needed to explore the views of the patient-client and other care providers to identify the barriers and enablers in eye care services, in particular refraction for children.

KEYWORDS: children, cycloplegia, cycloplegic drugs, eye care practitioner, refraction

ORAL PAPER ABSTRACTS

THE OUTCOME OF NON-SURGICAL INTERVENTION AMONG PEDIATRIC PATIENTS WITH EXOTROPIA AT HOSPITAL RAJA PERMAISURI BAINUN

Nurul Farhana Abu Bakar, Nur Amirah Meor Shaharuddin*
Optometry Unit, Department of Ophthalmology, Hospital Raja Permaisuri Bainun, Jalan Raja Ashman Shah, 30450 Ipoh, Perak.

PURPOSE: Exotropia is a common type of strabismus among Asian children. Non-surgical management options for strabismic patients are controversial due to the lack of evidence in its effectiveness. The aim of this study was to report the outcome of non-surgical intervention of exotropia cases and its associated factors.
METHODS: This retrospective study was based on data from Hospital Raja Permaisuri Bainun Health Information System. All pediatric patients with exotropia aged between 2 to 17 years old who attended orthoptics and binocular vision clinic were recruited. Exotropia interventions were considered success if patient achieved good binocular single vision at distance and near without any manifest ocular deviation.
RESULTS: A total of 77 patients were included in the analysis. Approximately 65% of patients with exotropia were given non-surgical interventions with 44% of success rate within 1 year follow-up. The success rate of non-surgical intervention was found significantly related to the type of exotropia ($\chi2=5.864$, $p<0.05$) and child's age ($\chi2=5.864$, $p<0.05$).
CONCLUSIONS: Non-surgical intervention among children with exotropia is quite promising especially among older age children and in intermittent exotropia cases. High percentage of non-surgical intervention given for exotropia patients suggested the importance of optometrists' role in the management of strabismus. More comprehensive studies are required to evaluate the efficacy of the non-surgical intervention procedures to find out the most effective strategy.

UTILIZING SGANS FOR GENERATING SYNTHETIC IMAGES OF PTERYGIUM: TRAINING FUTURE OPTOMETRISTS AND OPHTHALMOLOGISTS

Mohd Zulfaezal Che Azemin [1]*, Mohd Izzuddin Mohd Tamrin[2], Mohd Radzi Hilmi[1], Khairidzan Mohd Kamal[3]
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PURPOSE: Pterygium, an ocular surface disorder, poses diagnostic challenges for optometrists and ophthalmologists. We propose using Style-Generative Adversarial Networks (SGANs) to generate synthetic pterygium images for training purposes.
METHODS: A training dataset of 68 pterygium images collected during routine clinical examinations was used. Fréchet inception distance (FID) was employed to evaluate the similarity between the synthetic and original images.
RESULTS: FID analysis revealed that the synthetic images closely resemble the original pterygium images, suggesting a high degree of similarity. This indicates the potential of SGANs in generating realistic pterygium images.
CONCLUSIONS: The successful generation of synthetic pterygium images using SGANs provides a valuable tool for training future optometrists and ophthalmologists in pterygium diagnosis and grading. By expanding the availability of diverse pterygium images, trainees can enhance their skills and proficiency. The use of synthetic images overcomes limitations associated with obtaining a sufficient number of real pterygium images. Additionally, the availability of a large dataset of synthetic images enables the development of advanced machine learning algorithms and computer-assisted diagnostic tools, improving the accuracy and efficiency of pterygium grading. SGAN-generated images have the potential to standardize and control the training process, leading to improved patient care and management of pterygium.

ORAL PAPER ABSTRACTS

ASSESSING NON-CYCLOPLEGIC TECHNIQUES FOR REFRACTION IN SCHOOL-AGED CHILDREN: A POTENTIAL NEW GOLD STANDARD

Akmarina Rosnan[1]*, Normaisarah Salleh[1], Fazrul Azwan,[1] Siti Nursyuhada[1], Nur Molizawatie [2], Kew Fui Hsein[3], Amy Grace [4], EffendyHashim[5]
[1]Departments of Ophthalmology, PulauPinang General Hospital, [2]Department of Ophthalmology, Sultan Abdul Halim Hospital, [3]Department of Ophthalmology, KualaLumpur Hospital, [4]Department of Ophthalmology, Sungai Bakap Hospital, [5]Department of Ophthalmology, Sultanah FatimahSpecialist Hospital

PURPOSE: This study aimed to evaluate the effectiveness of autorefractor machine and Mohindra retinoscopy compared to cycloplegic retinoscopy in diagnosing refractive errors among children in the Eye Clinic at Hospital Pulau Pinang.
METHODS: A cross-sectional experimental study was conducted, including thirty-six eyes from eighteenchildren aged 6-13 years with a visual acuity of at least 6/12 in both eyes. Children with binocular abnormalities and accommodative problems were excludedfrom the study. Non-cycloplegic measurements were obtained using autorefraction with a Canon model RK-F2 and Mohindra retinoscopy. Subsequently, cycloplegic retinoscopy was performed. The sphericalequivalent (SE) obtainedfrom each non-cycloplegic technique was compared to cycloplegic retinoscopy, and the mean differences were calculated.
RESULTS: A paired samples t-test was conductedto determine the mean difference of SE between the autorefractor machine and Mohindra retinoscopy techniques compared to cycloplegic retinoscopy. The results indicated that the differences were not statistically significant for autorefractor machine (M=.33;SD=1.03; t(35)=1.90, p=.065)and Mohindra retinoscopy (M=.17; SD=0.44; t(35)=1.69, p=.086) compared to cycloplegic retinoscopy. Agreement analysis suggested that both autorefractor machine and Mohindra retinoscopy techniques slightly overestimated hyperopia and underestimated myopia by 0.3D and 0.2D, respectively, compared to the standard procedure of cycloplegic retinoscopy. The correlation between Mohindra retinoscopy and cycloplegic refraction (r=.67, p=.000) was lower than that between autorefractor machine and cycloplegic refraction (r=.95, p=.000). Regression analysis showed no significant differences between the two methods, indicating good agreement and the possibility of using them interchangeably (autorefractor machine: R2 = 0.20, F(0.74, 37) = 0.70, p =0.42; Mohindra retinoscopy: R2 = 0.008, F(0.06, 6.7) = 0.28, p = .60).
CONCLUSIONS: Non-cycloplegic refraction using autorefractor machine and Mohindra retinoscopy is reliable for routine assessment of refractive errors in school-aged children with normal or low refractive errors, especially in large centers or for screening purposes. However, children with accommodative disorders and binocular abnormalities still require cycloplegic refraction for accuratemeasurement of refractive errors.

Keywords:School-aged children,Refraction, Refractive errors,Cycloplegic, Retinoscopy

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COMPARISON OF MEASUREMENT DIFFERENCE BETWEEN AUTOMATED OCULAR SURFACE ANALYZER (IDRA®) AND SLIT LAMP EXAMINATION

Nor Sabrina Sulaiman [1,2]*, Khairidzan Mohd Kamal[2] , Mohd Radzi Hilmi[3]
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PURPOSE: To compare the difference in ocular surface health (tear stability and tear meniscus height) measurement between IDRA® (SBM SISTEMI, Inc., Torina, Italy) and slit lamp (SL) examination.
METHODS: We prospectively identified asymptomatic dry eye disease (DED) participants using the Standard Patient Evaluation of Dry SPEED questionnaire. Subsequently, all the participants underwent IDRA® analysis, consisting of two components: non-invasive tear film break-up time (NITBUT) and tear meniscus height (TMH) and slit lamp microscopy: fluorescein tear break-up time (FBUT) and TMH.
RESULTS: A total of 40 participants (40 right eyes, mean age = 29.0 ± 5.84 years, 65% female) were enrolled. For the SPEED score, the mean score was 1.4 ± 1.63. There was a significant average difference between tear stability measured with slit lamp compared to IDRA® (t39 = - 4.717, p < 0.001). There was a significant average difference between tear stability measured with slit lamp compared to IDRA® (t39 = - 4.717, p < 0.001). There was no significant difference between TMH by SL and TMH by Idra measurements (t39 = 0.537, p > 0.05). On average, TMH by SL measurement was 0.007 mm higher than TMH by Idra (95% CI [-0.021,0.036]). On average, the SL assessment took 6.475 minutes longer than the IDRA assessment (95% CI [5.485,7.465].
CONCLUSIONS: The automated non-invasive assessment by IDRA® may be a valuable tool in the extramural setting for reaching a non-invasive diagnosis of DED with good performance.

ORAL PAPER ABSTRACTS

COMPARISON OF CORNEAL CURVATURE VALUES BETWEEN THREE DIFFERENT DEVICES IN A HOSPITAL SETTING

Nurul Hafizah Binti Amil Bangsa*, Mahani Binti Mohd Salleh, Rosmainiza Binti Saien, Noor Suriana Binti Adanan.
Hospital Putrajaya, Presint 7, 62250 Putrajaya

PURPOSE: To compare two parameters of corneal curvature, namely corneal dioptric power and axis location between two examiners with three different devices.
METHODS: This study was conducted in Ophthalmology department, Hospital Putrajaya from August until January 2023. The corneal curvature of 24 eyes from 2 males and 10 females were measured by first examiner and subsequently by second examiner without interval using Retinomax K-Plus 3, Tomey Optical Biometer OA-2000 and Medmont Corneal Topographer E300. The readings were masked between the two optometrists. All data were analyzed using Intraclass correlation coefficient (ICC) in SPSS 21.0 and Bland Altman analysis in Microsoft Excel.
RESULTS: Corneal dioptric power values demonstrate high reproducibility between examiners (ICC>0.98) and good agreement (95% LoA within ±0.50D) in all devices except for Medmont Corneal Topographer E300. However, reproducibility between examiners on axis location using Medmont Corneal Topographer E300 was lower (ICC<0.50) compared to other devices. Lower level of agreement (95% LoA larger than ± 10 degrees) was also found on axis location with Medmont Corneal Topographer E300 compared to other devices.
CONCLUSIONS: Medmont Corneal Topographer E300 shows greater variability in axis location values between examiners and devices. These findings suggest that the Retinomax K-Plus 3 and Tomey optical biometer OA-2000 can be used interchangeably in clinical practice, while caution is warranted with Medmont Corneal Topographer E300 particularly in measuring axis location.

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Hospital Sibu, Sarawak
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Management and Science University
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E-POSTER ABSTRACTS

THE AETIOLOGIES AND CURRENT PRESCRIBING PATTERN OF PATIENTS AT SIBU HOSPITAL'S LOW VISION CLINIC

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PURPOSE: This study aims to investigate the causes of low vision and blindness and the types of low vision devices prescribed among patients attending Low Vision Clinic, Sibu Hospital.
METHODS: This retrospective study retrieved data from medical notes of new patients who attended Low Vision Clinic, Sibu Hospital from 1st January 2019 to 30th April 2022.
RESULTS: This study enrolled 40 patients ranging in age from 7 to 75 years old, with a mean age of 39.5±17.81 years old. The leading causes of low vision and blindness were retinal diseases (52%), neurological causes (22%), glaucoma (18%), albinism (5%) and corneal diseases (3%). Approximately more than half of the patients (57.5%) were prescribed low vision devices. Types of low vision devices prescribed were video magnifiers (37%), handheld magnifiers (22.2%), telescopes (14.8%), spectacle magnifiers (14.8%) and stand magnifiers (11.1%).
CONCLUSIONS: Retinal diseases, specifically retinitis pigmentosa is the major cause of low vision and blindness among patients attending Low Vision Clinic, Sibu Hospital. Furthermore, video magnifiers are the largest percentage of prescribed low vision aid. These findings imply that strategies for managing Low Vision Clinic patients should include eye screening and awareness campaigns, and obtaining third-party engagement to fund and make low vision devices easily accessible to patients.

Keywords: Low Vision Clinic, Low Vision Rehabilitation, Causes of Low Vision and Blindness, Low Vision Devices

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THE BINOCULAR VISION STATUS OF 'ORANG ASLI' CHILDREN IN A SAMPLE POPULATION IN KUALA LANGAT, SELANGOR

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PURPOSE: The refractive status of 'Orang Asli' children mostly prevalent as hyperopia. Therefore, the risks to have binocular vision anomalies especially non-strabismic types may be suspected. The aims of this study to identify the binocular vision status of 'Orang Asli' children in one sample population in Kuala Langat Selangor.
METHODS: This study was cross sectional study with purposive sampling. The subjects recruited at Mukim Tanjung 12, Kuala Langat Selangor. The subjects underwent the new model of binocular vision assessment pathway designed for 'Orang Asli' children, and the reliability of each test was analyzed before its use in this study. In this study, the initial diagnosis of binocular vision anomalies required a minimum of three clinical signs related to specific types. A total of 109 children from the 'Orang Asli' community were recruited, and 103 children met the criteria.
RESULTS: There were 52% of 'Orang Asli' children had non-strabismic binocular vision anomaly and no subjects had strabismic binocular vision anomalies. The types of non-strabismic binocular vision detected were convergence excess (1%), divergence excess (4%) and accommodation insufficiency (47%). All the children with binocular vision anomalies were hyperopia. There were significant association between binocular vision anomalies and refractive error status ($p < 0.05$). However, there were no association between binocular vision anomalies with the gender and age group of the children ($p > 0.05$).
CONCLUSIONS: In conclusion, binocular vision anomalies were detected among the sampled population of 'Orang Asli' children, particularly affecting those with hyperopia. It is recommended to conduct binocular vision status screening for 'Orang Asli' children to identify any potential binocular vision abnormalities, particularly the non-strabismic types."

E-POSTER ABSTRACTS

CHANGES IN CORNEAL THICKNESS AND KMAX VALUE BEFORE AND AFTER 6 MONTHS UNDERGOING CXL : CASE REPORT

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PURPOSE: Keratoconus is a specific type of corneal ectasia in which the cornea thins and weakens, causing of distorted and blurred vision, as well as sensitivity to light and glare. Keratoconus may progress slowly over several years and can affect one or both eyes. Treatment for keratoconus include glasses, contact lenses and corneal cross linking (CXL). CXL is used to strengthen the cornea and halt the progression of keratoconus. This case report describes the changes in corneal thickness and maximum-K reading (Kmax) value before and after 6 months undergoing CXL.
CASE REPORT: A 34 years old Malay man came to eye clinic Hospital Tuanku Ja'afar Seremban (HTJS) . He complained of redness, swelling and epiphora on right eye (RE). Patient has allergy to seafood. Patient was diagnosed with left eye (LE) Keratoconus but defaulted follow up. His RE vision was 6/9 , with pinhole 6/6. His LE vision was 6/60 , with pinhole 6/18. Vision improved to 6/6 on RE and 6/9 on LE with correction. Patient underwent LE corneal cross linking (CXL) subsequently. Measurement of several parameters were taken before CXL and 6 months after CXL. It was found decreased in the thickness of the cornea by 11% and Kmax value of 0.4D.
CONCLUSIONS: Corneal cross linking can change corneal parameters and may affect contact lens parameters fitting.

LOWE SYNDROME OCULAR MANIFESTATION: A CASE REPORT

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PURPOSE: Lowe Syndrome is a rare x-linked disorder that can be transmitted recessively. It is characterized by multisystemic disorders which particularly involving the eyes, kidney and central nervous system where the features predominantly manifest among male. This study described the ocular manifestation in Lowe Syndrome in a young patient from Sarawak.
CASE REPORT: A 9-year-old boy with no known medical illness was referred for multiple chalazion since 2 years old of age, reduced visual acuity and absence of red reflex on left eye. The patient then progressed and developed corneal keloids and cataract on both eyes with buphthalmos on left eye. Paediatrician diagnosed him with distal tubular acidosis (Fanconi Syndrome) and developmental delay.
CONCLUSIONS: Primary eye care plays an essential role on engaging unusual cases, like Lowe's syndrome. Early detection with subsequent proper multidiscipline lifetime follow-up may benefit patient with discrete social life and assisted working activity regardless of short lifespan. Proper genetic counselling to the patient's family is crucial to avoid recurrence within the same extended family.

E-POSTER ABSTRACTS

ASSESSING THE AGREEMENT BETWEEN SMARTPHONE COLOR VISION APPLICATION AND THE ISHIHARA COLOR VISION PLATES

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PURPOSE: To assess the agreement between standard Ishihara Color Vision Plates with Smartphone Color Vision Application.
METHODS: A cross sectional study on 101 subjects aged 18 to 60 years old were recruited in Hospital Melaka and Klinik Kesihatan Peringgit. Patients were presented with two color vision tests: an Ishihara Color Vision plates and Smartphone Color Vision Application (KPP Test 2023-KPP 01 JPJ android). Descriptive statistic was conducted using SPSS version 23.0. Sensitivity and specificity of the electronic test was assessed. Blant and Altman was used to assess the agreement between two color vision tests.
RESULT: Average age was 26.95 ± 1.12 years. There were 54 males (53.5 %) and 47 females (46.5 %). The subjects consist of 83 normal trichromats and 18 color deficient. Sensitivity and specificity of color vision application in determining color vision defect was 100% and 51.8% respectively. Youden's index is 0.52. There was significance mean difference between Smartphone Color Vision Application and Ishihara plates $P < 0.05$. The agreement between the two tests was poor.
CONCLUSIONS: Smartphone application testing for color vision test are readily available, however it shows low specificity and high false positive rate compared with Ishihara, limiting their usefulness for clinical use. Therefore, further improvement of these applications is required.

EARLY CHANGES IN QUALITY OF LIFE AFTER MONOVISION LASER REFRACTIVE SURGERY

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PURPOSE: To investigate the impact of monovision laser refractive surgery on the quality of life of presbyopic patients during preoperative and three postoperative follow-up visits.
METHODS: This prospective longitudinal study was conducted at IIUM Eye Specialist Clinic (IESC) on 44 pre-presbyopic and presbyopic patients aged 35 to 45, who have been treated with femtosecond laser in situ keratomileusis (FS-LASIK) and photorefractive keratectomy (PRK). The dominant eye was corrected for distance vision and the non-dominant eye was corrected for near vision by adding +0.50D to +1.50D sphere to the final manifest distance refractive power. All patients underwent objective visual assessments and answered questionnaires regarding quality of life using validated Quality of Life Impact Refractive Correction (QIRC) questionnaires preoperatively and at one week, one month and three months postoperatively. The visual assessments were preoperative and postoperative visual acuity, stereopsis, and contrast sensitivity.
RESULTS: This study enrolled 44 patients with a mean refractive error of -4.95 ± 0.27 for the dominant eye and -4.22 ± 0.35 for the non-dominant eye. Postoperatively, the objective visual assessments such as distance visual acuity, contrast sensitivity and stereopsis between pre- and 1-week postoperative visits were statistically significant with $p<0.05$. In this study, the overall QIRC scores after monovision laser refractive surgery were improved between before and three months after the surgery from a mean of 39.18 ± 0.67 (SD) to 49.07 ± 1.21 [$F(2,101 = 32.58, p<0.001)$]. Next, when comparing FS-LASIK and PRK, the QIRC scores after three months of follow-up showed no statistically significant difference in both techniques, with the mean QIRC score in FS-LASIK slightly greater (50.84 ± 7.58) than PRK (47.31 ± 8.23; $t(42) = -1.48$, $p=0.15$).
CONCLUSIONS: Monovision correction by laser refractive surgery improved the patient's quality of life and visual quality in early postoperative visits among pre- and presbyopic patients. However, there is also a small number of patients (16%) who have decrement in overall QIRC scores, as it is associated with certain issues. Nevertheless, the visual quality remains unchanged, especially within 1-week to 3-month postoperatively.

E-POSTER ABSTRACTS

SPECTACLE WEAR AMONG PRIMARY SCHOOLCHILDREN IN MUAR, JOHOR - ACCESSIBILITY

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PURPOSE: Uncorrected refractive error can impede children's education where spectacle correction is simple and cost-effective. The accessibility of spectacle by children with refractive error has not been fully explored and this study aims to investigate this.
METHODS: Using a simple random sampling out of 104 public primary schools, 64 administrators were selected (80% power, 5% margin error) to measure the prevalence of spectacle wear among schoolchildren. A first survey using Google Form was distributed among randomised primary school administrators in Muar, Johor between February to March 2023. To measure the accessibility of spectacles among primary schoolchildren, a second survey among the parents of spectacle-wear schoolchildren from those 64 primary schools was conducted using Google Forms between March to April 2023. To improve the response rate, each potential subject was approached by Whatsapp, telephone, and e-mail correspondence with the assistance of the District Education Office. Google Maps was used to calculate the distance between the school and the optical stores. A descriptive analysis was performed using Microsoft Excel 2013.
RESULTS: With a response rate of 29.7%(19/64) from the first survey, the prevalence of spectacle wear among schoolchildren was 14.0%(803/5570), where male was 52.0%(416/2755) and female was 48.0%(387/2815). Among those school children wearing spectacles, 72.2%(580/803) belong to Chinese ethnic, 25.8%(207/803) Malay ethnic, 1.7%(14/803) Indian ethnic, and Other ethnic 0.2% (2/803). From the second survey with a response rate of 26.5% (213/803), a total of 213 parents of the children wearing spectacles responded to the question on the estimated distance from their house to the optical shop. The mean distance between the schoolchildren's house to the optical shop was estimated at 10.21(SD±23.54) km from the survey and the mean distance between the school and the optical shop was calculated at 4.49(SD±7.06) km from the desk review. The result of Spearman's correlation analysis revealed that there was a positive correlation between the estimated distance of house to optical shop from survey and the calculation between school to optical shop from desk review (r=+0.350, p-value =.01).
CONCLUSIONS: Primary schoolchildren in Muar, Johor have to travel double the distance to get a pair of spectacles from their respective house in comparison to their school. This highlights the importance of this study for future policy recommendations to improve access to spectacle for school children shall involve the school and education sector. This study shall be replicated and conducted to encompass more Districts and States to be representative of Malaysia.

SPECTACLE WEAR AMONG PRIMARY SCHOOLCHILDREN IN MUAR, JOHOR - AFFORDABILITY

Ungku Noor Aqilla Ungku Hassan[1]*, Roziana Sumardi[1], Rasyida Awang[1], Norhuda Md Yusof[1], Suhada Ahmad Suhaimi[1], Effendy Bin Hashim[2]
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PURPOSE: It is common for children with refractive error to experience changes in their spectacle prescription because of eye and vision changes while growing. For school-going children needing frequent changes of refractive correction with spectacles, this may cause additional economic stress to those who belong to families with low income status. This study explored the burden of refractive error correction in terms of spectacle price, frequency of spectacle changes, family income status, and perceived affordability to purchase spectacles.
METHODS: A first random-sampling survey (Google Forms) was conducted among public primary school administrators in Muar, Johor to gain access to the parents of the schoolchildren wearing glasses between February to March 2023. A second convenient-sampling survey (Google Forms) was administered among those parents with contacts between March to April 2023 to maximize responses. To improve the response rate, administrators and parents were approached via WhatsApp, telephone, and e-mail with assistance from the District Education Office. Descriptive analysis was performed using Microsoft Excel 2019.
RESULTS: 220 parents of schoolchildren wearing spectacles responded from nineteen primary schools in Muar, Johor with a response rate of 27.3% (220/803) from the second survey. The mean purchase price for a pair of spectacles for schoolchildren was estimated at RM375.94(SD∓RM237.19) and the spectacle perceived as affordable at RM210.50(SD∓RM122.55). The Pearson correlation analysis revealed a positive correlation between the estimated purchase price and the affordable spectacles price ($r = +0.674$, p-value $=1.9 \times 10^{-30}$). 60.5% (133/220) of the respondents claimed that the frequency of spectacle changes for schoolchildren was at least once a year. With an average gross household monthly income of RM4,958.41(SD∓ RM4016.34), 82.7% (182/220) of respondents claimed they could afford to purchase only one pair within one year. There is a positive correlation between household income and the price of spectacles among primary schoolchildren (Pearson Correlation, r=+0.266, p-value=.000066)
CONCLUSIONS: A tool for vision and education, the spectacle must not cause an additional economic burden to schoolchildren from low-income families. Policy direction for refractive error correction and intervention must consider this aspect by improving affordability to reduce inequality in society.

E-POSTER ABSTRACTS

REFRACTIVE ERROR FINDINGS IN STUDENT WHO FAILED SCHOOL-BASED VISION SCREENING IN HOSPITAL SANDAKAN (HDOK), SABAH

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PURPOSE: To investigate refractive error findingsamong students who were referredto optometrist at Hospital Duchess of Kent Sandakan (HDOK) by Health School Service Unit (UPKS).
METHODS: This study was conducted using cross-sectional analysis.The data collection was based on students who came after being referredby UPKS from April 2022 till December2022. Students were grouped to Standard 1 (7 years old), Standard 6 (12 years old) and Form 3 (15 years old). Examinations such as visualacuity (VA), cycloplegic or non-cycloplegic weredone by optometrists at HDOK or at klinik kesihatan during district visit. Any refractive error was identified when there is at least -0.50 dioptre (D) sphere equivalent (SE) myopia, +0.50D SE hyperopia, -1.00D astigmatism or 1.00D anisometropia in the righteye. Whereas, clinically significant refractive error is defined as decreased VA and more severe refractive error. The results will be used to determine if there are any contributing factors associated with refractive error findings.
RESULTS: A total of 228 studentswere analysed in this study. Clinically significant refractive error and any refractive error were found in 162 (71.1%) and 174 (76.3%) students respectively. The highest type of refractive error found is myopia; 142 (62.3%) followed by astigmatism; 97 (42.5%), anisometropia; 54 (23.7%) and lastly is hyperopia; 20 (8.8%). Myopia reportedmore in Form 3; 36 (92.3%) studentscompared to the lower age group. Whilstsuburban district showed a higher incidence of myopia, which is 126 (85.1%) students than rural area which is 32 (40%). From the analysis, there is significance difference between students with clinically significant refractive error at different age groups ($p<0.001$). When comparing students in the same age group, it showed that students in suburban area had more clinically significant refractive error compared to the rural area ($p<0.05$).
CONCLUSIONS: Almost 2/3 of the students had clinically significant refractive error and any refractive error with suburban communityhad higher risk of acquiring myopia. This is might be due tothe difference dailyactivities or lifestyle of the studentsbetween the two places. Nevertheless, this also demonstrated that the screening program by UPKS had a significant impact on identifying students with vision problems.

AN ANALYTIC HIERARCHY PROCESS-BASED CLINICAL DECISION-MAKING FOR DRY EYE DISEASE DIAGNOSTIC TEST SELECTION

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PURPOSE: Various diagnostic tests are available to diagnose dry eye disease (DED). It is recommended that the diagnosis of DED be made based on the presence of symptoms and at least one positive homeostasis marker result from the diagnostic test. To date, there is no single gold standard clinical sign that correlates perfectly with DED. This leads to uncertainty for health practitioners in selecting the tests to diagnose DED. The analytic hierarchy process (AHP) is a quantitative decision-making technique for multicriteria decision problems. In this study, a systematic framework using AHP was developed for the multicriteria evaluation of alternatives for DED diagnostic test selection.
METHODS: AHP approach was used, where the pairwise comparison of the multiple criteria and alternatives were performed to identify the most preferred DED diagnostic test. After having a comprehensive literature review, four criteria namely: accuracy, reliability, cost, and time needed are important in deciding DED diagnostic tests and seven alternatives (questionnaire, TBUT, NIBUT, Schirmer test, tear osmolarity, Meibomian gland assessment, and ocular surface staining) were used to demonstrate the process. The step began with structuring the decision problem in the form of hierarchy framework where the goal was located at the highest level, criteria in the intermediate level, leaving the decision alternatives at the lowest level. The step was followed by pairwise comparison using Saaty's nine-point scale to evaluate the relative importance of criteria in selecting DED diagnostic test. Six experts in optometry were recruited to derive the relative importance of criteria and the relative preference of alternatives via questionnaire. The geometric average of experts' response was obtained. The weight between all criteria and diagnostic tests were calculated.
RESULTS: Accuracy was the most important criteria (weightage=0.62) to be considered in selecting DED diagnostic tests, followed by reliability (weightage=0.23), time needed (weightage=0.09), and cost (weightage=0.06). Schirmer test was the most preferred DED diagnostic test (weightage=0.20) whereas questionnaire was the least preferred (weightage=0.07).
CONCLUSIONS: The developed AHP approach can effectively address the uncertainty of practitioners' clinical decision-making in selecting DED diagnostic tests. It greatly reduces the associated costs, resources, and time involved in obtaining the diagnosis of DED.

Keywords: dry eye disease, analytic hierarchy process, clinical decision-making

E-POSTER ABSTRACTS

ACUTE ACQUIRED COMITANT ESOTROPIA (AACE) – POST COVID-19 HOME CONFINEMENT

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PURPOSE: To present a case of Acute Acquired Comitant Esotropia (AACE) encountered in the Ministry of Health Hospital, Malaysia. AACE is a relatively rare form of strabismus characterized by a sudden onset of concomitant esotropia with diplopia.
CASE REPORT: A 7-year-old boy presented to the Ophthalmology Department, HRPZ II, Kota Bharu with acute onset of diplopia. Two days before the presentation, his parents noted crossed eyes when he woke up and dancing eyes. He had no history of recent infections or physical or psychological stress. In the past 2 months, he used a tablet approximately 8 hours a day. His best corrected visual acuity (BCVA) was 6/12 on RE and 6/18 on LE eye. Stereopsis was not detectable by the Lang test. Manifest esotropia was 20 prism diopters (PD) at both far and near distances in all positions of gaze. The cycloplegic refraction was RE +0.75/-1.00 x 20 (6/7.5) and LE +1.50 / -1.00 x 165 (6/7.5) Ductions and versions were full. Neurologic evaluation and brain magnetic resonance imaging (MRI) under sedation were unremarkable. Full time glasses was prescribed, although other treatment options such as prisms and topical cycloplegics were discussed. Case Report 2: A 22-year-old girl presented to the Ophthalmology Department, HRPZ II, Kota Bharu with acute onset of diplopia. She is studying on statistic course and spend many hours on computers. She had no history of recent infections or physical or psychological stress. The patient reported an intense use of the computer for more than 8 hours a day. She had worn any glasses yet. Her BCVA was 6/6 in both eyes. On alternate cover test, the manifest esotropia was 25 PD at both far and near distances in all positions of gaze. Ductions and versions were full, with no pattern strabismus. The cycloplegic refraction was RE -2.00/-0.25 X 180 and LE +1.00/-1.00 X 180. Neurologic evaluation and MRI were normal.
CONCLUSIONS: Home confinement during covid-19 appeared to cause an increasing total hours of screen time and the number of consecutive minutes/hours without visual breaks should be recommended to prevent AACE.

CLINICAL PROFILE OF PATIENTS ATTENDING LOW VISION CLINIC IN HOSPITAL-BASED MALAYSIA

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PURPOSE: Low vision service was established in Malaysia public hospitals in 1986 and gradually expanded. As of 2023, there are 70 hospitals that offered low vision service at their centre. To date, a very limited study has been conducted to review the demographic characteristics of the patient attending public hospitals in Malaysia. The aim of this study is to review the causes of low vision and services that had been offered at low vision clinic.
METHODS: Records of all new patients (n=534) attending low vision clinics at public hospitals in 2021 and 2022 were examined.
RESULTS: Mean age was 41 years old (range 1 to 86 years old) with 60 percent male and 60.7 percent less than 50 years of age. The main cause of low vision was retinal disease (30 percent), glaucoma (15 percent) and diabetic retinopathy (12 percent). Median distance vision and best corrected visual acuity was 1.00 (0.78) and 0.90 (0.70) respectively (p=0.001). Peripheral visual field defect was found in 137 patients (95 percent) who underwent visual field test. 188 patients (35.2 percent) were prescribed optical aids, 154 patients (28.8 percent) electronic magnification devices and fourteen (2.6 percent) were prescribed spectacles. 97 patients (18.2 percent) were referred to occupational therapists, 218 patients (40.8 percent) to Department of Social Welfare Malaysia and 56 patients (10.5 percent) were referred to non-government organisations.
CONCLUSIONS: Retinal disease, glaucoma and diabetic retinopathy were the most common causes of low vision and prescribing low vision aids as well as referral to other professionals were part of the services that have been offered in low vision clinics.

Keyword: causes of low vision, low vision aids, multidisciplinary care

E-POSTER ABSTRACTS

THE VALIDITY OF SHORT BAHASA MELAYU SENTENCES OF THE UKM-RADNER READING CHARTS FOR NEAR VISION ASSESSMENT

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PURPOSE: To develop and validate short sentences in Malay that are comparable in number and length of words, difficulty, and syntactical structure for constructing the Radner-UKM Reading Chart.
METHODS: Forty sentence optotypes in Bahasa Melayu with comparable structure and similar lexical and grammatical difficulty were constructed following the methods used for the German version of the Radner Reading Chart. Reading time rt, reading speed rs, and the number of errors were measured with the 40 sentence optotypes. For inclusion in the UKM-Radner Reading Chart, the sentences were statistically standardized by selecting those within rtmean±0.25×SD and rsmean ±1.25×SD measured in 120 non-presbyopic participants (mean age=22.09±1.28 years). Validity was analyzed by comparing the sentences' reading time and reading speed with those for the 75-word long Teks Penilaian Bacaan Awal Bahasa Melayu as the standard text.
RESULTS: Twenty-four most equally matched sentences were selected for the Radner-UKM reading chart, with a mean reading speed of 179.14±4.66 words per minute (wpm), compared to 172.89±27.97 wpm for the long text. The mean reading times were 4.83±0.13 seconds and 26.17±3.23 seconds, respectively. The mean number of reading errors was 0.13±0.04. The correlation between the Radner-UKM sentences and the long text was high ($r=0.81$; $p<0.05$). Reliability analyses revealed an overall Cronbach's alpha coefficient of 0.979 for the 24 sentences.
CONCLUSIONS: The 24 selected Bahasa Melayu sentence optotypes are highly comparable in syntactical structure, number, position, word length, lexical difficulty, and reading length. Their inclusion would make the UKM-Radner Reading Chart an assessment tool with high validity, reliability, and practicality for measuring reading performance.

ASSOCIATION BETWEEN TEAR FILM STABILITY AND SELF-REPORTED NIGHT DRIVING DIFFICULTIES IN MALAYSIAN ADULTS

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PURPOSE: Dry eye is a growing public health concern that causes ocular discomfort and visual disturbances that interfere with quality of life, including daily activities. An unstable tear film is the common cause of dry eye disease. Dry eye with unstable tear film has been associated with glare sensitivity and decreased contrast sensitivity, especially under dim illumination. This study aimed to investigate the association between tear film stability and self-reported night driving difficulty in Malaysian adults.
METHODS: This cross-sectional study involved 90 Malaysian drivers aged 18 to 40 years (mean age = 24.78 years ± 4.52). All drivers had their habitual refractive correction with distance visual acuity of 6/6 or better in both eyes. Non-invasive tear film break-up time (NIBUT) was measured to evaluate the tear film stability while Vision and Night Driving Questionnaire (VND-Q) was used to assess the self-reported night driving difficulty score.
RESULTS: No statistically significant difference in NIBUT was found between sex, ethnicity, vehicle type, and optical correction type for night driving. The median value of NIBUT in this study, 6.02 s was used as the cut-off value to categorize the participants into low and normal NIBUT groups. The VND-Q score of low NIBUT group was significantly higher than normal NIBUT group ($p < 0.05$). A significant negative correlation was found between the NIBUT and self-reported night driving difficulty score ($r = -0.33$, $p < 0.05$).
CONCLUSIONS: The drivers with lower NIBUT tend to report greater difficulties in night driving. This study suggests that unstable tear film has a measurable impact on the ability to perform certain activities requiring sustained visual attention under dim illumination, such as driving at night. A distance visual acuity of 6/6 with unstable tear film does not guarantee a good night vision for driving. Eye care practitioners should verify the presence of clinical signs in all patients complaining about dry eye and recommend treatment to alleviate this condition.

Keywords: break-up time; dry eye; night driving; tear film

E-POSTER ABSTRACTS

KNOWLEDGE AND ASSOCIATED FACTORS REGARDING VISION SCREENING AMONG PRESCHOOL TEACHERS IN MALAYSIA.

Shazrina Ariffin*, Saadah Mohamed Akhir, Sumithira Narayanasamy
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PURPOSE: This study aims to assess preschool teachers' level of knowledge on vision screening and identify the contributing socio-demographic factors.
METHODS: A cross-sectional study was conducted among public and private preschool teachers in Malaysia using a validated self-administered questionnaire. This questionnaire consists of 6 sections, which are; i) Information sheet, ii) Consent form, iii) Participant's information, iv) Knowledge of preschool vision screening, v) Attitude towards preschool vision screening and vi) Practice of preschool vision screening. The knowledge domain consists of 42 items. The 42 items assess teachers' knowledge of vision screening comprising several topics such as types, signs, and symptoms of visual impairment in children, effects of visual impairment and treatment, children's vision screening, and visual hygiene. Teachers' knowledge level was scored and classified into three categories (low, moderate, and high) using Bloom's cut-off point. Socio-demographic factors associated with the level of knowledge were analysed using ordinal logistic regression. Fourteen factors were assessed, which are; gender, age, race, level of education, field of study, type of preschool (public/private), location of preschool (urban/rural), years of experience, spectacles/contact lens wearers, presence of eye disease, family members who are spectacles/contact lens wearers, presence of eye disease among family members, teachers' involvement in vision screening training and preschool involvement in vision screening.
RESULTS: The result shows that the majority of preschool teachers (57.6%) were in the high-level knowledge category. The factors contributing to the level of knowledge are teachers with eye disease/problem [AOR= 1.716 (95% CI, 1.088, 2.705)], involvement in vision screening training [AOR= 1.588 (95% CI, 1.111, 2.270)] and serving at preschools conducting vision screening [AOR= 1.799 (95% CI, 1.283, 2.523)].
CONSCLUSIONS: This study found that factors such as training and exposure to vision screening could improve teachers' level of knowledge. Therefore, teachers could be part of preschool vision screening programs provided they are well-trained and supported by the authorities involved, such as the Education and the Health department.

ADULT-ONSET VITELLIFORM MACULAR DYSTROPHY (AVMD): A CLINICAL CASE REPORT

Irni Suhana M[1]*, Syarmilla CS2, Nur Mizan H[2], Ahmad Ziyad S[3], Syahirul Khalis M[4], Muhammad Afzam Shah AR[5].
[1]Optometry Unit Hospital Jeli, [2]Ophthalmology Department Raja Perempuan Zainab II, [3]Optometry Unit Hospital Gua Musang, [4]Optometry Unit Hospital Tanah Merah, [5]Department of Optometry and Visual Science, Kuliyyah of Allied Health Sciences, International Islamic University Malaysia.

PURPOSE: To present a case of AVMD encountered in the Ministry of Health Hospital, Malaysia.
CASE REPORT: A 39-year-old man came to the Optometry Unit, Hospital Jeli, Kelantan, in 2022 for his eye examination for a new pair of spectacles. He has never been to a proper eye examination. Upon presentation, he complained that both of his eyes had experienced gradual blurring of vision since his early 30s. He also mentioned that his aunt was recently blinded, but the causes were unknown as his aunt did not went for a proper eye examination. In addition, he has type-2 diabetes mellitus, hypertension and hyperlipidaemia. His best corrected VA for the right eye (RE) and left eye (LE) was 6/60, respectively. Upon funduscopy, the optometrists noted a small white lesion near the macular area (BE). As such, he was subsequently referred to the Ophthalmology Department, Hospital Raja Perempuan Zainab II, Kelantan. The ophthalmologist diagnosed him with Vitelliform Macular Dystrophy (atrophic stage). He was given a 6-month appointment to monitor the fundus. No treatment was prescribed since there is no causal treatment for this disorder yet.
CONCLUSIONS: In most cases of AVMD, the VA is typically unaffected for many years; thus, AVMD may not be detected until much later in life. To date, genetic counselling would be beneficial for the affected individuals and their families.

Keywords: Adult-onset vitelliform macular dystrophy (AVMD), Hospital Jeli, Hospital Raja Perempuan Zainab II.

E-POSTER ABSTRACTS

THREE CATS EXERCISE FOR DECOMPENSATED ESOPHORIA: A CASE REPORT

Nurazillah binti Ismail*, Sharifah Suzaini binti Syed Kuning, Nur Aida Madiha binti Che Rahim, Asmah binti Ahmad.
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PURPOSE: Decompensated esophoria is a latent binocular misalignment that becomes symptomatic. Symptoms varied from a simple headache to severe asthenopia and diplopia. Most cases can be treated with vision therapy, but the majority of the exercises are difficult to perform. In this case, we prescribed three cats exercise that were recommended primarily for convergence training, as a divergence training.
CASE REPORT: An 18 years old female with no known medical illness presented with intermittent horizontal binocular diplopia during driving for 6 months. On the first visit, her aided vision in each eye is 6/6. Her refractive error for RE -4.50/-2.50x180 (6/6) and LE -4.75/-1.75x170 (6/6). Her stereopsis, extraocular muscle movement, and amplitude of accommodation were all within normal range. Hirschberg was initially centre and symmetry. However, Worth's Four Dots test showed diplopia. The cover test revealed RE esotropia at distant and near. Further test with prism cover test showed 18 prism base out at 6m and 14 prism base out at 40cm. The three cats exercise was prescribed to the patient as divergence training. Her second visit 3 months later showed no improvement as the patient was having difficulty performing the exercise. Her third visit demonstrated remarkable improvement with no remaining diplopia symptom. This parallels Worth's Four Dots test. The cover test showed esophoria to alternating esotropia at 6m and esophoria at 40cm. She could perform the three cats exercise effectively, but her negative fusional vergence at distance and near range remained inadequate. The patient was instructed to continue with three cats exercise until the next appointment.
CONCLUSION: The three cats exercise was an effective option for treating decompensated esophoria.

KNOWLEDGE AND ATTITUDE TOWARDS REFRACTIVE ERROR AMONG FSK UNDERGRADUATE STUDENTS AND THE CONTRIBUTING SOCIODEMOGRAPHIC FACTORS

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PURPOSE: This study aimed to determine the knowledge and attitude towards refractive error among FSK undergraduate students and the factors that influence it.
METHODOLOGY: This cross-sectional study involves data collection through an online questionnaire. This validated questionnaire consists of three parts, which are; i) Social demographics and factors influencing the knowledge and attitude towards refractive errors, ii) Knowledge of refractive errors, and iii) Attitudes towards refractive errors. Knowledge is assessed with 10 multiple choice questions that carries a total of 17 marks. Knowledge of refractive error was categorized as good or poor using the median score value (8.5 points). Attitudes was assessed based on a three-point Likert scale using eight questions and the scores ranged from 8 to 24. Attitudes is categorized as favourable and non-favourable using the median score value (16 points).
RESULTS: The results showed that FSK students have good knowledge and favourable attitude towards refractive error correction, which are 66.3% and 97.2% respectively. In this study, 22.8% of the subjects believed that refractive errors cannot be corrected by wearing glasses, while 61.0% of the subjects agreed that young people need glasses to correct refractive errors. Using the chi-square test, gender was significantly associated with the knowledge of refractive error ($\chi 2=4.71$, p-value=0.03).
CONCLUSION: The proportion of good knowledge and favourable attitude towards refractive error among FSK students were fair. Eye health education is important to increase the knowledge and attitude towards refractive error to reduce visual impairment due to refractive error.

E-POSTER ABSTRACTS

UNILATERAL NUTRITIONAL OPTIC NEUROPATHY (VITAMIN A DEFICIENCY): A CASE REPORT

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Department of Ophthalmology, Selayang Hospital

PURPOSE: To report a case of Unilateral Nutritional Optic neuritis due to Vitamin A Deficiency.
CASE REPORT: An 11 years old Malay boy presented with headache on the frontal region and blur of vision of left eye. Ophthalmology examination showed normal anterior segments and left eye relative afferent pupillary defect (RAPD)positive grade 3. Fundus examination showed both eye optic disc swelling. Optometric examination was done. Refractive assessment showed hyperopia and astigmatism in both eyes with higher on left eye which correlates with the axial length measurement. Axial length measurement revealed a shorter eyeball for left eye. Best corrected vision was 6/6 for the right eye and 1/60 for the left eye. Hess test was normal. Bjerrum test showed constricted visual field for both eyes. Dietary history from parents revealed the child start to become picky eater after age of 3 years old. He only takes nuggets, rice, milo and cookies. Serum vitamin A showed a severely low vitamin A level which is 0.18Umol. Other examinations found a few characteristics associated with Vitamin A deficiency that is phrynoderma on the knee and milia over the face. Skin biopsy reported possible phrynoderma which may cause by Vitamin A deficiency.
CONCLUSIONS: The diagnosis of nutritional optic neuropathy was made based on fundus assessment, visual impairment, impaired colour vision and constricted visual field. In developing countries, vitamin A deficiency is a major cause of preventable childhood blindness. It is an uncommon case in Malaysia. Early diagnosis and treatment necessary to preserve the vision thus reduced the risk of permanent loss of vision. Balance diets are essential, especially in growing children. A thorough history taking, with high suspicion and involvement other specialties are needed especially for those who are at risk of the condition.

RUSSELL-SILVER SYNDROME OCULAR MANIFESTATIONS – A CASE REPORT

Azalia Razali[1]*, Halijahton Abdul Rahim[2], Khatijah Mustapa[1]
[1]Ophthalmology Department, Selayang Hospital, [2]Ophthalmology Department, Cyberjaya Hospital

PURPOSE: To describe the clinical ocular features of a Russel-Silver Syndrome (RSS) patient.
CASE REPORT: A 13-year-old boy diagnosed with RSS presented to our department for ophthalmic examination as patient complained of blur vision at distance and near for one year. The patient has postnatal growth retardation and triangular face with a prominent forehead and small chin consistent with RSS. Visual acuity was 6/60 in both eyes with the left eye showing moderate esotropia. Anterior segment examination showed small corneas with steep curvature but no significant corneal cylinder or shape. Refraction testing indicated bilateral high hyperopia with best-corrected vision of 6/21 in the right eye and 6/30 in the left eye. The axial length of both eyes was exceptionally short, and an OCT scan revealed a dome-shaped retina in the left eye. Additionally, the left eye lens exhibited early subcapsular cataract. Examination of the posterior pole showed small and crowded optic discs with normal retinal blood vessels. The macula appeared mottled with reduced reflectivity in both eyes.
CONCLUSION: This case report highlights the ocular manifestations observed in a patient with Russell-Silver Syndrome. The presence of microphthalmia, strabismus and refractive errors emphasizes the importance of early and regular ophthalmic assessment in individuals with RSS. Early identification and intervention of ocular abnormalities can improve visual outcomes leading to a better quality of life for individuals affected by this condition.

E-POSTER ABSTRACTS

A CASE STUDY OF DECOMPENSATED ESOTROPIA WITH DIPLOPIA

Siti Faeza Hanim Syed Aziz*, Sit Jo Anne, Haizan Farah Hamzah, Rosmawati Uthman
Department Ophthalmology, Hospital Selayang

PURPOSE: To report a case of Decompensated Esotropia with Diplopia
CASE REPORT: A Malay man, 18 years of age, presented to eye clinic with a complaint of double vision on and off over 3 months. Double vision was previously present intermittently since primary school. There was no known medical illness and no history of trauma or fall, headache, nausea or vomiting. He was born premature twin at 28 weeks via EMLSCS. He was screened by the ophthalmologist since birth and subsequently discharged as normal. Parents noted intermittent squint at the age of 9 years old on the right eye.
RESULTS: Clinically, his visual acuity was 6/6 in each eye with binocular diplopia occurs horizontally. Extraocular muscle movements were normal. The diplopia was also worse with distance fixation. Worth 4 dots test showed uncrossed diplopia for near and distance and had no stereopsis. Cover test revealed large angle of the right eye to alternating esotropia on both near and distance primary fixation. Prism cover test on several visits noted that after prolonged dissociation, magnitude increased from 25PD to 40PD. Atropine refraction resulted in low hyperope astigmatism in each eye. Anterior segment and funduscopy examination were unremarkable. Initial treatment was planned for Fresnel prism but the magnitude of the prism is too high and patient still sees double vision intermittently then the suggestion was given for squint surgery. Squint surgery is done with both eye medial rectus recession 4.5mm. Post squint surgery 1 month noted small esophoria with good stereopsis. The most important thing no more diplopia is noted and patient is happy and satisfied with the outcome.
CONCLUSIONS: In case of persistent symptoms, a correct assessment and intervention can help to correct and minimize the symptom. Normally nonsurgical intervention is preferable compared to surgical intervention. This case is challenging when nonsurgical intervention does not eliminate the diplopia. Therefore, squint surgery is the best option.

CASE REPORT: RETINITIS PIGMENTOSA IN 3 YEARS OLD GIRL.

Nurul Aini Y, Faeza Hanim SY*
Ophthalmology Department, Hospital Selayang

PURPOSE: This report describes a case of Retinitis Pigmentosa in a 3-year-old girl presenting with visual symptoms and subsequent diagnosis confirmation.
CASE REPORT: A 2-and-a-half-year-old girl was referred to the Ophthalmology Department at Hospital Selayang for an eye assessment. The child's parents expressed concerns about their daughter squinting and experiencing poor visual acuity. Refraction findings revealed bilateral high myopia with astigmatism, and an orthoptic assessment showed a small exophoria. Prescription glasses were provided to address the refractive errors. During the sixth visit, the mother reported that her child appeared to be wandering and had difficulty seeing in low light conditions or at night. The mother denied any family history of night blindness or other eye diseases. Funduscopy revealed a mid-peripheral salt and pepper appearance, while other parts of the eyes appeared normal. Due to the suspicious findings, the patient was referred for an Electroretinogram (ERG) test to confirm the diagnosis of Retinitis Pigmentosa.
CONCLUSIONS: This case highlights the detection of Retinitis Pigmentosa at an early age, which is uncommon but possible. The patient's symptoms, along with the funduscopy findings, led to a referral for an ERG test to confirm the diagnosis. Early intervention is crucial in managing RP, as it allows for appropriate counseling and support for the child and their family. With early diagnosis, parents and healthcare practitioners can initiate interventions to optimize the child's visual functioning and quality of life.

ACKNOWLEDGEMENT

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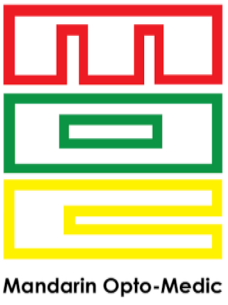

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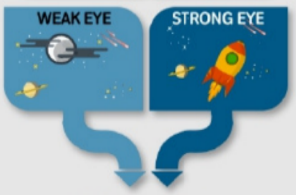

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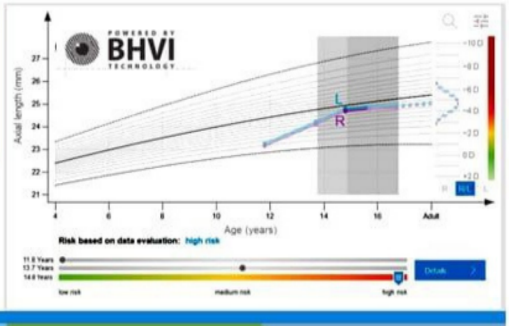

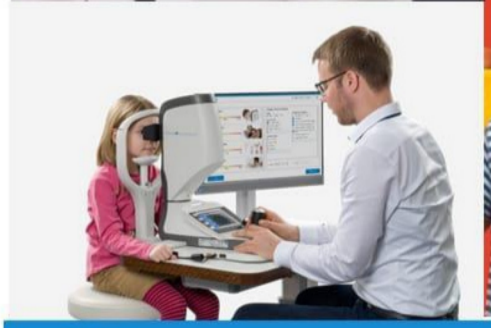

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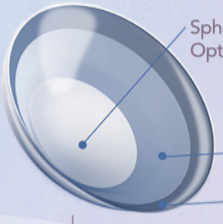

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[Al-Bukhari and Muslim].

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In-book reference : Book 15, Hadith 3

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