

ABSTRACT BOOK

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Title: A Cross-sectional Survey on Compliance with Contact Lens Care Among Healthcare Workers in MOH Hospitals

Authors: Muhammad Faizal Bin Risman¹, Syuhairah Binti Hamzah², Azlina Binti Abdullah³, Nurul Najiha binti Mohammed Khairi⁴, Farah Binti Ismail⁵

¹Hospital Sultanah Nora Ismail Batu Pahat, Ministry of Health

²Allied Health Division, Ministry of Health

³Freelancer Optometrist

⁴Hospital Sungai Buloh, Ministry of Health

⁵Hospital Ampang, Ministry of Health

Purpose:

Healthcare workers are often regarded as role models by the public in healthcare, including eyecare. This study aims to determine contact lens (CL) compliance and awareness among healthcare workers in the Ministry of Health (MOH).

Method:

This study used a cross-sectional design and was conducted among healthcare workers of the MOH from July 2025 until August 2025. The questionnaire survey, validated by a study from Mohidin and Zahidin, 2012, is converted into Google Form and its link was randomly distributed through MOH emails. The questionnaire is in Bahasa Malaysia. Responses were analyzed using Google Sheets and SPSS software version 22. Chi-square test is used to observe significance between related data.

Results:

A total of 462 respondents completed the survey with a mean age of 39.45 (range 29 to 56). Male respondents were 65(14.1%) and female, 397(85.9%). CL users=270(58.4), non-user=192(41.6). Soft contact lens users=262(98.1%), hard lens=5(1.9%). Refractive error (71.5%) and cosmetics (11.5%) were the main reasons for using contact lenses. 86.8% of contact lens wearers bought their lens from Optometrist outlet and 12.1% online. The compliance rate for CL users is 44.4%. Regarding knowledge about CL care, 19.3% respondents answered all questions correctly. Mean awareness rate is 70.67%. Respondents that managed to get all the right answers are categorised as highly aware. High awareness rate among CL users is 27.04%, and for non-CL wearers is 8.33%. The difference between high awareness rates between CL wearers and non-wearers is statistically significant based on the Chi-square test ($p < 0.01$). 78.5% of responses believed saline solution can be used to disinfect contact lenses.

Conclusion:

This study indicates that most subjects from MOH have an average awareness regarding contact lenses usage. Knowing that more than half of respondents believed that saline can be used to disinfect CL is worrying. To ensure that MOH personnel are in compliance with contact lenses and can serve as a role model for the public and patients, additional educational modules and awareness initiatives are necessary, eg. Contact Lens Awareness Program (CLAP), Contact Lens Awareness Network (CLAN), organised by Contact Lens Specialty Committee, MOH Optometrist.

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Keywords:

Healthcare workers, contact lens; awareness, compliance, role models

Title: Accommodative Spasm and Depressive Symptoms among Teenagers: A Case Series

Authors: Nurul Anis Sabarina binti Noruhaimi¹, Siti Syahidah binti Sobri²

¹Department of Ophthalmology, Sultanah Bahiyah Hospital, Kedah, Malaysia

Background:

The increasing use of digital devices has led to greater near visual demands, contributing to accommodative and binocular vision disorders such as accommodative spasm. This condition, characterised by sustained contraction of the ciliary muscle, commonly affects teenagers and presents with blurred distance vision, asthenopia, headaches, and difficulty shifting focus. Emerging evidence suggests that psychological factors, including stress and depression may contribute to its development and persistence.

Methods:

A retrospective case series was conducted involving three female patients diagnosed with accommodative spasm at the Optometry Clinic, Hospital Sultanah Bahiyah, Kedah (2023–2025). All patients presented with blurred vision at distance and near, accompanied by asthenopia. Clinical data were extracted from the electronic hospital information system (eHis) using a standardised data collection form. Variables included visual acuity, non-cycloplegic and cycloplegic refraction, accommodative function, ocular alignment, management strategies, and follow-up outcomes. Psychological status was screened using the Patient Health Questionnaire (PHQ-9), with scores interpreted based on standard severity cut-offs to identify the presence and level of depressive symptoms.

Results:

The mean age was 18.3 years. All patients demonstrated pseudomyopia on non-cycloplegic refraction, which resolved following atropine treatment. Reduced accommodative function was observed in all cases. PHQ-9 findings indicated mild to moderate depressive symptoms. Following a combination of reduced near-work activities, screen time limitation, and vision therapy, two patients achieved complete symptom resolution, while one showed partial improvement and was subsequently diagnosed with Streff syndrome.

Conclusion:

This case series highlights the potential interplay between accommodative spasm and depressive symptoms, underscoring the importance of a multidisciplinary management approach. While combined optical and behavioural interventions appear beneficial, conclusions should be interpreted with caution due to the limited sample size. Further large-scale studies are required to substantiate these findings.

Keywords:

Accommodation spasm, pseudomyopia, asthenopia, depression

Title: Preliminary Retrospective Study on the Clinical Effectiveness of 0.01% Atropine Eye Drops for Myopia Control Among Children in Melaka

Authors: Eryanti Md Omar¹, 'Afifah Kamarudin¹, Hazliyati Hassan¹, Nurulfaiz Rahmat¹, Nooraishah Md Yusop¹, Nurul Hafizah Mohd Norizan¹, Siti Jalia Jumadi¹, Nor Emalina Suleiman¹, Nur Hidayah Hilmi¹

¹Department of Ophthalmology, Hospital Melaka

Background:

The widespread prevalence and rapidly increasing rates of myopia among children make it a significant public health concern (Holden et al., 2016). Among available treatment strategies, atropine 0.01% eye drops significantly reduce myopia progression with minimal side effects (Sen et al., 2022). This study aimed to evaluate the effectiveness of atropine 0.01% eye drops in slowing myopia progression in children.

Methods:

This single-arm, retrospective observational cohort study reviewed medical records of children who completed Phase 1 of atropine 0.01% therapy between September 2022 and October 2025. Changes in spherical equivalent (SE) and axial length (AL) were assessed from baseline to Phase 1 end. Data were analysed using SPSS v22. Descriptive statistics are presented as mean $\pm$ standard deviation (SD). Repeated-measures ANOVA was applied for normally distributed data, and Kruskal-Wallis ANOVA for non-normal data. A p-value < 0.05 was considered statistically significant.

Results:

Nineteen patients (37 eyes; mean age 8.79 ± 2.2 years; 52.6% female; 94.7% Malay) were included. Inferential analysis was performed on 37 eyes. First-year mean SE change was 0.43 D ($p < 0.001$, 95% CI: 0.21-0.65) and 0.22 D ($p = 0.065$, 95% CI: -0.01, 0.46) in the second year, indicating well-controlled myopia progression (< 0.50 D/year). Mean AL changes were 0.23 mm ($p < 0.001$, 95% CI: -0.29, -0.17) and 0.20 mm ($p < 0.001$, 95% CI: -0.27, -0.14). First-year axial elongation slightly exceeded 0.2 mm/year but remained clinically controlled. Mean annual progression rates were 0.33 D/year for SE and 0.22 mm/year for AL. Treatment accounted for 36% of SE variance and 72% of AL variance. No participants reported glare or reading difficulties. The limited sample size may affect generalizability, and larger multicentre studies are needed.

Conclusion:

Atropine 0.01% demonstrated a favourable balance of clinical effectiveness and tolerability, effectively slowing myopia progression and axial elongation while maintaining minimal side effects and good visual comfort.

Keyword:

Myopia control, atropine, children, spherical equivalent, axial length

References

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Sen, S., Yadav, H., Jain, A., Verma, S., & Gupta, P. (2022). *Effect of atropine 0.01% on progression of myopia*. *Indian Journal of Ophthalmology*, 70(9), 3373–3376.

Baseline Data on Contact Lens Case Distribution and Service Utilisation in Borneo: A One-Year Study at Hospital Queen Elizabeth, Sabah

Authors & Affiliations: Norazizah Binti Abd Latif¹, Nur Syuhadah Binti Azni², Diana Binti Mohamed³

Optometry Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia

Background:

Baseline data describing contact lens practice in the Borneo region remain scarce. Understanding patient demographics, clinical indications, and prescribing trends is essential for strengthening specialised contact lens services and guiding future service planning in East Malaysia.

Methods:

A retrospective descriptive study was conducted using contact lens clinic records at Hospital Queen Elizabeth, Sabah, from January to December 2024. Data collected included patient demographics, age, service utilisation (fitting, delivery, aftercare), visit category (new or follow-up), clinical indications, and types of contact lenses prescribed. Data were analysed using descriptive statistics with SPSS software. Three cases were excluded due to incomplete records.

Results:

A total of 140 patients were analysed, comprising 73 males (52.1%) and 67 females (47.9%). The mean age was 29.3 years (range: 14–70 years). Monthly attendance peaked in November (n = 26) and was lowest in September (n = 5). Service utilisation included 55 fittings, 30 deliveries, and 53 aftercare visits. Follow-up cases (n = 87) exceeded new cases (n = 50), reflecting strong continuity of care. Keratoconus was the predominant clinical indication, 66.7% of cases, involving 52 right eyes and 56 left eyes. Laterality for keratoconus presented equally as bilateral (n = 14) and unilateral cases (n = 14). High myopia represented 18.5% of cases while corneal scarring (11.1%) of cases. Less common indications included anisometropia (3.1%) and other conditions (0.6%). Specialized lens designs, particularly Rose K and Rose K XL lenses, were predominantly prescribed, highlighting the complex clinical profile of patients in a tertiary care setting.

Conclusion:

This study represents a baseline report on contact lens case distribution in Sabah, Borneo. The predominance of keratoconus and specialised lens use underscores the critical role of contact lenses in visual rehabilitation within the region. These findings provide valuable evidence to support service development, training priorities, and resource planning.

Keywords: contact lens; keratoconus; service utilisation; prescribing pattern; Borneo region

Title: Profile of Cerebral Visual Impairment (CVI) Patient at Ministry of Health Malaysia (MOH) Facilities

Authors: Rachel Clarice Linggam¹, Ruby Huong Yeng Ting²

¹Optometry Unit, Department of Ophthalmology, Sabah Women & Children Hospital, Sabah

²Optometry Unit, Department of Ophthalmology, Miri Hospital, Sarawak

Background:

Cerebral visual impairment (CVI) is an increasingly recognized cause of childhood visual dysfunction, resulting from injury or maldevelopment of the retrogeniculate visual pathways and higher visual centers. Profiling the demographics, etiologies, CVI phase, and associated ocular and neurological deficits of CVI in MOH facilities is essential to improve multidisciplinary management and rehabilitation.

Methods:

This was an observational, retrospective study. All clinical records of patients who attended CVI clinics in 18 MOH facilities from 2019 to 2023 were included in the study. Data extracted included demographics, etiologies, visual impairment category, CVI phase, and associated ocular and neurological deficits. Descriptive statistics were used to summarize the data extracted. The association between etiology and CVI phase was analyzed using SPSS software.

Results:

There were 227 patients with CVI with a median age of 3 years (mean 3.89, S.D. 3.10) attended CVI clinics. The ratio of male to female was 1.5: 1. The 3 main CVI etiologies were structural abnormalities (54, 23.1%), acquired CVI (41, 18.1%) and hypoxic ischemic encephalopathy (40, 17.6%). The most common ocular deficits were optic nerve atrophy (67, 29.5%), significant refractive error (62, 27.3%) and strabismus (47, 20.7%), while the most common neurological deficits were cerebral palsy (41, 18.1%), epilepsy (26, 11.5%) and global developmental delay (17, 7.5%). Based on functional vision assessments, patients were categorized into phase I (103, 45.4%), phase II (68, 29.9%) and phase III (56, 24.7%) respectively. There was no significant association between CVI etiology and CVI phase, $\chi^2(20, N=227) = 29.72, p > 0.05$.

Conclusion:

The lack of association between CVI etiology and CVI phase highlights that etiology does not dictate visual function. This indicates the importance of functional vision assessments, as patients with identical etiologies may present in different CVI phases. Therefore, tailored interventions that target unique visual behaviors should be utilized to enhance both habilitation and rehabilitation.

Keywords:

cerebral visual impairment, etiologies, ocular deficits, neurological deficits, CVI phase

Reference:

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Title: Regional and Layer-Specific Corneal Thickness Changes Following Phacoemulsification: An Anterior Segment OCT Study

Authors: Durgeashree Muniandy¹, Pui Juan Woi¹, Mizhanim Mohamad Shahimin¹, Kan Kok Wei²

¹ Optometry and Vision Science Programme, Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia

² GPS Eye Specialist Centre, No. 5, Precinct 2, Medan Sunway Wellesley 1, 14000 Bukit Mertajam, Penang, Malaysia

Background:

Cataract remains a leading cause of visual impairment globally. While phacoemulsification is the gold standard for cataract treatment, postoperative corneal edema and epithelial disruption remain common challenges that impact visual quality. Current literature offers limited insight into the short-term, region-specific fluctuations of corneal sub-layers. This study aims to evaluate epithelial and non-epithelial corneal thickness changes after phacoemulsification, to better elucidate the recovery process and facilitate the early detection of complications.

Methods:

A prospective study was conducted involving 46 eyes undergoing uncomplicated phacoemulsification. Corneal thickness was measured preoperatively, at 1 week, and 1 month postoperatively using anterior segment optical coherence tomography (OCT). Measurements included epithelial, non-epithelial, and total thickness at central, nasal, and temporal regions along the horizontal meridian. All surgeries were performed by a single ophthalmologist using a 2.6 mm temporal clear corneal incision with Rayone Hydrophobic Aspheric Monofocal IOL implantation. Data were analysed using repeated measures ANOVA.

Results:

Significant differences in corneal thickness were observed across all layers and regions ($p < 0.001$). At 1 week, non-epithelial and total thickness increased significantly at all locations, indicating transient edema, most pronounced temporally. By 1 month, thickness values decreased and approached near-baseline. Conversely, epithelial thickness demonstrated mild thinning at 1 week with full recovery by 1 month, with minimal fluctuation throughout. Pairwise comparisons revealed significant differences across most regions between all time points ($p < 0.001$).

Conclusion:

Postoperative corneal healing exhibits distinct layer-specific and regional recovery patterns. Epithelial changes were minimal and reversible, reflecting rapid resurfacing, whereas non-epithelial layers showed marked early edema near the temporal incision due to surgical trauma and endothelial stress. These findings underscore the importance of assessing layers-specific assessment and support anterior segment OCT as a sensitive tool for early detection of abnormal changes when specular microscopy is unavailable.

Keywords:

Phacoemulsification; corneal thickness; corneal edema; corneal epithelial changes; anterior segment optical coherence tomography

Title: Developing Stereopsis in Adulthood: A Case of Vision Therapy Success in Long-Standing Strabismic Amblyopia

Author: Dr.Stanley Tien Tong Keat¹, DOptoms, M.Ed, MSc, BSc,
FCOVD,FCSO,FACBO, FNORA, FBDO. Low, Shi Ying¹, BSc(Hons) Optometry

¹Sun Time Vision Specialist, Kuala Lumpur

Background

Adults with long-standing strabismic amblyopia are often considered to have limited potential for visual improvement after childhood because binocular development is thought to be constrained beyond the critical period. However, increasing evidence suggests that some degree of neuroplasticity may persist in the adult visual system. This case report describes changes in visual acuity, suppression, and stereopsis in an adult patient with longstanding strabismic amblyopia who underwent vision therapy.

Methods

A 38-year-old woman presented in May 2022 with left hypertropic exotropia, high myopia in the left eye (−11.50 D), reduced best-corrected visual acuity (BCVA) of 6/24 in the amblyopic eye, and absent stereopsis. Worth 4-Dot testing demonstrated complete suppression of the left eye. The patient also reported functional difficulties associated with poor depth perception, including fear of escalators, difficulty with night driving, and visual fatigue at work.

She underwent monthly in-office vision therapy directed at visual developmental stages, oculomotor control, anti-suppression, peripheral fusion, vergence, and binocular integration. Optical correction was modified during the course of therapy, including partial under-correction of the left eye and later multifocal spectacle correction, with the aim of facilitating binocular engagement and reducing suppression. Outcome measures included BCVA, Worth 4-Dot responses, stereoacuity, and patient-reported functional changes.

Results

Over the course of therapy, binocular findings improved. Worth 4-Dot responses progressed from complete left-eye suppression to fusion at intermediate distances, although residual suppression or diplopia remained at far and near. Stereoacuity, initially absent, became measurable: 400 arcsec by late 2024, 200 arcsec by early 2025, and 100 arcsec by mid-2025. BCVA in the amblyopic eye improved from 6/24 to 6/15.

The patient also reported subjective improvement in depth perception and greater confidence in daily activities, including using escalators, driving, and reading. By November 2024, after approximately 2.5 years of therapy, she demonstrated functional binocular vision with measurable stereopsis for the first time.

Conclusions: This case suggests that meaningful improvement in visual acuity, suppression, and stereoacuity may be possible in some adults with long-standing strabismic amblyopia undergoing vision therapy. Although findings from a single case cannot be generalized broadly, the outcome supports the possibility of residual neuroplasticity beyond childhood and indicates that selected adult patients may benefit from therapeutic intervention.

Keywords

adult amblyopia; strabismic amblyopia; vision therapy; stereopsis; suppression; binocular vision; neuroplasticity; exotropia

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Title: Performance evaluation of the Auckland Optotypes (TAO) digital display for preschoolers visual screening: A Pilot Study.

Authors: Muhammad Faizal Bin Risman¹, Haryanny Binti Kamilan¹, Noor Aida Binti Sapiee¹, Nuraini Binti Musa¹, Syamzariah Binti Mizlan¹, Nurulyun Binti Shafie¹

¹Hospital Sultanah Nora Ismail Batu Pahat

Objective:

Using a digital display vision chart for preschoolers visual screening possesses the possibility to reduce screening duration and improve the subject's cooperation. This pilot study tries to evaluate the performance and statistical agreement of the Auckland Optotypes (TAO) digital display developed for quality assurance against an established method, the Lea Chart.

Methodology:

TAO resized for visual acuity 6/9@3 meters projected on an Asus notebook E410K, 14-inch LED display, 1366 x 768 resolution running at 60 Hertz. Subjects underwent both TAO and Lea Chart screening. Performance was assessed by constructing a Confusion Matrix table where failing the screening was defined as the Positive condition. Key diagnostic statistics, including Accuracy, Sensitivity, Specificity, Positive Predictive Value (PPV), and Negative Predictive Value (NPV), were calculated. The presence of a statistically significant difference in the marginal error rate between the two methods was tested using McNemar's Test.

Results:

This study included 25 preschoolers with a mean age of 4.96 years (range: 4–6 years), consisting of 13 females (52%) and 12 males (48%). Digital display TAO demonstrated good overall agreement with Lea Chart, achieving an accuracy of 96%. The method was highly effective in identifying all 'fail', with Sensitivity (Recall) at 100.00% and 0 False Negatives. Its ability to correctly identify 'pass' results (Specificity) was 95%. The primary form of disagreement was a single False Positive (FP=1), where TAO incorrectly classified a 'pass' as a 'fail'. PPV is 83.3%, and NPV is at 100%. The Exact Binomial McNemar's Test revealed no statistically significant difference in the marginal error rates between the two methods ($p = 1.0000$). Cohen's Kappa = 0.884.

Conclusion:

The digital display TAO displays a good performance and agreement with Lea Chart. Further improvement can be done to reduce the false positive rate to optimize the technology's overall precision, such as using a full HD display, which can turn this into an alternative, reliable visual screening tool for preschoolers.

Keywords:

preschoolers, visual screening, The Auckland Optotypes, digital display optotypes, Lea Chart.

Title: Myopia Diagnosis Among Children in Malaysian MOH Optometry Service: A National Census Analysis, 2020–2024

Authors: Nor Bahiyah Binti Tahar¹, Ilyana Binti Rosli², Intan Khursiah Binti Abd Rahman³, Fairuz Binti Zainol⁴, Nazaryna Binti Marzuki⁵, Rohaila Binti Ariffin⁶

¹Department of Ophthalmology, Tunku Azizah Hospital, Malaysia

²Department of Ophthalmology, Sibul Hospital, Malaysia

³Department of Ophthalmology, Kuala Lumpur Hospital, Malaysia

⁴Department of Ophthalmology, Sultan Idris Shah Hospital, Malaysia

⁵Department of Ophthalmology, Sarawak General Hospital, Malaysia

⁶Department of Ophthalmology, Sultanah Bahiyah Hospital, Malaysia

Background

Myopia prevalence is accelerating and poses a critical public health concern. National-level optometry service data offer a valuable opportunity to evaluate temporal trends and demographic factors associated with myopia in real-world clinical settings.

Objective

To examine trends in myopia diagnosis and its associated demographic factors among children attending Ministry of Health (MOH) optometry services in Malaysia from 2020 to 2024.

Methods

This retrospective analysis utilised national optometry census data from MOH Malaysia facilities providing optometry services between 2020 and 2024. All new referrals and walk-in cases of children aged 0–18 years were included. Myopia diagnosis were done by the optometrist, with the definition of refractive error $\leq -0.50D$. Variables analysed included year of encounter, age group (0–12 and 13–18 years), gender, and race (Malay, Indian, Chinese, Bumiputera Sabah and Sarawak). Multivariable binomial logistic regression was used to assess temporal trends and factors associated with myopia diagnosis, with results presented as adjusted odds ratios (OR) and 95% confidence intervals.

Results

A total of 125,261 children were included for analysis. After adjusting age, gender, and race, the odds of myopia increased by approximately 4% per year (OR = 1.04, $p < 0.001$). Adolescents aged 13–18 years had higher odds of myopia than children aged 0–12 years (OR = 1.81, $p < 0.001$) while female children had slightly higher odds of myopia than males (OR = 1.18, $p < 0.001$). Compared to Malay children, Indian (OR = 1.20), Chinese (OR = 1.11), and Bumiputera Sabah and Sarawak (OR = 1.17) children demonstrated higher odds of myopia.

Conclusion

Myopia diagnoses among children attending MOH optometry services increased steadily from 2020 to 2024. Older age, female gender, and race were independently associated with higher odds of myopia. These findings underscore the need for targeted prevention and early detection strategies within public optometry services.

Keywords:

Myopia, paediatric myopia, pediatric eye health

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Title: A Cross-Sectional Investigation Of Binocular Function, Screen Time And Visual Fatigue In Children With Dyslexia

Authors: Suhaida Shahudin ^{1,2}, Sabrina Subri ¹

¹Center of Optometry, Faculty of Health Sciences, Universiti Teknologi MARA, UiTM Cawangan Selangor, 42300 Puncak Alam, Selangor, Malaysia

²Department of Ophthalmology, Level 6, Specialist Complex and Ambulatory Care Service Center, Hospital Kuala Lumpur, 50586 Kuala Lumpur, Malaysia

Background: Dyslexia is a specific learning disorder characterized by difficulties in reading, spelling, and writing. Studies suggested that dyslexic may experience binocular vision abnormalities and visual fatigue symptoms. Therefore, this study aimed to evaluate the visual and binocular vision status of children with dyslexia and examine its association with screen time exposure and visual fatigue.

Method: A cross-sectional study conducted on 137 dyslexic students aged 13 to 19 (M=15.24; SD= 1.75) years. Refractive and binocular vision parameters were performed. In addition, screen time exposure and visual fatigue symptoms were measured using a translated and validated questionnaire (Cronbach's alpha value of 0.8). Screen time and visual fatigue then compared with 83 typically developing students with mean aged of 14.59±1.42 years.

Results: 95% of dyslexic children had best-corrected visual acuity of 6/9 and better at distance and near. Myopia (44%) and astigmatism (59%) being the most common refractive error. The most impaired binocular parameter was lag of accommodation (67%). Exophoria found more at near (29%). Identified binocular vision anomalies included convergence insufficiency, accommodation insufficiency and accommodation infacility. Typically developing students reported significantly higher screen time and visual fatigue scores compared to dyslexia ($p<0.05$), possibly due to differences in near-work demands related to screen time activities engaged. Regression analysis revealed that near point of convergence was a significant predictor of visual fatigue symptoms in dyslexic children ($p<0.001$).

Conclusion: Dyslexic children generally exhibit normal visual acuity, however, deficits in binocular function particularly accommodation and convergence are common. Near point of convergence predicts visual fatigue suggests that these symptoms more due to factors such immature oculomotor control and reduced visuo-attentional capacity, rather than environmental influences like screen time. These results underscore the importance of regular comprehensive eye examinations in dyslexia to enable early detection and management of binocular vision anomalies that may impact reading performance and visual comfort.

Title: Ocular Cicatricial Pemphigoid in a Young Adult: A Case Report

Author: Nur Diana Bt Mohd Zani¹

¹Hospital Kuala Kubu Bharu, Selangor, Malaysia

Purpose: To report a case of Ocular Cicatricial Pemphigoid in a Young Adult

Background:

Ocular Cicatricial Pemphigoid (OCP) is a rare, chronic autoimmune disease affecting the conjunctiva and can result in progressive scarring and irreversible vision loss if not recognised early. It predominantly affects elderly individuals; however, younger patients may present with subtle and nonspecific symptoms, increasing the risk of delayed diagnosis.

Case Report: A 38-year-old male presented to a primary eye care optometry clinic with complaints of mild conjunctival redness, watering, and persistent ocular discomfort. The symptoms had gradually developed over several months. Visual acuity remained normal. Slit lamp examination revealed mild conjunctival hyperaemia and an abnormal strand-like fibrous tissue extending from the bulbar conjunctiva towards the peripheral cornea. The tissue appeared adherent to the conjunctiva and resembled an early pseudopterygium-like extension, raising suspicion of early cicatrising conjunctivitis. Early conjunctival scarring changes such as this may represent the initial stage of ocular cicatricial pemphigoid before more advanced complications develop. No significant corneal opacity or involvement of the visual axis was observed.

Management and Outcome:

Initial management focused on symptomatic relief using preservative-free lubricating eye drops. Given the progressive nature and potential sight-threatening complications of OCP, the patient was promptly referred to an ophthalmologist for further evaluation and initiation of disease-modifying therapy, including topical or systemic corticosteroids and immunosuppressive agents. At subsequent follow-up, the condition remained clinically stable with no evidence of progression.

Conclusion:

This case emphasises the critical role of Primary Eye Care optometrists in the early detection of ocular cicatricial pemphigoid. Recognition of early cicatrising changes and prompt referral to ophthalmology services may help prevent progressive conjunctival fibrosis and long-term visual morbidity associated with ocular cicatricial pemphigoid.

Keywords:

ocular cicatricial pemphigoid; cicatrising conjunctivitis; autoimmune ocular disease

Title: Exploring Self-Esteem As A Mediator Between Family Relationship and Mental Health In Low Vision Patients With Diabetic Retinopathy

Authors: Siti Syahidah Binti Sobri¹, Dr. Sana Anwar Lashari²

¹Department of Ophthalmology, Hospital Sultanah Bahiyah, Kedah, Malaysia

²School of Applied Psychology, Social Work and Policy, Universiti Utara Malaysia, Kedah, Malaysia

Background:

Low vision resulting from diabetic retinopathy is frequently associated with psychological distress, including depression, anxiety, and stress. Psychosocial factors such as self-esteem and family relationships play a crucial role in patients' adaptation to chronic visual impairment. However, limited evidence in the Malaysian context has examined the mediating role of self-esteem in the relationship between family relationships and mental health outcomes. This study aimed to investigate whether self-esteem mediates this relationship among low vision patients with diabetic retinopathy.

Methods:

A cross-sectional study was conducted among 52 low vision patients diagnosed with diabetic retinopathy at Hospital Sultanah Bahiyah, Kedah, using purposive sampling. Data were collected using validated instruments: Rosenberg Self-Esteem Scale, Brief Family Relationship Scale, and Depression Anxiety Stress Scale. Statistical analyses were performed using SPSS version 26, including descriptive statistics, Pearson correlation, multiple linear regression, and mediation analysis using the Sobel test.

Results:

Participants reported moderately high levels of self-esteem and positive family relationships. Multiple regression analysis indicated that self-esteem was a significant predictor of mental health outcomes ($\beta = -0.535$, $p < 0.001$), whereas family relationships were not a significant direct predictor ($\beta = -0.017$, $p > 0.05$). The model explained 29.6% of the variance in mental health outcomes ($R^2 = 0.296$). Mediation analysis demonstrated that family relationships significantly predicted self-esteem ($a = 0.355$), and self-esteem significantly predicted mental health outcomes ($b = -0.676$). The direct effect of family relationships on mental health outcomes was not significant ($c' = -0.015$). The Sobel test confirmed a significant indirect effect ($z = -2.805$, $p = 0.005$), indicating that self-esteem fully mediates the relationship between family relationships and psychological distress.

Conclusion:

Self-esteem plays a significant mediating role in linking family relationships and mental health outcomes among low vision patients with diabetic retinopathy. These findings highlight the importance of incorporating self-esteem enhancement and family-based interventions into low vision care. However, the relatively small sample size may limit the applicability of the findings and future research with larger samples is recommended.

Keywords:

Self-esteem, family relationships, mental health, low vision, diabetic retinopathy

Title: Effectiveness of SOOA in Optometry Census Reporting: A Comparison with Conventional Logbook Method

Authors: Syahidah binti Zulkifli¹, Nur Syahirah binti Abdul Rahman¹, Mohd Faizal bin Abd Rahman², Mohd Khan bin Abd Rahman³

¹Unit of Optometry, Department of Ophthalmology, Hospital Kuala Lipis, Malaysia

²Commerce Department, Politeknik Muadzam Shah, Malaysia

³Unit of Information Technology, Hospital Kuala Lipis, Malaysia

Background:

Sensus Optometri Oftalmology Autosmart (SOOA) is an automated digital platform designed to capture patient data in real time and generate census reports efficiently. This study aimed to evaluate the effectiveness of SOOA compared with the conventional logbook method in reporting general optometry census data.

Methods:

A retrospective cross-sectional study was conducted at Hospital Kuala Lipis. The mean time required to record census data for 30 patients (in seconds) and to generate monthly summary reports from January to December 2025 (in minutes) were compared between SOOA and the logbook method. Data accuracy was assessed through inter-rater analysis, in which three examiners independently read and identified patient names recorded in the logbook. The proportion of correctly identified entries was calculated, and differences among examiners were analysed using Cochran's Q test.

Results:

There was no significant difference in the time required to record census data between the logbook method and SOOA, $t(29) = -1.46$, $p = .154$ (mean difference = -3.40 seconds; $SD = 12.74$; 95% CI: $-8.16, 1.36$). In contrast, SOOA significantly reduced the time required to generate monthly summary reports compared to the logbook method, $t(11) = 31.83$, $p < .001$ (mean difference = 27.14 minutes; $SD = 2.95$; 95% CI: $25.26, 29.01$), representing an approximate 96% reduction (28 minutes vs 1 minute). Inter-rater analysis demonstrated that only 63.3% to 73.3% of patient names were correctly identified from the logbook, indicating that up to one-third of records were prone to misinterpretation. No significant difference was observed among examiners, $Q(2) = 1.75$, $p = .417$, suggesting that these errors were consistent across readers rather than attributable to individual performance.

Conclusion:

SOOA markedly improves efficiency in generating optometry census reports while minimizing errors associated with manual record interpretation. The findings highlight inherent limitations of the logbook method and support the adoption of digital systems to enhance data accuracy and clinical workflow.

Keywords:

Optometry Census, Optometry, Application, Efficiency

TITLE: LIGHT OF HOPE IN KERATOCONUS

Suhaida Binti Shahudin¹

¹Department of Ophthalmology, Hospital Kuala Lumpur

Purpose: To report a case of keratoconus progression

Case Report: A 14-year-old boy with bilateral keratoconus was referred to Hospital Kuala Lumpur (HKL) for further management. At presentation, the right eye had corneal scar with counting fingers vision, while the left eye showed advanced keratoconus with best-corrected visual acuity (BCVA) of 6/21. Progressive astigmatism had been documented since the age of 10. There was no family history of keratoconus. **Results:** The left eye was initially managed with contact lenses, achieving BCVA of 6/7.5, while in the right eye, due to poor visual potential, it was undergoing penetrating keratoplasty (PK) resulting in postoperative refraction of +1.00/-2.00 × 65 and BCVA of 6/7.5. After ten years of contact lens wear, the left eye also required PK. Postoperative refraction was +3.00/-11.00 × 85 with BCVA of 6/7.5, followed by suture removal to reduce astigmatism. During long-term follow-up into adulthood, both eyes demonstrated increasing astigmatism despite stable graft clarity. Eight years after PK, the right eye refraction increased to +3.50/-6.00 × 60 (VA 6/7.5), while the left eye achieved plano/-4.00 × 70 with VA 6/6 seven years postoperatively. Even though, the refraction increasing the patient was very thankful with the current vision. **Conclusion:** Contact lens may be an option for early to moderate cases, however in advanced case, successful penetrating keratoplasty is the best option for keratoconus to get sustain and significant visual improvement. However, as the progression of keratoconus is still present following the age increment, the excellent long-term visual rehabilitation is therefore essential to optimise patient care in this case.

Keywords: visual acuity, best-corrected visual acuity, penetrating keratoplasty

References

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Title: Visual Function Outcomes In Paediatric Cerebral Visual Impairment Following 12–24 Months Of Intervention At A Tertiary Referral Centre

Mohd Hedir Ali¹, Nursyazilah Samsuden¹, Lily Muhanifa Mustafa¹

¹Department of Ophthalmology, Hospital Kuala Lumpur

Introduction:

Cerebral visual impairment (CVI) is a brain-based visual disorder commonly affecting young children, where visual dysfunction arises from impaired processing of visual information despite structurally normal eyes. Early support may influence visual function development.

Purpose:

To describe longitudinal changes in CVI range and phase in children with cerebral visual impairment over a 12–24-month period, and to report clinical characteristics observed in children with and without visual improvement.

Methodology:

A retrospective longitudinal review was conducted on children with CVI assessed in 2023 and re-evaluated after 12–24 months. Visual outcomes were described according to developmental stage, neurological profile, and timing of intervention.

Results:

At follow-up, 6 children (43%) demonstrated improvement in CVI range, while 8 children (57%) showed no improvement. Improvement was observed among younger children, those in earlier CVI phases, and those who received earlier intervention. Some children progressed from Phase 1 to Phase 2 or showed measurable gains within the same phase.

Children without improvement included those with ongoing seizures, later initiation of intervention, older age at intervention, end-phase CVI, and co-existing conditions such as autism, severe neurological impairment, and significant ocular comorbidities (e.g., retinopathy of prematurity and pseudophakia). Children in Phase 3 at baseline, particularly adolescents, demonstrated minimal or no change over time.

Conclusion:

Over a 12–24-month period, variability in visual function outcomes was observed among children with CVI. Descriptive patterns were noted across age groups, CVI phases, timing of intervention, and clinical characteristics.

Keywords:

Cerebral visual impairment, CVI range, paediatric visual outcomes

References:

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TRANSLATION AND FACE VALIDATION OF PEDIATRIC EYE QUESTIONNAIRE (PEDEYEQ) INTO MALAY LANGUAGE

Author : Siti Hajar ARazak, Siti Azrin Ab.Hamid, Md Mustafa Md-Muziman-Syah, Afzam Shah Arahim, Ismail Shatriah, Hussein Waheeda-Azwa.

Department of Ophtalmology and Visual Science, School of Medical Science, Universiti Sains Malaysia, Kubang Kerian, 16150 Kelantan, Malaysia.

BACKGROUND: Pediatric Eye Questionnaire (PedEyeQ) English version was published and validated in 2019 to assess eye-related quality of life (ER-QOL) and functional vision in children with eye conditions. PedEyeQ consists of Child, Proxy (5–11 and 12–17 year old versions) and Parent components. This study aimed to translate and face validated PedEyeQ into malay language to be used among children with myopia.

METHOD: The questionnaire consisted of 40 questions across four domains and was translated into Malay for local children. 4 language experts were recruited to do the forward backward translation into Malay language. Another 3 expert (pediatric opthamologist and optometrist) to analyse the language usage and words term. Then, face validity index (FVI) was done by 30 children partipants and was analysed using Microsoft excel.

RESULT : The item-level face validity index (I-FVI) was calculated using the universal agreement method of the scale-level face validity index (S-FVI/UA). Each question was required to achieve an I-FVI value greater than 0.83 to ensure that the overall scale-level face validity index, using the averaging method (S-FVI/Ave), exceeded 0.91. However, several items in the PedEyeQ version for children aged 5–11 years did not meet this threshold, resulting in an S-FVI/Ave below 0.91. Therefore, items with an S-FVI/UA value of less than 0.83 were removed from the questionnaire. While for the PedEyeQ version for children aged 12 to 17 years, all items achieved an I-FVI above the cut-off value of 0.83, with an S-FVI/Ave of 0.92. All questions reached universal agreement and were considered clear and understandable for the children.

CONCLUSION : The final assessment of PedEyeQ items by respondents is important to ensure the validity of the questionnaire. The translation and face validity study confirmed that the Malay version of PedEyeQ is ready for the next phase of the translation process.

KEYWORDS : PedEyeQ, Quality of Life, Face Validity

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Title: Visual-Information Processing and Autism Severity in Children: A Cross-Sectional Study

Authors: Ayu Nazirah Ab Rawi, Naufal Nordin, Mohd `Izzuddin Hairol, Woi Pui Juan, Mahadir Ahmad

Faculty of Health Sciences, Centre for Community Health Studies (ReaCH), Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia

Background:

Visual information processing includes visual-motor integration (VMI), visual perception (VP), and visual-spatial (VS) abilities. These skills play a critical role in children's academic achievement and everyday functioning. Children with Autism Spectrum Disorder (ASD) are known to experience challenges in these visual domains. However, it is still unclear how these skills relate to each other. Understanding how perceptual and motor-based visual skills connect with spatial ability may help explain the visual challenges among children with ASD. This study compared visual processing skills between children with ASD and typically developing children and examined how VMI, VP, and VS are related within the ASD group.

Methods:

A total of 56 children participated in this cross-sectional study, including 28 children with ASD and 28 typically developing children matched for age, gender, and intelligence quotient. The sample comprised 36 males and 20 females, with a mean age of 7.78 ± 0.79 years. VMI skill was evaluated using the Beery-Buktenica Developmental Test of Visual-Motor Integration, Sixth Edition (Beery-VMI). Motor-reduced VP was assessed using the Developmental Test of Visual Perception, Third Edition (DTVP-3), while VS ability was measured using the Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V).

Results:

Typically developing children demonstrated significantly higher performance than children with ASD in VMI (97.14 ± 8.92 vs. 84.07 ± 8.65 ; $t(54) = 5.57, p < .01$) and VP (104.93 ± 12.95 vs. 96.93 ± 12.80 ; $t(54) = 5.57, p = .02$). In contrast, no significant group difference was observed in VS skills (105.75 ± 12.85 vs. 101.11 ± 17.00 ; $t(54) = 5.57, p = .25$). Within the ASD group, moderate positive correlations were found between VMI and VS ($r = .537, p = .003$) and between VP and VS ($r = .467, p = .012$). Multiple linear regression analysis revealed that VS was a significant predictor of VMI performance ($\beta = .489, p = .019$), explaining approximately 30% of the variance in VMI scores ($R^2 \approx .30$), whereas VP and autism severity were not significant predictors.

Conclusion:

Children with ASD exhibit marked difficulties in VMI and VP compared to their typically developing peers, while VS abilities appear relatively preserved. Importantly, VS skills

emerged as a key contributor to VMI performance within the ASD group. These findings underscore the heterogeneity of visual processing profiles in ASD and highlight the clinical value of domain-specific visual assessments. Incorporating targeted evaluation of visual-spatial skills may enhance intervention planning and functional support for children with ASD.

Keywords:

Autism Spectrum Disorder, Visual-Motor Integration, Visual Perception, Visual-Spatial, children

Title: The Demographic and Ocular Biometry of Patients Undergoing Cataract Surgery at MOH Hospitals in Sarawak.

Authors: Siti Khadijah binti Osman@Othman¹, Nazaryna Binti Marzuki¹, Nor Sabrina Binti Sulaiman², Liong Swee Lee³, Ahmad Daniel Bin Rosdi⁴, Mohamed Hazrul Alif Bin Mohamed Kamaruddin⁵

¹Department of Ophthalmology, Sarawak General Hospital, Malaysia

²Department of Ophthalmology, Sri Aman II Hospital, Malaysia

³Department of Ophthalmology, Miri Hospital, Malaysia

⁴Department of Ophthalmology, Limbang Hospital, Malaysia

⁵Department of Ophthalmology, Sarikei Hospital, Malaysia

Background:

Sarawak is a multiethnic state with unique patient's demography profile. This study aimed to examine the associations between race, age and gender with ocular biometry profile of patients undergoing cataract surgery at MOH hospitals in Sarawak.

Methods:

This prospective cross-sectional study analysed ocular biometry data from patients who were planned for cataract surgery in five tertiary MOH hospitals in Sarawak (Sarawak General Hospital, Sarikei Hospital, Sibu Hospital, Bintulu Hospital, Miri Hospital) during the first two weeks of January 2026. Parameters evaluated included axial length (AL), average keratometry (AK), corneal astigmatism (CA), and anterior chamber depth (ACD). Race was categorised as Malay, Chinese, and Bumiputera Sarawak. Multiple linear regression analyses were conducted for each ocular biometry parameter to examine its association with race, age, and gender.

Results:

A total of 236 patients were included in the analysis. In multivariable regression analysis, increasing age was independently associated with shorter AL ($\beta = -0.034$ mm per year, $p < 0.001$). The Chinese had significantly longer AL mm compared with Malay patients ($\beta = 0.669$ mm, $p = 0.001$). No significant AL difference was observed between Bumiputera Sarawak and Malay patients. Females demonstrated significantly shorter AL ($\beta = -0.547$ mm, $p < 0.001$), steeper AK ($\beta = 0.585$ D, $p = 0.004$) and shallower ACD ($\beta = -0.175$ mm, $p = 0.028$).

Conclusions:

Racial differences in ocular biometry were limited primarily to AL. Other ocular biometry parameters were more strongly influenced by age and gender than by race. These findings underscore the importance of demographic factors in ocular biometry assessment and may inform cataract surgery planning in multiethnic populations.

Keyword:

ocular biometry; multiethnicity; Borneo eye study

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The Development of a Bahasa Malaysia Version of the PedEyeQ and Parents' Instructions about Their Child's Visual Aids.

Syarmilla Che Shamsudin¹, Rossaidah Mustapa¹, Nur Ain Husna Abd Hamid², Muhammad Afzam Shah Abdul Rahim³

¹Department of Ophthalmology, HRPZ II, Kota Bharu

²Optometry Unit, Klinik Kesihatan Bachok

³Department of Optometry and Visual Science, Kulliyyah of Allied Health Science, IIUM, Kuantan

Background: Understanding parental perspectives is vital for effective clinical management of pediatric refractive errors. This study aims to translate and validate a Bahasa Malaysia (BM) version of the Pediatric Eye Questionnaire (PedEyeQ), specifically the 'Parental Instructions regarding child's visual aids' domain. Providing a linguistically suitable instrument allows Malaysian clinicians to accurately evaluate parental experiences and obstacles concerning their children's use of corrective lenses.

Methods:

This methodical investigation involved a multi-stage process: forward-backward translation, psychometric validation, and reliability testing. An expert panel (comprising an optometrist, an ophthalmologist, and linguists) evaluated the BM-PedEyeQ for content validity. A pilot study was conducted with 30 Malay-speaking parents of children using visual aids. Statistical analysis was performed to determine internal consistency (Cronbach's alpha) and content validity indices (I-CVI and S-CVI) to assess the clarity and relevance of the BM version.

Results:

The translation phase successfully adapted technical terms to reflect local nuances in visual aid maintenance. Psychometric analysis demonstrated high internal consistency for the BM-PedEyeQ (Visual Aids domain), with a Cronbach's alpha exceeding 0.70 [0.978] .

Conclusion:

The Bahasa Malaysia version of the PedEyeQ (Parental Instructions/Visual Aids) is a statistically reliable and linguistically valid instrument for the Malaysian clinical setting. This validated tool enables eye care providers to identify specific barriers to compliance, ultimately improving communication and pediatric vision outcomes in Malaysia.

Acknowledgement : We would like to thank the Director General of Health Malaysia for the permission to publish this article. This study is self funded and we declared no financial and conflict of interest

Keywords: Pediatric Eye Questionnaire (PedEyeQ), translation, reliability, visual aids

Title: Agreement of JPJ Colour Vision Screening And Ishihara In Kemaman Driving License Candidates; Pilot Study.

Authors: Aziimah Awang Abd Rahman¹, Fadhlina Mohd Nor¹

¹Department of Ophthalmology, Hospital Kemaman, Malaysia.

Background:

In Malaysia, initial colour vision screening is conducted at the Road Transport Department (JPJ) using screening tools determined by the department, while confirmatory testing is performed in hospitals using the Ishihara colour vision test, as stated in Medical Examination Standards For Driver's Licensing¹. Clinical observations at Hospital Kemaman indicate inconsistencies between screening results at JPJ and Ishihara test outcomes. Some candidates who fail JPJ screening subsequently pass the Ishihara test, while others who pass initial screening are still referred for further assessment. This raises concerns regarding the sensitivity and agreement of the screening tools used.

Objective:

This study aims to evaluate the level of agreement between colour vision screening tools used at JPJ and Ishihara testing conducted by optometrists at Hospital Kemaman.

Methods:

This is a retrospective cross-sectional study. Existing clinical and referral records of driving licence subjects who failed colour vision screening at JPJ and underwent Ishihara testing at Hospital Kemaman were reviewed. All the failed JPJ screening were retested using Ishihara in Hospital Kemaman. The kappa coefficient of reliability was calculated using SPSS version 27.

Results:

This study involved 42 subjects to evaluate the agreement of colour vision screening results between JPJ and hospital-based optometrists, age between 16 and 47 years old, consist of 36 males (81.8%) and 6 females (18.2%). The Cohen's kappa value of 0.00 (95 % CI, 0.00) indicates no agreement beyond chance between the two screening outcomes.

Conclusion:

This finding suggests a significant inconsistency in colour vision screening results between JPJ and optometrists, highlighting potential differences in screening methods, testing conditions, examiner training, or interpretation of results. The lack of agreement underscores the need for standardisation of colour vision screening protocols, clearer referral guidelines, and improved inter-agency collaboration to ensure accurate and consistent assessment, particularly for driving fitness and safety-related decisions.

Keyword:

colour vision screening, colour, driving, driving license

References

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Title: Prevalence of Visual Function Status in Primary School Students with Special Needs in Kelantan, Malaysia

Authors: Nur Mizan Hanaffi¹, Syarmilla Che Shamsudin¹, Nur Ain Husna bt Abd Hamid^{1,3}, Muhammad Afzam Shah Abdul Rahim²,

¹Department Ophthalmology, Hospital Raja Perempuan Zainab II

²Bachok Health Clinic, Bachok

³Department of Optometry and Visual Science, Kuliyah of Allied Health Science, IIUM

Background:

Children with disabilities are at a significantly higher risk of visual impairment (VI) compared to the general population. Early detection is critical as these children rely heavily on visual input for academic and social development. This study investigated the visual function status of special needs students (primary school level) during an Outreach Programme across all districts in Kelantan from 2023 to 2025.

Methods:

In this cross-sectional study, vision screening was conducted on 1,657 students with special needs aged 8 to 12 years. Assessments included visual acuity (using ICD-11 criteria for VI), colour vision testing, and orthoptic evaluation. Descriptive analysis was used to categorize visual function, and the Chi-Square Test compared the status across the three-year study period.

Results:

A total of 1,556 students (93.9%) had no VI, while 101 (6.1%) were diagnosed with VI according to ICD-11 codes. Statistical comparisons across years showed no significant difference in VI distribution $\chi^2(8, N=1657)=10.55, p=0.229$. Among the 101 students with VI, 68.31% were mild, 26.73% moderate, 1.98% severe, and 2.97% presented with blindness. Refractive errors were found in 101 students (6.1%), primarily consisting of myopia (37.8%), astigmatism (51.1%), and hyperopia (11.1%). Colour vision defects (2.4%) were predominantly red-green deficiencies, and binocular vision anomalies (2.1%) included strabismus and convergence insufficiency.

Conclusion:

Ocular morbidities, particularly refractive errors and binocular vision anomalies, are prevalent among children with special needs. While the prevalence of VI remained stable over three years, the high proportion of treatable conditions underscores the need for mandatory, comprehensive ocular examinations for this vulnerable population. Early intervention is essential to prevent visual deficits from compounding existing developmental disabilities.

Keywords:

Visual impairment, special needs, refractive error, Kelantan, prevalence

Title : A Case Study Of Managing A Cerebral Visual Impairment (CVI) Child With History Of Epilepsy

Authors: Rahayu Ab Hadi¹, Syarmilla Che Shamsudin¹, Muhammad Afzam Shah Abdul Rahim²

¹Department Ophthalmology, Hospital Raja Perempuan Zainab II

²Department of Optometry and Visual Science, Kulliyyah of Allied Health Science, IIUM

Purpose:

To report a case of Managing A Cerebral Visual Impairment Child with history of Epilepsy. Cerebral Visual Impairment (CVI) is the leading cause of paediatric visual dysfunction, resulting from damage to the brain's visual processing pathways. Epilepsy is a frequent comorbidity that may adversely affect neurodevelopmental outcomes, yet the specific relationship between seizure frequency and functional vision progression remains poorly understood

Case report:

This case report follows an 8-month-old boy referred in March 2022 with a history of spastic quadriplegic cerebral palsy secondary to prematurity, intraventricular haemorrhage, and arrested hydrocephalus. Functional vision was longitudinally assessed from age 8 months to 4 years and 3 months using the CVI Range (Roman-Lantzy).

Results: The longitudinal data revealed a descriptive trend where visual behaviours fluctuated in tandem with seizure activity. During periods of high seizure burden, including daily episodes, the patient demonstrated minimal visual engagement, with functional vision regressing to CVI Range 1–2. Conversely, as seizure frequency reduced to once per year in mid-2023, there was a noticeable improvement to CVI Range 4–5, reaching Range 5–6 by late 2023. Following a relapse in May 2024 that dropped the range back to 1–2, the patient achieved one year of seizure freedom in 2025. This sustained control was associated with a more organized EEG background and a recovery of functional vision to CVI Range 5–6.

Conclusions: A reduction in seizure frequency was temporally associated with improved visual behaviours. These findings suggest a descriptive trend where seizure stability may be a prerequisite for functional vision progress. Clinicians should remain vigilant in monitoring seizure activity and consider early referral to epilepsy specialists to optimize care for children with CVI.

Keywords

Cerebral Visual Impairment (CVI), CVI Range, Epilepsy

Title : Visual Function Anomalies and Associated Demographic Factors Among Students with Learning Difficulties in Kuala Muda, Kedah

Authors: Nurul Hazlina Darus¹, Dr. Sumithira Narayanasamy², Dr. Naufal Nordin³

¹Optometry & Vision Science Programme, Faculty of Health Sciences, Centre for Community Health Studies (ReaCH), Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300, Kuala Lumpur, Malaysia

Background :

Children with learning difficulties are at increased risk of undetected visual function anomalies that may impair reading ability, visual attention, and academic performance, yet these deficits remain frequently under-recognised in school settings. This study aimed to determine the prevalence of visual function anomalies and identify demographic factors associated with visual impairments among students with learning difficulties in Kuala Muda, Kedah.

Methods :

A cross-sectional study was conducted among 90 Malay students aged 8–12 years enrolled in Special Remedial Education Classes. Comprehensive visual assessments included distance and near visual acuity, refractive error assessment, accommodative amplitude, near point of convergence (NPC), horizontal heterophoria, and stereoacuity measured using the TNO test. Visual anomalies were classified according to established clinical norms for accommodative and binocular vision parameters. Statistical analysis was performed using SPSS, including multivariate regression to determine demographic predictors of visual function outcomes.

Results :

Visual function anomalies were highly prevalent. Poor near visual acuity was the most common finding (93.3%, n=84), followed by poor distance visual acuity (81.1%, n=73), convergence insufficiency (55.6%, n=50), accommodation insufficiency (41.1%, n=37), and reduced stereoacuity (40.0%, n=36). Multivariate regression analysis ($R^2=0.124$, $p=0.027$) identified age as a significant predictor of distance visual acuity ($\beta=-0.101$, $p=0.011$, 95% CI $[-0.179, -0.023]$), while paternal education level significantly predicted stereoacuity performance ($\beta=-0.160$, $p=0.047$, 95% CI $[-0.318, -0.002]$).

Conclusion :

Visual function anomalies were highly prevalent among students with learning difficulties in Kuala Muda, highlighting a substantial risk of undetected visual deficits that may influence learning performance. These findings emphasise the importance of implementing systematic visual screening and multidisciplinary assessment in primary school settings to facilitate early identification and targeted intervention. However, the inclusion of only Malay students may limit the generalisability of the findings to other ethnic populations.

Keywords :

Visual function anomalies, learning difficulties, children, binocular vision, accommodative dysfunction

Title: A Case Study Of Left Superior Oblique Palsy Secondary To Traumatic Brain Injury

Authors: Nur Adibah Yahaya¹, Norliza Mohamad Fadzil¹

¹ Optometry and Vision Science Programme, (ICaRehab), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.

Purpose:

To report a case of left superior oblique palsy secondary to traumatic brain injury (TBI) following a motor vehicle accident.

Case Report:

A 34-year-old Malay man presented to the UKM Optometry clinic with a complaint of persistent vertical diplopia in primary position, and horizontal diplopia on the right gaze that began four months after a motor vehicle accident. He sustained a severe TBI with a documented left frontal subdural hematoma. The patient denied ocular pain, redness, or floaters. On initial examination, unaided visual acuity (VA) was 6/7.5 in the right eye (RE) and 6/12 in the left eye (LE). Cover test revealed left hypertropia with exophoria at both distance and near. Prism cover test measured 10 prism diopters (PD) base-down and 12 PD base-in over the LE at distance, and 4 PD base-down and 9 PD base-in over the LE at near. Extraocular movements showed vertical diplopia reported in primary position, with limitation of LE on dextrodepression.

Results: Subjective refraction revealed myopia, and best-corrected VA improved to 6/6 in both eyes; however vertical diplopia persisted. Hess chart demonstrated underaction of the left superior oblique muscle. Prism correction was prescribed to eliminate diplopia in the primary position, consisting of 2 PD base-up in the RE and 2 PD base-down in the LE incorporated into the spectacle lenses. Following prism wear, the patient reported resolution of diplopia and achieved single, comfortable binocular vision. The patient was advised to wear the spectacles full-time and to use compensatory head movements in different gaze positions.

Conclusion: Superior oblique palsy may develop secondary of TBI and can present with persistent vertical diplopia despite good VA. Comprehensive binocular vision assessment, including Hess chart, is essential for accurate diagnosis. Prism correction is an effective non-surgical management option, providing significant symptomatic relief and improving quality of life.

Title: SITA Faster 24-2C in Visual Field Testing: A Rapid Revolution

Authors: Mahani Mohd Salleh, Nurul Hafizah Amil Bangsa, Suriana Suaibun
Ophthalmology Department, Hospital Putrajaya

Introduction:

SITA Standard 24-2 has long been the cornerstone of visual field testing in Malaysia's Glaucoma Clinical Practice Guidelines (2018). However, this procedure is time-consuming and lacks sensitivity in detecting central visual field defects which is now recognised to appear even in early glaucoma. The latest innovation, SITA Faster 24-2C marks a transformative shift. By incorporating 10 additional central test points and significantly cutting down test time, it paves the way for a more efficient clinical workflow.

Objectives:

This review synthesises evidence comparing SITA Faster 24-2C with SITA Standard 24-2 and SITA Standard 10-2, focusing on central field sensitivity, test duration, reliability and clinical suitability for early glaucoma and glaucoma suspect.

Method:

A narrative review was conducted using PubMed to identify studies published up to 2025. Search terms included *visual field OR perimetry OR glaucoma OR neurology OR neuro-ophthalmology AND 24-2C OR SITA Faster*. Out of 61 identified records, seven studies met the inclusion criteria after title and abstract screening. Eligible studies included English-language cohort, cross-sectional and case series evaluating SITA Faster 24-2C.

Results:

SITA Faster 24-2C demonstrates strong concordance with SITA Standard 10-2 in detecting early glaucomatous changes involving the central field. It shows comparable global indices to SITA Standard 24-2 in glaucoma suspects and early glaucoma. Across included studies, SITA Faster 24-2C consistently demonstrated shorter test duration compared to other strategies.

Conclusions:

SITA Faster 24-2C overcomes the key limitations of SITA Standard 24-2 in early glaucoma and glaucoma suspect diagnosis with greater central field sensitivity and shorter test duration. These compelling advantages support its recommendation as an alternative to SITA Standard 24-2, establishing SITA Faster 24-2C as a new benchmark for visual field testing.

Keywords:

SITA Faster 24-2C; SITA Standard 24-2; SITA Standard 10-2; Visual Field; Glaucoma

Title: Effectiveness of School Health Programme Referrals in Detecting Refractive Errors among School Children in Bachok, Kelantan

Authors: Nur Ain Husna binti Abd Hamid¹, Syarmilla binti Che Shamsudin², Nurulain binti Mat Zin³, Muhammad Afzam Shah bin Abdul Rahim⁴

¹ Klinik Kesihatan Bachok, Kelantan, Malaysia

² Hospital Raja Perempuan Zainab II Kota Bharu, Kelantan, Malaysia

³ Hospital Sultan Ismail Petra Kuala Krai, Kelantan, Malaysia

⁴ Department of Optometry and Visual Science, Kulliyah of Allied Health Sciences, International Islamic University Malaysia

Background

Refractive errors represent a leading cause of visual impairment among school children, with the potential to adversely affect academic achievement and development. In Malaysia, the national School Health Programme incorporates vision screening with referral pathways to optometry services. However, evidence regarding the specific impact and outcomes of these referrals at the district level, particularly in Bachok, remains limited. This study aimed to evaluate the effectiveness of the School Health Programme referral system in detecting refractive errors among school children within the district of Bachok, Kelantan, Malaysia.

Methods

A descriptive cross-sectional study was conducted using secondary data from the School Health Programme vision screening records and subsequent optometry assessments between 2023 and 2025. The study sample comprised school children who failed the initial vision screening and were subsequently referred for a comprehensive optometry assessment. Data on screening outcomes, referral attendance, visual acuity, and refractive error diagnoses were analysed descriptively by using IBM SPSS Statistics, with results presented as frequencies and percentages.

Results

Out of 10,105 school children screened, 236 (2.34%) failed the vision screening. From this group, 200 children (84.75%) were formally referred to optometry services. Of those referred, 133 (66.5%) attended their appointment. Refractive errors were diagnosed in 113 children, yielding a detection rate of 85 % among attendees. Detection rates increased over time from 15.9% in 2023 to 25.7% in 2024 and 58.4% in 2025. Types of refractive error were categorized as simple myopia, compound myopic astigmatism, simple hyperopia and mixed astigmatism, and the outcome was 41.4%, 29.3%, 3.8% and 10.5% respectively.

Conclusion

The referral pathway within the School Health Programme proved effective in identifying refractive errors among children who attended optometry services in Bachok. To maximise the programme's public health impact, future efforts should focus on strengthening referral follow-up mechanisms and improving attendance rates following school-based vision screening.

Keywords

School Health Programme, refractive error, vision screening, optometry referral, school children

Title : Inter-professional agreement in diagnosis and referral decisions between optometrists and ophthalmologists in Malaysia

Authors

Duratul 'Ain binti Hussin ¹, Siti Khadijah binti Osman², Nurul Syafiqah binti Abdul Hadi ³, Nur Ayuni binti Mara Kasmedee ⁴, Nur Diana binti Mohd Zani ⁵, Nur Hani Asmira Binti Mohd Amli⁶

Affiliation

¹ Allied Health Sciences Division, Ministry of Health Malaysia, Putrajaya, Malaysia

² Hospital Umum Sarawak, Kuching, Malaysia

³ Klinik Kesihatan Lahad Datu, Sabah, Malaysia

⁴ Klinik Kesihatan Kuala Lumpur, WP Kuala Lumpur, Malaysia

⁵ Hospital Kuala Kubu Baru, Selangor, Malaysia

⁶ Klinik Kesihatan Jalan Angsana, Pulau Pinang, Malaysia

Background:

Optometrists are primary eye care practitioners who frequently encounter patients with a variety of ocular conditions. Their ability to accurately diagnose eye disease and determine appropriate referral to ophthalmologists is fundamental to efficient eye health service delivery. This study evaluated inter-professional agreement between optometrists and ophthalmologists in diagnosing ocular conditions and making referral decisions using image-based assessment.

Methods:

This was a cross-sectional study undertaken during Primary Eye Care Seminar held in July 2025. Optometrists were invited to assess a set of 30 anonymised ocular and fundus images from their own devices. For each image, participants provided a primary diagnosis and a management decision within a 30-minute time limit. A senior Ophthalmologist reviewed the same images and provided primary diagnosis and referral decision masked to the participants' responses. Principal investigator independently scored the ophthalmologist's agreement with optometrist diagnoses and referral decisions, based on an established protocol. The study obtained MREC approval (NMRR-19-4126-45858) prior to the data collection.

Results:

Twenty-seven optometrists participated, 85.2% were female, with a mean age of 32.5 ± 3.9 years (range 27–40). Participants were from Ministry of Health hospitals and clinics, private

optometry practice, and university hospitals; the majority had more than 6 years of clinical experience. Diagnostic concordance ranged from 25.9% (95% CI 13.2%–44.7%) to 100.0% (95% CI 87.5%–100.0%), with wider confidence intervals observed for conditions with lower agreement. Across 753 referral decisions, overall concordance was 76.2%. Perfect referral agreement was observed for several sight-threatening conditions such as retinal detachment, while lower concordance occurred in milder anterior segment disorders.

Conclusion:

Diagnoses and referral agreement between optometrists and ophthalmologists was generally high, despite variable diagnostic concordance. These findings support the role of optometrists in primary eye care and highlight areas for targeted diagnostic training to further strengthen eye care pathways in Malaysia.

Keywords:

Optometrists, primary eye care, referral decision, inter-professional agreement, sight-threatening conditions

Title: Rapid Guide in Colour Vision Management for Medical and Health Practitioners; A Pilot Study

Authors: Aziimah Awang Abd Rahman¹, Fadhlinah Mohd Nor¹, Mazita Mahmud¹

¹Department of Ophthalmology, Hospital Kemaman, Malaysia.

Background

Accurate interpretation of colour vision assessment is essential in clinical practice, particularly for medical certification involving driving licences, safety-critical occupations and industrial placement. However, variability in understanding colour vision terminology and diagnostic categories among medical officers often leads to inconsistent clinical decisions and uncertainty in medical reporting. Common terms such as *protanopia*, *deutanopia*, and *tritanopia* are frequently misunderstood, particularly in relation to their functional implications and fitness-to-work or fitness-to-drive decisions. This knowledge gap may result in inappropriate clearance or unnecessary restriction, with potential implications for patient safety and public health. To address this issue, a concise, visual and evidence-based clinical support tool, the Rapid Guide in Colour Vision Management, was developed to standardise interpretation and enhance medical officers' understanding of colour vision assessment.

Objective

This study aimed to evaluate the effectiveness of the Rapid Guide as a pilot innovation project.

Methods

A pre-test and post-test design was employed involving seven medical officers. As this was a pilot study with a small sample size ($n=7$), data analysis focused primarily on descriptive statistics and trend analysis. Pre-test and post-test scores were analysed using percentage distribution, median values and individual score changes. A non-parametric Wilcoxon signed-rank test was applied to explore the direction of change following the intervention.

Result

Descriptive analysis demonstrated a marked improvement in colour vision knowledge after implementation of the Rapid Guide, with median scores increasing from 64% in the pre-test to 100% in the post-test. All participants showed improvement in post-test scores. The Wilcoxon signed-rank test indicated a statistically significant difference between pre-test and post-test results ($Z = -2.371$, exact $p = 0.016$), suggesting a positive effect of the intervention.

Conclusion

Although limited by a small sample size, this pilot study demonstrated consistent improvement across all participants. The findings suggest that the Rapid Guide in Colour Vision Management has the potential to improve medical officers' understanding and consistency in colour vision interpretation, supporting safer and more standardised clinical decision-making. Further evaluation with a larger sample size is recommended.

Keywords: colour vision management, colour vision understanding,

Title : Knowledge, Attitude and Practice on Contact Lens Use and Care : A Survey of University Students in Kota Kinabalu, Sabah

Authors : Nurul Fara Idayu Binti Ishak¹, Diana Binti Mohamed¹

¹Unit of Optometry, Department of Ophthalmology, Hospital Queen Elizabeth Sabah, Malaysia

Background:

Unregulated online platforms and street markets look appealing for university students to purchase contact lenses without a valid prescription and eye examinations from optometrists. This may lead to weak exposure of contact lenses care knowledge and practice. Hence, this study was to assess the level of Knowledge, Attitude, and Practice (KAP) regarding contact lens use and care among university students, namely in Sabah.

Method:

A descriptive cross-sectional study of 62 university students employed using simple random sampling. A self-developed questionnaire is used to assessed demographics, contact lens knowledge, attitudes, and practices, with scores based on percentage of correct responses. Data were analysed using SPSS v30.

Result:

Respondents mean age was 20 + 1.75 years old with majority were female respondents (80.6%, n=50). More than half (66.1%, n=41) had no contact lens experience. Among 33.9% (n=21) contact lens wearer, 52.4% (n=11) had one to five years contact lenses experience. Moderate contact lens knowledge was found (mean score = 67.9%) in this cohort with no significant difference between gender ($\chi^2=2.16$, $p=0.84$), years of experience ($\chi^2=10.04$, $p=0.82$) and contact lens wear status ($\chi^2=2.78$, $p=0.73$). Majority (79%, n=49) agreed that annual contact lens optometric examinations are necessary. Nearly half respondents (40%) bought contact lens from non-qualified source (cosmetic retail shop (24%, n=6) and internet (16%, n=4). Majority (81%, n=17) surprisingly did not recall the contact lens brand and only 38% (n=8) practised proper hygiene contact lens care. However, contact lens wearers scored good practice (mean score: 81.25%) with 95.2% (n=20) compliance with eight to ten hours of wearing time.

Conclusion:

Moderate contact lens knowledge underscores the need for community-based awareness initiatives in university students. Enhancing legal enforcement is critical to restrict access to contact lenses through unauthorized channels and to safeguard public eye health.

Keywords:

Knowledge, contact lens, awareness, practice

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Title: Refractive and Binocular Vision Profiles of Primary Indigenous Schoolchildren in Selangor.

Authors: Noorsuriawati Mohd Said ^{1,2}, Sabrina Subri², Nurin Syahmina², Noor Haziq Saliman², Maryam Amiruddin², Nurulain Muhamad³

¹Klinik Mata, Hospital Sungai Buloh, 48100, Sungai Buloh, Malaysia

²Centre of Optometry, Faculty of Health Sciences, University Teknologi MARA Cawangan Selangor Kampus Puncak Alam, Puncak Alam, 42300, Selangor, Malaysia

³Kulliyyah of Allied Health Sciences, Department of Optometry and Visual Sciences, IIUM Kuantan Campus, Kuantan, 25200, Pahang, Malaysia.

Background:

Visual function is a critical component of pediatric development. However, data on refractive profiles and binocular function in indigenous children in Malaysia remain scarce. This study aims to determine the refractive profiles and binocular function among indigenous schoolchildren in Selangor.

Methodology:

A cross-sectional study was conducted among 106 indigenous primary schoolchildren aged 7–12 years. Distance and near visual acuity (VA) were measured using the Sonksen LogMAR test, followed by retinoscopy and subjective refraction. Binocular vision assessment included accommodative amplitude (AA), accommodative facility (± 2.00 D flippers), relative accommodation, accommodative response (Monocular Estimation Method), near-point-of-convergence (NPC), phoria measurement, and fusional vergence (FV) ranges. Descriptive statistics were employed to analyze the distribution of refractive errors and the six binocular vision parameters according to established normative clinical criteria.

Results:

Emmetropia was the most prevalent (79.25%), followed by hyperopia (17.92%) and myopia (2.83%). Reduced unaided VA was found in 2.83% at distance (<0.2 LogMAR) and 1.88% at near ($<N6$). 44.56% had abnormal AA (15.56 ± 2.49 D), while 45.50% demonstrated high accommodative lag ($>+0.75$ D; 0.86 ± 0.25 D). Reduced monocular and binocular accommodative facility were found in 36.60% (4.94 ± 2.01 cpm) and 25.75% (5.07 ± 2.25 cpm), respectively. Abnormal NRA and PRA were present in 72.30% (2.06 ± 0.68 D) and 47.50% (-3.39 ± 1.51 D). Receded NPC was observed in 49.50% (7.35 ± 0.31 cm). Most children had normal phoria and fusional vergence. 2.97% had abnormal negative FV at distance, 4.95% was abnormal at near, while 3.65% had abnormal positive FV at near. 18.26% and 2.88% had exophoria at near and distance respectively.

Conclusion:

Despite a high prevalence of emmetropia and good VA, results showed suboptimal binocular vision, particularly in accommodation and NPC. This highlights the need to incorporate binocular vision assessments into routine eye examinations for indigenous schoolchildren.

Keywords:

Indigenous schoolchildren, refractive error, binocular vision parameter, accommodation, and vergence.

Allergic Rhinitis: A Potential Risk Factor for Astigmatism

Nurul Aini Yusoff¹, Nur Liyana Ishak¹, Nurulain Mat Zin¹, Aznor Azwan Ab Azid¹, Dr Norihan Ibrahim¹, Dr Aifaa Abd Manan², Dr Mohd Hazimin Ishak²

¹.Department Of Ophthalmology, Hospital Sultan Ismail Petra (HSIP)

².Department Of Otorhinolaryngology (ORL), HSIP

Background: Allergic rhinitis (AR) is a common chronic inflammatory condition of the nasal mucosa. It often features the ocular symptom in the form of itchiness and eye rubbing¹. Repeated eye rubbing in allergic conditions has been shown to induce corneal biomechanics and topographic changes, which may contribute to refractive errors including astigmatism.^{2,3} However, the relationship between AR and astigmatism has not been widely reported in literatures.

Objective: This study aims to determine the relationship between AR and astigmatism.

Methods: This study is a cross-sectional retrospective study. Medical records of 376 school-going patients, aged between 7-18 years old, attending ORL Clinic through 2025 with diagnosis of AR were obtained from the Medical Program Information System (MPIS). Among these patients, 31 were referred to the Ophthalmology Department for ocular assessment due to various ocular complaints. Refractive findings were analyzed, with a focus on astigmatism both present and variable in magnitude. Only the refractive results of the right eye were included in the analysis. Data collected for this study included refractive error measurements, as well as the recorded severity of AR.

Results: The findings showed a statistically significant association between the severity of AR and the degree of astigmatism. This relationship was confirmed using a chi-square test, which demonstrated a significant difference between groups ($\chi^2 = 13.37$, $df = 4$, $p < 0.05$). These results suggest that increasing severity of AR may contribute to higher levels of astigmatic refractive error.

Conclusion: This study will help us understand that allergic rhinitis as a potential risk factor for astigmatism with increasing disease severity associated with greater refractive error. . This association may underline the need for routine visual screening and early ophthalmological referral in patients with chronic allergic conditions to prevent long-term visual impairment especially in pediatric patients. Furthermore, this study provides important local evidence that supports a multidisciplinary approach in the management of patients with allergic rhinitis.

Keyword: Allergic rhinitis, astigmatism, refractive error.

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Title: Optimizing School Vision Screening Systems; Evaluating the Effectiveness of RAVAC (Rapid Assessment Visual Acuity Chart) in Reducing False Positives

Authors: Nur Hafizah Mat Jalil¹, Muhammad Iqbal Basri¹, Najwa Munirah Mohd Yusoff¹, Norina Abdul Gafor²

¹Ophthalmology Department, Hospital Duchess of Kent, Sandakan, Sabah

²Ophthalmology Department, Hospital Kuala Lumpur

Background:

This study aims to evaluate the effectiveness of the RAVAC visual acuity chart in reducing false positive referral rates compared to the conventional Snellen chart. False positive referrals are a recognized limitation of school vision screening programmes, contributing to unnecessary healthcare utilisation and increased burden on tertiary services.

Methods:

This retrospective cross-sectional analysis compares two groups of students who failed their vision screening conducted by nurses from the School Health Team Unit. Group 1 (Snellen Group) was screened using the Snellen chart in 2022, and Group 2 (RAVAC Group) was screened using RAVAC in 2024. All students underwent comprehensive eye assessments, including visual acuity, refraction, colour vision and binocular vision assessment. A false positive was defined as students who failed vision screening but had normal findings on comprehensive examination. Visual Impairment (VI) was categorized using ICD-11 classification by the World Health Organization (WHO). Statistical comparisons between groups were performed using the chi-square test, and a p-value of < 0.05 considered statistically significant.

Results:

A total of 394 students were analysed, with 236 in the Snellen Group and 158 in the RAVAC Group. The proportion of students with no visual impairment was higher in the Snellen Group compared to RAVAC Group (35.2% vs 24.7%, $\chi^2 = 4.87$, $p = 0.027$). RAVAC significantly reduced false-positive referrals compared to Snellen (3.2% vs 16.5%, $\chi^2 = 17.03$, $p < 0.001$), with Snellen showing over six-fold higher odds of false positives (OR = 6.06, 95% CI: 2.33–15.74).

Conclusion:

Implementation of RAVAC is effective in reducing false positive referral rates compared to the conventional Snellen chart. This may help reduce unnecessary referrals to tertiary hospitals and improve the efficiency of school vision screening programmes.

Keywords:

Rapid Assessment Visual Acuity Chart; Snellen chart; false positive; school vision screening

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Title: Validation of A Questionnaire Attitude and Barriers Towards Conducting Research Among Government Optometrists in Malaysia: A Content Validity Study

Authors: Nurulain MZ¹, Anis Suzanna M², Syarifah Faiza binti Syed Mohd Dardin³, Aziimah binti Abd. Rahman⁴, Nurul Hafizah binti Mohd Norizan⁵, Nurul Akimi binti Abdullah⁶, Mahani Binti Mohd Salleh⁷, Muhammad Faizal Bin Risman⁸, Nursyairah binti Mohd Khalid⁹, Hussein Waheeda-Azwa¹⁰

¹Optometry Unit, Department of Ophthalmology, Hospital Sutan Ismail Petra, Kuala Krai, Kelantan

²Optometry Unit, Department of Ophthalmology, Hospital Pulau Pinang

³Majlis Optik Malaysia

⁴Optometry Unit, Department of Ophthalmology, Hospital Kemaman, Terengganu

⁵Optometry Unit, Department of Ophthalmology, Hospital Melaka

⁶Optometry Unit, Department of Ophthalmology, Hospital Tunku Ampuan Najihah

⁷Optometry Unit, Department of Ophthalmology, Hospital Putrajaya

⁸Optometry Unit, Department of Ophthalmology, Hospital Sultanah Nora Ismail, Batu Pahat, Johor

⁹Optometry Unit, Department of Ophthalmology, Hospital Bukit Mertajam, Pulau Pianang

¹⁰Department of Ophthalmology and Visual Sciences, School of Medical Sciences, 16150 Kubang Kerian, Kelantan

Background

Engagement in research by optometrists is crucial to enhance evidence-based practice, professional development, and healthcare service delivery. In Malaysia, government optometrists are encouraged to participate in research activities within the public healthcare system. Understanding the attitudes and barriers towards research activities is able to create an excellent research culture. A valid and reliable instrument is needed to measure these aspects. Thus, this study was conducted to determine the content validity of the adopted questionnaire to measure attitudes and barriers towards conducting research among government optometrists in Malaysia

Methods:

A study on content validity was carried out using an adapted questionnaire by Khalafet al. (2019), which was originally designed to determine attitudes and barriers towards conducting research among primary care physicians in Bahrain. The adapted questionnaire contained 33 questions on attitudes towards research, perceived barriers, and institutional

support. Content validity was examined by six experts from clinical optometrist, public health ophthalmologist, and educator. A scale of dichotomous ratings was used by the experts to determine the relevance of the questions. Item-level Content Validity Index (I-CVI), Scale-level Content Validity Index by the use of the average method (S-CVI/Ave), and the use of the universal agreement method (S-CVI/UA) were computed.

Results:

The I-CVI values varied from 0.33 to 1.00, with most items showing good relevance (I-CVI $\geq$ 0.83). The S-CVI/Ave was 0.885, which showed excellent content validity, and the S-CVI/UA was 0.52, which showed partial universal agreement. Items with lower values of I-CVI were further refined by incorporating expert opinions to enhance clarity and relevance.

Conclusion:

The questionnaire has good content validity and can be used to measure attitudes and barriers in conducting research among government optometrists in Malaysia. It may be implemented in future studies to support research commitment initiatives within the public optometry field.

Title: Changes in Horizontal Peripheral Refraction and Its Association with Axial Growth During 36 Months of DIMS Lens Wear

Authors: Siti Nurdiana Yusop^{1,2}, Bariah Mohd Ali^{1*}, Mizhanim Mohamad Shahimin¹, Woi Pui Juan¹

¹Optometry and Vision Science Programme, Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia

²Hospital Seri Manjung, 32040, Perak, Malaysia

Background:

Peripheral refractive input has been proposed as a potential modulator of ocular growth. However, longitudinal evidence describing changes in horizontal peripheral refraction during Defocus Incorporated Multiple Segment (DIMS) lens wear and its relationship with axial elongation remains limited. This study aimed to evaluate changes in relative peripheral refraction (RPR) over 36 months and to examine their association with axial growth.

Methods:

Twenty Malay myopic children (baseline age 9.55 ± 1.61 years) who wore DIMS lenses full-time were followed for 36 months. Cycloplegic spherical equivalent refraction (SER), axial length (AL), and horizontal peripheral refraction were measured at baseline, 3, 6, 9, 12, and 36 months. RPR was calculated at seven eccentricities (30N to 30T). Longitudinal changes were analyzed using RM-ANOVA and Friedman tests, while associations between changes in RPR (Δ RPR) and axial elongation (Δ AL) were assessed using Spearman correlation.

Results:

Horizontal peripheral refraction showed a non-uniform pattern of change. A significant myopic RPR shift was observed only at 30N (-0.69 ± 0.28 D), while temporal eccentricities showed smaller and non-significant changes, with 10T remaining the most stable (-0.05 ± 0.18 D). Although nasal eccentricities displayed a greater magnitude of defocus change, stronger associations with axial elongation were observed at temporal locations. Borderline correlations were identified at 20T ($\rho = 0.436$, $p = 0.055$) and 30T ($\rho = 0.437$, $p = 0.054$), whereas nasal locations showed weaker or non-significant relationships.

Conclusion:

Peripheral refraction changes during 36 months of DIMS wear varied across retinal eccentricities, with nasal regions demonstrating greater refractive changes, while temporal regions showed relatively stronger associations with ocular growth. However, the relatively small sample size may limit generalizability.

Keywords:

Peripheral refraction; relative peripheral refraction; axial elongation; DIMS lens; myopia progression.

TITLE: Acute Acquired Concomitant Esotropia Associated with Excessive Near Work in an Adolescent: A Case Report

Norhayati Hat¹, Diana Mohamed²

¹Department Ophthalmology Hospital Queen Elizabeth

²Head of Unit Optometry Hospital Queen Elizabeth

Purpose:

To report a case of Acute Acquired Concomitant Esotropia (AACE) in an adolescent with a history of prolonged near work and excessive smartphone use during the COVID-19 pandemic.

Case Report: A 15-year-old girl was referred from Hospital Pitas with sudden-onset bilateral convergent squint since 2020, associated with diplopia and headaches. Review of pre-pandemic photographs confirmed previously normal ocular alignment. She reported excessive smartphone use of approximately 6 to 8 continuous hours daily following the transition to online learning during the COVID-19 pandemic. There was no history of trauma, neurological symptoms, or known systemic illness. **Result:** Best-corrected visual acuity was 6/6 in both eyes. Ocular examination revealed a large-angle non-accommodative esotropia measuring 91 prism dioptres (PD) at near and 77 PD at distance on prism cover test. Computed tomography of the brain and orbits showed no intracranial or intraorbital abnormalities. Reduction of screen time did not result in clinical improvement. Bilateral medial rectus botulinum toxin injection was performed on 29 November 2023; however, significant residual deviation persisted. The patient subsequently underwent bilateral medial rectus recession (7 mm) with right inferior oblique surgery. Postoperatively, the angle of deviation improved to 30 PD at distance and 35 PD at near, with complete resolution of diplopia. Ongoing management was limited by repeated missed follow-up appointments and the patient's refusal of further surgical intervention. **Conclusion:** This case highlights a possible association between prolonged near work and AACE in adolescents. It also underscores the importance of excluding neurological pathology, initiating timely management, and ensuring adherence to follow-up in optimising visual and functional outcomes.

Keywords:

Acute acquired concomitant esotropia, AACE, screen time, adolescent, strabismus, COVID-19

Title: Binocular Vision Anomalies: Data Distribution Among Patients in Eye Clinic, Hospital Queen Elizabeth, Kota Kinabalu, Sabah

Authors: Norhayati binti Hat¹, Nurul Hanani binti Ozali¹, Diana binti Mohamed²

¹Optometry Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia

²Head of Optometry Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia

Background:

Binocular vision anomalies, including strabismus and non-strabismus conditions, are commonly encountered in clinical practice. Management options include optical correction, prism therapy, vision therapy, and surgical intervention. This study aimed to describe the distribution and management of binocular vision anomalies among patients attending the Eye Clinic, Hospital Queen Elizabeth, Kota Kinabalu, Sabah.

Methods:

A retrospective study was conducted involving 123 new patients diagnosed with binocular vision anomalies from 2022 to 2024. Data were analysed using SPSS version 30, including demographic characteristics, types of anomalies, and treatment modalities.

Results:

Of the 123 patients, 51.2% (n=63) were male and 48.8% (n=60) were female, with a mean age of 36.53 ± 17.6 years. Strabismus accounted for the majority of cases (97.6%, n=120), while non-strabismus conditions comprised 2.4% (n=3). Among strabismus cases, exotropia (46.3%, n=57) was the most common diagnosis, followed by esotropia (30.9%, n=38), neurological causes (8.1%, n=10), vertical deviation (7.3%, n=9), heterophoria (4.1%, n=5) and Brown's syndrome (0.8%, n=1). The majority of patients underwent surgical intervention (72.4%, n=89), followed by optical correction (12.2%, n=15), vision therapy (5.7%, n=7) and prism correction (2.4%, n=3).

Conclusion:

Strabismus was the predominant binocular anomaly observed. Surgical intervention remains the primary treatment modality, highlighting the importance of early detection, timely referral and access to specialized care to optimize patient outcomes.

Keywords: strabismus, exotropia, esotropia, accommodation, vergence

Title: Assessment of Rapid Assessment Visual Acuity Chart (RAVAC) Implementation in School Health Programe : Agreement Between School Health Team and Optometrist in Sandakan

Authors: Muhammad Iqbal Basri¹, Nur Hafizah Mat Jalil¹, Najwa Munirah Mohd Yussoff¹, Nazirin Arsad², Nurul Farhana Abu Bakar³, Norina Abdul Gafor⁴

¹Ophthalmology Department HDOK, ²Ophthalmology Department, HSAJB, ³Ophthalmology Department, HRPB, ⁴Ophthalmology Department, HKL

Background:

To evaluate the level of agreement and diagnostic performance of the Rapid Assessment Visual Acuity Chart (RAVAC) conducted by the School Health Service Unit (UPKS) compared to the optometrist assessment at Hospital Duchess of Kent Sandakan (HDOK).

Methods:

This cross-sectional study took place at HDOK using data collected from March 2024 to December 2025. Students referred from UPKS with documented RAVAC screening results were included. All participants underwent repeat RAVAC testing and examination by an optometrist in HDOK. Cohen's kappa statistic was used to evaluate the agreement between UPKS versus optometrist RAVAC assessments and versus clinically significant refractive error. We assessed diagnostic performance based on sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

Results:

A total of 310 eyes were analyzed. There was a substantial agreement between UPKS and Optometrist when performing RAVAC ($\kappa = 0.728$, $p < 0.001$). RAVAC performed by UPKS showed a sensitivity of 90.1%, specificity of 83.7%, PPV of 92.3%, and NPV of 79.6%. But comparing to clinically significant refractive error result, RAVAC assessment by UPKS shown moderate level of agreement ($\kappa=0.485$, $p<0.001$) while by optometrist indicate substantial agreement ($\kappa=0.623$, $p<0.001$) with sensitivity of 86.7% and 94.3% respectively. When comparing with refractive error, a greater proportion of student with hyperopia (10, 33.3%) passed RAVAC screening especially mild hyperopia (7, 23.3%)

Conclusion:

RAVAC is a good screening tools with a high sensitivity and good agreement between UPKS and Optometrist. RAVAC also showed excellent diagnostic performance and significant agreement with clinically significant refractive error results. These findings support RAVAC as a practical and effective school-based visual screening tool that can be reliably performed by trained healthcare workers. However, the ability to detect mild hyperopia is limited suggesting additional strategies to strengthen the screening.

Keywords:

Rapid Assessment Visual Acuity Chart (RAVAC), school health screening, student, refractive error

Title: Barriers of Refractive Eye Care Services in Rural Areas in Sabah

Authors: Nur Syafirah Zalaiqah Ruslan¹, Aizuddin Bin Hidrus², Chua Shee Wen³

¹ Department of Ophthalmology, Hospital Universiti Malaysia Sabah, Kota Kinabalu, Sabah

² Department of Public Health, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Kota Kinabalu, Sabah

³ Department of Ophthalmology, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Kota Kinabalu, Sabah

Background:

Refractive error is a leading cause of visual impairment. Although spectacle correction is effective in restoring visual function, the high prevalence of uncorrected refractive error (URE) suggests that access to spectacles alone is insufficient. Understanding the prevalence of URE and identifying barriers to refractive eye care are essential for planning interventions and health policies to improve service uptake.

Methods:

This cross-sectional study was conducted in rural district of Sabah during community outreach programmes led by the Ophthalmology Department of Hospital Universiti Malaysia Sabah. All participants underwent vision screening, and random sampling was applied. Data collected included unaided and aided visual acuity and refractive status using autorefractometry. URE was defined as myopia [spherical equivalent (SE) $\leq -0.50\text{D}$], hyperopia (SE $\geq +2.00\text{D}$), or astigmatism (cylinder $\geq -0.75\text{D}$). Selected participants completed a questionnaire on sociodemographic information and barriers to accessing refractive eye care services.

Results:

A total of 282 participants were recruited, with a mean age of 39.1 ± 4.7 years. URE was identified in 96 participants (34.07%). Myopia (64.6%) was the most common refractive error, followed by hyperopia (31.3%) and astigmatism (4.2%). URE was significantly associated with older age, Bajau ethnicity, and lower educational level. Lack of awareness was the most frequently cited barrier, followed by financial constraints.

Conclusion:

Low awareness of URE among rural populations in Sabah contributes to delayed help-seeking and preventable visual impairment. Targeted eye health education and community-based awareness initiatives are recommended to improve knowledge and increase utilisation of refractive eye care services.

Keywords:

Refractive error, prevalence, barrier, awareness

Title: The Role of Primary Care Optometry in Early Detection and Referral of Ocular Conditions: A Retrospective Review

Authors: Nur Diana bt Mohd Zani¹, Duratul 'Ain binti Hussin²

¹ Optometry Unit, Hospital Kuala Kubu Bharu, Selangor, Malaysia

² Allied Health Science Division, Ministry of Health Malaysia, Putrajaya, Malaysia

Background:

Primary care optometry plays a crucial role as the first line of defence in the early detection of ocular conditions that may lead to irreversible visual impairment and blindness. As frontline eye care providers, optometrists are often the first to identify abnormal ocular findings during routine examinations and facilitate timely referral to ophthalmology services when required. This study aimed to determine the frequency and causes of referrals provided by an optometrist from a primary eye care optometry clinic at Hospital Kuala Kubu Bharu.

Methods:

A retrospective observational study was conducted on patient records over a one-month period from 5 January 2026 to 5 February 2026. During this period, a total of 128 patients received primary eye care services. Data collected included patient demographics, clinical findings, provisional diagnoses, and indications for referral. Descriptive analysis was performed to evaluate referral frequency and the spectrum of ocular conditions detected.

Result:

Remarkably, within one month, 28 out of 128 patients (22.0%) required referral to ophthalmology services for further evaluation and management. Cataract was the most common indication for referral, 15 cases (53.6%), followed by advanced diabetic eye disease, 5 cases (17.9%). Potentially eye-threatening conditions requiring urgent intervention were also detected, including vitreous haemorrhage (1 case, 3.6%), papilloedema (1 case, 3.6%), retinal detachment (2 cases, 7.1%), glaucoma suspect (1 case, 3.6%), and central retinal vein occlusion (1 case, 3.6%). Other conditions included corneal foreign body (1 case, 3.6%) and posterior capsular opacity (1 case, 3.6%). Many of these conditions were detected during routine primary eye care examinations.

Conclusion:

This study highlights the critical role of primary eye care optometry in the early identification and referral of ocular diseases with significant blinding and life-threatening potential. Strengthening optometry-led primary eye care services is essential to ensure timely specialist intervention and to reduce the burden of avoidable vision loss at the population level.

Keywords:

Primary care optometry; ocular disease; preventable blindness

Title: Impact Of Therapeutic Contact Lens Intervention On Visual Impairment In Keratoconus Patients At A Tertiary Hospital In Sabah

Authors: Nur Syuhadah binti Azni¹, Norazizah binti Abdul Latif¹, Diana binti Mohamed¹

¹Optometry Unit, Ophthalmology Department, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia

Background:

Corneal irregularities, predominantly keratoconus, contribute to visual impairment. This condition cannot be corrected with regular spectacle correction. Therapeutic contact lens is a non-invasive method to restore functional vision. This study aimed to determine the distribution of keratoconus patients attending the Contact Lens Clinic at Hospital Queen Elizabeth and to evaluate the impact of therapeutic contact lens intervention on their visual impairment status.

Methods:

A retrospective study was conducted involving 18 keratoconus patients (29 eyes) identified among 140 patients who attended the Contact Lens Clinic at Hospital Queen Elizabeth in 2024. Data collected included demographic characteristics, keratometry readings, keratoconus laterality, severity classification, type of contact lens prescribed, and visual impairment level with best-corrected spectacles and after contact lens intervention. Keratoconus severity was classified based on keratometry (K) readings as mild (<45.00 D), moderate (45.00–52.00 D), and severe (>52.00 D). Statistical analysis was performed using SPSS version 31.0.

Results:

Most patients were female (57.1%, n = 16) with a mean age of 25.68 ± 10.66 years, and 77.8% (n = 14) were from the Bumiputera Sabah and Sarawak group. Bilateral keratoconus occurred in 61.1% of patients. Severe keratoconus accounted for 82.8% (n = 24 eyes) and moderate keratoconus 17.2% (n = 5 eyes). Among 29 fitted eyes, RGP lenses (65.5%, n = 19) and mini-scleral lenses (34.5%, n = 10) were prescribed. Visual acuity improved significantly following contact lens intervention ($t = 5.22$, $p < 0.001$; 95% CI [1.3, 3.0]) with eyes showing no visual impairment increasing from 21.4% to 71.4%.

Conclusion:

Therapeutic contact lenses significantly improve visual outcomes in keratoconus patients and provide an effective non-surgical option for visual rehabilitation. The high proportion of severe keratoconus may reflect delayed presentation or limited access to specialised eye care in Sabah. Improving service accessibility and early detection is essential to reduce avoidable visual impairment.

Keywords:

Keratoconus, therapeutic contact lens, visual impairment

Title: Presenting Visual Acuity of Patients with Acquired Brain Injury (ABI) Attending Pusat Rehabilitasi PERKESO Tun Abdul Razak, Melaka

Authors: Shaz Ain Razak^{1,2}, Azuwan Musa¹, Abdul Rashid Ali³, Mohamed Saufi Awang⁴, Nur Liyana Kahar³

¹Department of Ophthalmology, Kuliyyah of Medicine, International Islamic University Malaysia, Malaysia

²Centre for Optometry Studies, Faculty of Health Science, Universiti Teknologi MARA, Malaysia

³Department of Integrated Health Care, Pusat Rehabilitasi PERKESO Tun Abdul Razak, Malaysia

⁴Department of Surgery, Kuliyyah of Medicine, International Islamic University Malaysia, Malaysia

Background:

Vision impairment can affect the rehabilitation outcomes among individuals with acquired brain injury (ABI); however, evidence from the Malaysian context remains limited. This study aims to determine the prevalence of visual impairment using presenting visual acuity (PVA) and its associated factors among patients with ABI.

Method:

A retrospective review was conducted on ABI patients referred for initial eye screening at Pusat Rehabilitasi PERKESO Tun Abdul Razak, Melaka, from January 1, 2023, to December 31, 2024. PVA for distance and near was measured in the better eye, where failure of PVA screening or visual impairment and blindness was defined according to the International Classification of Diseases, 11th Revision (ICD-11). The demographic variables and ABI profiles, including diagnoses, time since injury, and hemiparesis, were extracted from medical records.

Results:

From 940 ABI-cases reported, the majority of patients were male (75.9%) and Malay (76.2%), with a mean age of 44.58 (± 10.32) years. Most patients were diagnosed with stroke (78.8%), followed by traumatic brain injury (TBI) (17.2%) and other diagnoses (4.0%). The mean distance PVA in the better eye was 0.135 (± 0.25) logMAR. Distance and near PVA failure rate were 12.5% and 37.4%, respectively, with moderate visual impairment being the predominant category. Chi-square analysis showed that distance PVA failure was significantly associated with TBI (OR=1.66, 95%CI:1.04-2.65, $p=0.034$), whereas near PVA failure was significantly associated with stroke patients (OR=2.02, 95%CI:1.37-2.98, $p<0.001$). Severe TBI was also significantly associated with higher odds of failing distance PVA than mild-to-moderate TBI group (OR=1.24, 95%CI:1.13-1.37, $p=0.023$). No

significant associations were observed between PVA and gender, ethnicity, stroke subtype, time since injury, or presence of hemiparesis ($p>0.05$).

Conclusion:

Visual impairment based on the presenting visual acuity, particularly for near, is highly prevalent among the ABI on-going rehabilitation program, highlighting the importance of routine visual assessment in this population.

Keywords:

Acquired Brain Injury, Presenting Visual Acuity, Vision Impairment

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Title: Pattern of Refractive Errors Among School-age Children Referred After Failing Vision Screening in Sabah

Author: Nur Syazwina Binti Mat Noor¹, Nur Hayati Binti Mohamed Shabery², Diana Binti Mohamed³, Norina Binti Abdul Gafor⁴

¹Department of Ophthalmology, Hospital Labuan, Wilayah Persekutuan Labuan, Malaysia

²Department of Ophthalmology, Hospital Keningau, Sabah, Malaysia

³Department of Ophthalmology, Hospital Queen Elizabeth, Sabah, Malaysia

⁴Department of Ophthalmology, Hospital Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia

Background:

Uncorrected refractive error is a major public health issue worldwide and can negatively affect academic performance. Vision screening conducted by School Health Team plays an importance in early detection and referral. However, the information regarding pattern of refractive error among school-aged children in Sabah following referral is limited. Hence, this study aims to report the pattern of refractive errors and the association with demographic factors among school-aged children in Sabah.

Methods:

This study was conducted using cross-sectional analysis which includes students who failed school health visual screening and referred to Sabah MOH Optometry Services from 2024 to 2025. Refraction assessment and visual acuity examination was done and analysed.

Refractive error was defined of at least: -0.50 DS spherical equivalent (SE) myopia, +0.50 SE hyperopia, -1.00DC astigmatism or 1.00D anisometropia in either eye.

Results:

A total of 2321 students were analysed with 1118 (48.2%) were female and 1203 (51.8%) were male students. Refractive error (RE) was found in 1722 (74.2%) students. Myopia (1336, 57.5%) showed highest incidence, followed by astigmatism (941, 40.5%), anisometropia (453, 19.5%) and hyperopia (256, 11.0%). Older age group presented significant association with myopia compared to lower age group, ($X^2 = 27.224$, $p < 0.001$). The severity of myopia also increases with age ($X^2 = 60.055$, $p < 0.001$). Myopia and its

severity were also found to be associated with urbanisation ($X^2 = 26.901$, $p < 0.001$) and ($X^2 = 27.018$, $p < 0.001$) respectively. There was a statistically significant association between gender and myopia, with females showing a higher proportion of myopia than males ($\chi^2 (1) = 16.592$, $p < 0.001$).

Conclusion:

Uncorrected refractive error, particularly myopia, disproportionately affects older age groups, female students, and urban populations compared with rural populations. Therefore, strengthening public awareness and implementing early preventive programs are essential for effective myopia prevention.

Keywords:

uncorrected refractive error, school children, myopia

Title: Effectiveness of JPJ Computerised Vision Test: Clinical Outcomes and False Positive Rate Among Referred Licence Applicants at Hospital Tawau

Authors: Jerisa Binti Jefri¹, Nornabilah Binti Mohd Noor¹, Diana Binti Mohamed², Norina Binti Abdul Gafor³

¹ Optometry Unit, Department of Ophthalmology, Hospital Tawau, Sabah

² Optometry Unit, Department of Ophthalmology, Hospital Queen Elizabeth, Kota Kinabalu, Sabah

³ Optometry Unit, Department of Ophthalmology, Hospital Kuala Lumpur, Kuala Lumpur

Background:

Jabatan Pengangkutan Jalan (JPJ) computerised vision test is widely used in Malaysia as a screening tool for driving licence applicants. Individuals who failed the screening test are referred to hospital for further eye assessment. This study aimed to analyse the clinical findings of patients referred and to determine the false positive rate of JPJ vision screening tool.

Methods:

This retrospective study reviewed 867 driving license applicants who failed JPJ computerised vision test and were subsequently referred to Hospital Tawau between January 2020 and December 2024. All driving license applicants underwent a comprehensive visual examination, which included visual acuity assessment, refraction and colour vision assessment using Ishihara plates, Hardy-Rand-Rittler (HRR) plates, and/or Farnsworth D-15 test. A clinical diagnosis of visual impairment status and colour vision deficiency were descriptively analysed.

Results:

The 867 applicants (68.3% males and 31.7% females) reviewed were aged between 16-67 with a mean age of 28.5 years (SD $\pm$ 10.7 years). Colour vision deficiency was found in 142 (16.4%) applicants, while 49 (5.7%) of applicants had refractive errors. Out of 142 who were diagnosed with colour vision anomalies, 137 (96.5%) of them were male. Protanomaly was diagnosed in 41 (28.9%) while deutanomaly in 101 (71.1%). Forty-nine applicants who had mild to severe visual impairment (mild VI 2.3%, moderate VI 3.1% and severe VI 0.2%) were given glasses prescription. The false positive rate of JPJ computerised vision test referral was 78.0%.

Conclusion:

The JPJ computerised vision test demonstrated a high false positive rate in Hospital Tawau. These findings suggest that many referrals may not accurately reflect the actual number of colour vision deficiency and refractive error. Review of current screening protocol and equipment are needed to reduce unnecessary referrals and hospital workload.

Keywords:

Colour vision deficiency, JPJ, computerised test, colour vision, Hospital Tawau

Title: Presentation with Advanced Visual Loss at First Low Vision Referral: Demographic and Clinical Factors from The Malaysian Registry

Authors: Nur Hidayah Yusuf¹, Nur Adnin Razali²

¹Hospital Tuanku Ampuan Najihah Kuala Pilah Negeri Sembilan, ²Hospital Sultan Haji Ahmad Shah Temerloh Pahang

Background:

Early intervention in low vision rehabilitation is crucial for maintaining functional independence. This study examines factors associated with advanced visual loss at the time of first presentation to low vision services, utilizing data from the Malaysian Low Vision and Blind Registry.

Method:

A registry based cross-sectional analysis was conducted on 605 completed data. Severity of visual loss at first presentation was classified as mild/moderate ($<1.0\text{LogMAR}$) or severe ($>1.0\text{LogMAR}$). Binary logistic regression was used to examine the association between severity of vision at presentation and LVQoL category, education level, and employment status.

Result:

The logistic regression model was statistically significant ($\chi^2(5) = 57.17, p < .001$) and demonstrated adequate fit. Poorer vision-related quality of life was strongly associated with severe visual loss at first presentation ($B = 0.748, p < .001$), with each unit increase in LVQoL category were approximately 2.11 times more likely to present with severe visual loss (95% CI [1.67, 2.68]). Education level showed a marginal overall effect (Wald $\chi^2(3) = 7.51, p = .057$); notably, patients with no formal education were nearly six times more likely to present with severe visual loss compared with those with tertiary education (OR = 5.95, 95% CI: 1.62–21.91). Employment status was not significantly associated with severity of visual loss at presentation (OR = 0.83, $p = .324$).

Conclusion:

Advanced visual loss at first low vision referral is strongly associated with poorer vision-related quality of life and lack of formal education. These findings suggest that functional impact and educational disadvantage are key contributors to late presentation. Targeted strategies to improve early detection and timely referral particularly among individuals with low educational attainment and significant functional difficulties may reduce the proportion of patients presenting with severe visual impairment.

Keywords:

Malaysian Low Vision and Blind Registry; Advanced Visual Loss; Late Presentation

Title: Peripapillary Retinal Nerve Fibre Layer Thickness and Its Associated Factors in Children

Authors Pua Tian Siew¹, Mohd Izzuddin Hairol²

¹ Department of Ophthalmology, Hospital Kuala Lumpur, Kuala Lumpur, Malaysia

² Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia

Background:

The OCT reference database allows quantitative comparison between healthy eyes and those with possible abnormalities. To date, there is no retinal thickness database for Malaysian children. Thus, this study aimed to evaluate peripapillary retinal nerve fibre layer (pRNFL) thickness and its associated factors in a sample of healthy Malaysian children.

Methods:

A total of 150 eyes from 150 children (mean age: 11.64 ± 3.31 years; 46% boys; 72.67% Malay, 22% Chinese, 5.33% Indian & others) were evaluated in this cross-sectional study. The pRNFL thickness was measured at the 1st, 5th, 95th, and 99th percentiles using the spectral-domain Topcon 3D OCT-1. Correlations between pRNFL, age, and spherical equivalent (SE) were analysed. The pRNFL was also compared between gender and race. Agreement between pediatric data and adult reference database was estimated.

Results:

The mean pRNFL total thickness was 112.05 ± 8.65 μm , with the superior quadrant thickest (145.11 ± 14.51 μm), followed by inferior (144.89 ± 15.61 μm), temporal (79.32 ± 11.06 μm), and nasal (79.13 ± 12.78 μm). Average pRNFL total thickness was 112.77 ± 8.87 μm in Chinese, 112.43 ± 8.54 μm in Malay, and 103.92 ± 5.30 μm in Indian & others ($p=0.02$). Chinese had the thickest temporal pRNFL thickness, followed by Malay and Indian & others ($p<0.01$). SE positively correlated with total, nasal, and inferior pRNFL thickness, and negatively with temporal pRNFL thickness (all $p<0.01$). Discrepancies in retinal thickness classification between the adult percentile database and the pediatric data from this study were observed in 46 of 150 eyes (30.67%). Cohen's Kappa analysis showed substantial agreement only for temporal pRNFL ($\kappa = 0.65$).

Conclusion:

This study provides a normal distribution of pRNFL thickness in Malaysian children. pRNFL differs by quadrant and race, and is significantly associated with refractive error. Adult normative databases show notable discrepancies in pediatric retinal thickness classification, with substantial agreement only for temporal pRNFL, highlighting the need for age-matched norms in children.

Keywords:

OCT; retinal nerve fibre layer; agreement; children

Title: Managing Ocular Surface Disease (OSD) from Optometry Perspective in Contact Lens Clinic in Hospital Sungai Buloh

Authors: Ajmal bte Hazizan¹, Nik Nawwar binti Nik Mohammad Fahmi¹, Fadhiah binti Husin¹

¹Ophthalmology Department, Hospital Sungai Buloh

Background

Ocular Surface Disease (OSD) commonly causes tear film instability, ocular discomfort and fluctuating vision. Although visual acuity (VA) improves with ocular surface optimization, contact lens use in OSD is often avoided due to concerns of worsening dry eye symptoms. This challenges the patients requiring therapeutic contact lenses, such as those with keratoconus or corneal scarring, despite semi-scleral lenses providing optical correction while protecting the ocular surface through corneal vaulting and fluid reservoir. This study evaluates VA improvement in OSD patients following semi-scleral lens fitting.

Method

This retrospective study reviewed clinical records of 13 Hospital Sungai Buloh's contact lens patients (19 eyes) diagnosed with OSD, aged 9 to 46 years, who were fitted with semi-scleral lenses from October 2023 to October 2025. 16 of these OSD eyes (84.2%) resulted in corneal scar and all of them were still under ongoing ophthalmology's treatment. Habitual VA and best-corrected visual acuity (BCVA) obtained from refraction were compared with BCVA achieved using semi-scleral lenses. Visual impairment (VI) categories were assessed across habitual VA, refractive BCVA and semi-scleral lens BCVA.

Result

Refraction alone resulted in only 6 eyes (31.6%) improved to normal VA but with high astigmatism correction. After fitted with semi-scleral lenses, all 19 eyes (100%) obtained normal VA.

Conclusion

This study demonstrates that semi-scleral lenses provide significant visual improvement in patients with OSD who inadequately corrected with conventional treatment. All subjects were still under ongoing OSD treatment with different medicinal combinations of artificial tears, cyclosporine, pataday, corticosteroids, antibiotics and other drugs. With this proper co-management of OSD, semi-scleral lenses offer a safe, non-invasive and effective option for good vision therefore enhance the quality of life.

Keywords

Ocular surface disease, semi-scleral lens, visual acuity, best corrected visual acuity, visual impairment

Title: Reclaiming Visual Function After Penetrating Keratoplasty Through The New Innovation Of Scleral Lens Fitting: A Case Report

Authors: Nurfazliha binti Mustapha¹, Tengku Azlina binti Tengku Loding¹, Erni Fadhilah binti Norazmi¹, Fadhliah binti Husin¹

¹Ophthalmology Department, Hospital Sungai Buloh

Purpose:

This case report highlights the role of a new innovative custom-made scleral contact lens in managing high astigmatism following penetrating keratoplasty in a patient with advanced keratoconus, where standard keratoconus RGP lens fitting resulted in poor fitting outcome.

Report:

A 36-year-old Malay male with history of left eye penetrating keratoplasty in July 2012 presented with irregular astigmatism which led to moderate visual impairment (VA 6/36). Previous trial fitting with semi scleral (Rose K XL/5.70/13.00/-19.00/EL+1.00) and mini-scleral (Katt 1/sag 6.00s/16.50/-9.50/40°/35°) were failed to achieve adequate corneal vault, landing zone alignment and wearing comfort despite of good vision with both lenses. Hence, the contact lenses were not prescribed owing to unsatisfactory fitting. The new innovation of custom scleral lens (McAsfeer KeratoGenius by SEED) with parameter (McAsfeer KG/Sag 5750/15.60/-11.00) was fitted and assessed. Fitting assessment and over refraction were repeated after 4 hours of adaptation period. All findings from the assessment were reported using KG Custom Scleral Lens Form and sent to manufacturer for fitting modification.

Results:

The adjusted parameter received was (McAsfeer KG/Sag 5850/15.60/-15.25). Assessment showed adequate corneal clearance with no corneal touch, sufficient limbal clearance and edge alignment. Patient was comfortable and visual acuity with the lens was 6/6. The contact lens was successfully delivered to patient.

Conclusions:

This advanced, high-technology 360o custom-made contact lens may serve as an alternative option for advanced cases, including post-penetrating keratoplasty, that cannot be adequately fitted with standard lenses. This new innovative custom-made scleral contact lens has the ability to precisely tailor every aspect of the fitting yet reclaiming visual function and better quality of life.

Keywords:

Post penetrating keratoplasty, scleral contact lens, keratoconus

Title: Sight-Threatening Corneal Ulcers Associated With Contact Lens Wear: A Case Series Highlighting Visual And Life Impact

Authors: Nurul Najiha binti Mohammed Khairi¹, Fadhiah binti Husin¹

¹Department of Ophthalmology, Hospital Sungai Buloh

Purpose:

Fifteen cases of contact lens-related corneal ulcers were reported at Hospital Sungai Buloh in 2024. This case series highlights three illustrative cases, focusing on associated risk factors, visual outcomes and the critical importance of proper contact lens care and hygiene.

Case series report:

The cases involved a 21 years old male university student who was a regular contact lens wearer with a demanding academic schedule, a 37 years old male with an active lifestyle and 19 years experience wearing contact lens and a 38 years old female who had recently attempted contact lens wear for cosmetic purposes. All patients wore soft contact lenses. They presented to the eye clinic with eye pain, redness and reduced vision. Clinical examination revealed that all the cases were infected by *Pseudomonas aeruginosa* including one case with mixed *Acanthamoeba* infection. There was evidence of poor compliance with contact lens good practice as a contributing factor in all cases, leading to the development of corneal ulcers. Treatments involved intensive topical antibiotics with antifungal therapy and adjunctive antiviral on a case-by-case basis. Despite appropriate treatment, all patients developed corneal scarring with very poor visual outcomes, ranging from 3/60 to hand movement (HM). The third case was particularly severe, resulting in bilateral blindness, significantly affecting the patient's ability to handle daily duties.

Conclusion:

Contact lens-related corneal ulcer is a serious, sight-threatening complication that may result in permanent visual impairment despite prompt treatment. These cases emphasized the importance of continuous patient education on proper contact lens hygiene and care practices, regardless of user experience or purpose of lens wear. Preventing such complications is essential to preserve vision, career progression, quality of life and psychosocial well-being.

Keywords:

corneal ulcer, contact lens, contact lens care, sight-threatening

Title: Age Matters: Exploring the Relevance of Age Boundaries For Visual Field Strategy Adjustment

Authors: Nurul Hafizah Binti Amil Bangsa¹, Mahani Mohd Salleh¹, Suriana Suiabun¹, Saranyaa Manoharr¹

¹Jabatan Oftalmologi, Hospital Putrajaya

Background:

Humphrey Visual field (HVF) testing is essential in managing glaucoma. However, fatigue and poor test comprehension may lead to unreliable results and affect clinical decision-making. This study compared the reliability outcome of three HVF test strategies; SITA-Standard (SS), SITA-Fast (SF) and SITA-Faster (SFr) across different age groups.

Methodology:

HVF data were retrospectively obtained from Zeiss Forum, excluding first-time test takers. Analyses were performed using SPSS version 22.0. Mann-Whitney (U) test was used to compare median age between reliable and unreliable groups. Chi-square (χ^2) test was conducted to examine the association between test strategy and reliability outcomes. Age differences across test strategies were assessed using the Kruskal-Wallis (H) test. Binary logistic regression evaluated age and test strategy as predictors of unreliable visual field results.

Results:

Out of 116 patients, 58% had reliable HVF result, while 42% were unreliable. The unreliable group had a significantly higher median age (67 vs. 58 years; $U = 2278.0$, $p = .018$). Although not statistically significant, $\chi^2 (2, N = 116) = 0.148$, $p = .929$, SITA-Standard contributed the most unreliable results (27.6%), followed by SITA-Fast (14.6%) and SITA-Faster (1.7%). There was a significant difference in age distribution across unreliable test results, $H (2) = 6.53$, $p = .038$, suggesting that test reliability decreases with increasing age. Binary logistic regression showed that age was a significant predictor of unreliable visual field results, $B = 0.032$, $Wald = 5.62$, $p = .018$, $OR = 1.03$, suggesting each additional year of age, the odds of unreliability increase by 3%. Test strategy was not a significant predictor, $p = .768$.

Conclusion:

The reliability outcomes of HVF testing differed among SITA-Standard, SITA-Fast, and SITA-Faster across age groups, indicating that age influences test performance and should be considered when choosing the appropriate HVF strategy.

Keywords:

Visual fields; SITA-Standard; SITA-Fast; SITA-Faster

Title: Digital Screen Use, Sedentary Lifestyle, And Myopia In Secondary School Children In Shah Alam, Selangor

Author: Diana Binti Mohamed¹, Nur Aliah Amani Binti Muhamad Khairy²

¹Optometry Unit, Ophthalmology Department, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia

² Pusat Peralaksanaan Sains dan Teknologi, Universiti Malaysia Sabah, Kota Kinabalu, Sabah.

Background:

Growing dependence on digital devices, increasing academic demands, and limited outdoor exposure have been suggested as major contributors to myopia. Lack of local evidence limits implementation preventive strategies on higher level. This study assessed the screen time, near work and outdoor activities among secondary school children and its association with myopia in Shah Alam, Selangor.

Method:

A cross-sectional design study using a self-developed survey was administered among 112 students. The survey includes demographic data, refractive error status, and daily habits related to near work, screen time and time of outdoor activity. Severity of myopia was categorized as mild (<-2.00 D), moderate (-2.00 to -5.00 D), and high (>-5.00 D). Data were analysed using SPSS 31.

Result:

The mean age was 16.67 ± 0.67 years with higher female respondent 59.8% ($n=67$). High trend of near work (80.4% ($n=90$)) and digital screen usage (84.8%, $n=95$) was found with 44.6% ($n=50$) respondents had screen time of more than 6 hours/day. Only 28.6% ($n=32$) students engaged in outdoor activities more than 3 times/week. Myopia prevalence was 48.2% ($n=54$), with 29.5% ($n=33$) moderate and 6.3% ($n=7$) high myopia. Parental myopia ($\chi^2(1) = 93.56$, $p < 0.05$) and female gender ($\chi^2(1) = 6.67$, $p < 0.05$) showed strong association with myopia. Time spent on digital screens showed a significant association with myopia severity ($\chi^2(6) = 16.27$, $p = 0.012$), with moderate and high myopes more frequently reporting more than 6 hours/day of screen use. However, outdoor activity ($\chi^2(3) = 0.98$, $p = 0.81$), and near work ($\chi^2(2) = 0.09$, $p = 0.96$), was not a significant myopia factor.

Conclusion:

Myopia was common and strongly linked to parental myopia, female gender, and prolonged digital screen use, highlighting the need for school and community-based strategies on parental awareness to address excessive screen time in myopia prevention efforts in Malaysia.

Keyword:

Myopia, Screen time, School Children

Title: “A Case Study Of The Effectiveness Of Structured Report Cards In Enhancing Compliance With Pediatric Amblyopia Therapy”

Author: Muhammad Fadzli bin Yaacob

Optometry Unit, Hospital Gua Musang

Background:

Amblyopia, commonly referred to as “lazy eye,” requires consistent therapeutic intervention to achieve optimal visual outcomes. It is one of the leading causes of monocular visual impairment in children and may persist into adulthood if not treated early (Holmes & Clarke, 2006). Despite well-established treatment protocols such as occlusion (patching) and atropine penalization, patient adherence remains a major challenge and significantly influences treatment success. Treatment effectiveness is often limited by poor patient adherence, particularly among children undergoing patching therapy (Newsham, 2000). Traditional compliance monitoring methods often fail to provide timely feedback or sufficient motivation for patients and caregivers.

Objective:

To investigate the effectiveness of using structured report cards as a tool to enhance compliance in amblyopia therapy among pediatric patients.

Case report:

Three patients aged 7–12 years were referred by the school health team to Optometry Clinic, Hospital Gua Musang for refractive error assessment. None had strabismus, systemic medical illness, or a history of ocular or head trauma. Following comprehensive refraction, appropriate spectacles were prescribed to correct the refractive error. After 2–3 months of spectacle wear, amblyopia therapy was initiated and an amblyopia report card was introduced to monitor adherence to the prescribed patching regimen. The report card, designed by the author, consisted of four tables printed on a hard paper sheet, each containing 40 small boxes representing individual therapy days. Parents recorded adherence by documenting the date and duration (hours) of therapy in a designated box after each therapy session. The report card was maintained for two to four months; when completed, a new card was issued to continue monitoring compliance.

Results:

The effectiveness of amblyopia therapy was compared between patients using a structured therapy report card and those without monitoring. The report card group showed improved adherence to therapy and greater gains in visual acuity compared with patients who did not use the report card. Visual acuity in patients who underwent therapy with monitoring report cards showed significant improvement. Additionally, parents reported greater satisfaction and engagement with the therapy process, as the report card enabled them to directly monitor adherence.

Conclusion:

Structured report cards represent a low-cost, practical strategy to improve compliance in amblyopia therapy. By providing regular feedback and encouraging accountability, this approach supports consistent treatment behavior and enhances visual outcomes. Integrating structured monitoring tools into routine pediatric optometric care may strengthen long-term adherence and contribute to more effective amblyopia management.

Reference:

Holmes JM, Clarke MP. (2006). Amblyopia. *Lancet*, 367(9519), 1343–1351.

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Title: Patterns of Visual Impairment Among School Children: Findings from School Health Vision Screening Referrals to Sabah MOH Optometry Services

Author: Fariha Hana Binti Abd Razak¹, Jerisa Binti Jefri², Diana Binti Mohamed³, Norina Binti Abdul Gafor⁴

¹Optometry Unit, Department of Ophthalmology, Hospital Wanita & Kanak-kanak Sabah, Kota Kinabalu, Sabah, Malaysia

²Optometry Unit, Department of Ophthalmology, Hospital Tawau, Sabah, Malaysia

³Optometry Unit, Department of Ophthalmology, Hospital Queen Elizabeth, Sabah, Malaysia

⁴Optometry Unit, Department of Ophthalmology, Hospital Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia

Background:

Visual impairment (VI) is a major public health issue and inadequately addressed in Sabah. National Eye Survey IV (NES IV) in Sabah reported that 92.6% of VI detected in adulthood is avoidable. However, NES IV does not include paediatric population in Sabah. Hence, this study aims to analyse the pattern and causes of VI among school children referred to Sabah MOH Optometry Services.

Methods:

This cross-sectional study included students who failed school health visual screening and referred to Sabah MOH Optometry Services from 2024 to 2025. Habitual visual acuity and refraction assessment were performed. VI was classified according to WHO International Classification of Disease 11th based on presenting visual acuity in the better eye. Association between demographic factors and habitual VI were analysed using SPSS version 31.

Results:

A total of 2,353 students were analysed (51.5% male, 48.5% female). Based on presenting visual acuity, 63.7% (n=1,500) had VI; 61.3% (n=1119) was bilateral, 38.7% (n=381) was unilateral, while 36.3% (n=853) had no VI. After optical correction and treatment, 96.1% (n=2262) achieved no VI, with only 3.9% (n=91) remaining visually impaired. VI was significantly associated with age group ($\chi^2=16.355$, $p=0.000$), showing an increasing trend with age, and race group ($\chi^2=10.195$, $p=0.017$), with the Bumi Sabah group contributing the highest proportion of cases. The main causes of VI were refractive errors (81.9%), followed by binocular vision anomalies (7.5%), convergence and accommodative anomalies (7.0%), and ocular pathology (1.8%). Optometric intervention significantly improves vision impairment status from VI to no VI ($\chi^2=9.68$, $p=0.02$)

Conclusion:

Habitual VI has a substantial proportion among school aged children in Sabah. Significant reduction in VI following referral and treatment was proven. Early detection and intervention on avoidable VI are crucial. Thus, expanding the optometry services in all districts of Sabah is highly recommended.

Keywords:

visual impairment, school children, vision screening

Transforming Ocular Motility Assessment: Eye-Tracking Insights into Acquired Ocular Motor Nerve Palsies

Noor Wafirah Shafee^{1,2}, Helen Davis³

¹Department of Optometry and Visual Sciences, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia

² Integrated Omics Research Group (IORG), Kulliyyah of Allied Health Sciences, International Islamic University Malaysia

³Ophthalmology and Orthoptics, School of Allied Health Professions, Nursing and Midwifery, University of Sheffield, UK

Background: Acquired ocular motor nerve palsies commonly present with acute diplopia and ocular motility deficits. Although many microvascular palsies resolve spontaneously, early identification of atypical or delayed recovery is essential to guide further investigation. Conventional clinical motility assessment remains largely subjective, highlighting the need for objective and quantifiable tools to support clinical decision-making. **Purpose:** This study aimed to evaluate the clinical utility of eye-tracking technology in objectively assessing smooth pursuit and saccadic eye movements in patients with recent-onset acquired ocular motor nerve palsies and to examine recovery patterns over time. **Methods:** Ten patients (mean age 72.4 ± 10.5 years) with recent-onset acquired cranial nerve III, IV, or VI palsies of presumed microvascular origin were recruited within 14 days of symptom onset. Eye movements were recorded using the EyeLink 1000 Plus eye-tracking system at baseline and at 4, 8, 12, and 16 weeks post-onset. Horizontal and vertical smooth pursuit across multiple target frequencies and saccades of varying amplitudes were analysed and compared with age-matched control data. Eye-tracking findings were correlated with clinical ocular motility assessments. **Results:** At baseline, affected eyes demonstrated significantly reduced smooth pursuit gain and impaired saccadic performance compared with controls ($p < 0.05$). Deficits were most evident at higher pursuit frequencies (≥ 0.6 Hz) and during saccades directed toward the paretic gaze, characterised by reduced peak velocity and gain. Longitudinal analysis revealed variable recovery trajectories, with progressive improvement in eye-movement parameters corresponding to clinical motility recovery. **Conclusion:** Eye-tracking provides sensitive, objective metrics for detecting and monitoring ocular motor dysfunction in acquired nerve palsies. Incorporating eye-movement recordings into optometric practice may enhance clinical assessment, support monitoring of recovery, and contribute to technology-driven, evidence-based ocular motility management.

Keywords:

Ocular motility, eye tracking, cranial nerve palsy, smooth pursuit, saccades, neuro-optometry

Title: A Case Report Of Smart Glasses As Assistive Technology In Patient With Advanced Retinitis Pigmentosa

Authors: Siti Hanisah ¹, Mohd Harimi Abd Rahman ¹

¹Centre of Rehabilitation and Visual Needs, Faculty of Health Science, Universiti Kebangsaan Malaysia

Purpose:

To report a case of utilizing smart glasses to improve mobility in a patient with advanced retinitis pigmentosa.

Case report:

A Malay man, 57 years of age, presented with the main issue of difficulty walking independently in new places. He was diagnosed with retinitis pigmentosa in 2008, and currently utilizes a white cane, a Ruby 7 electronic magnifier, and prescription sunglasses for his daily activities. Clinically, his baseline visual acuity was 1/60 in both eyes. Speech Enabled Vision Aids (SEVA), an intelligent audio AI software integrated into smart glasses, was introduced to the patient. During the dispensing session, the patient was provided with training to use several applications in SEVA. First, using the '*Navigation*' application, the patient learned to orient within a 3x4m² clinic cubicle. Following this, a destination was set at a distance of more than 6m, and the patient successfully walked to the setting point independently and returned to the starting point. Additional applications useful for his mobility training included '*Describe scene*', '*Find object*', and '*Fall*'.

Results:

Following a 1-month trial of the SEVA smart glasses, the patient demonstrated a marked improvement in functional independence. The Low Vision Quality of Life (LVQOL) version Bahasa Melayu was used to quantify this outcome. The Low Vision Quality of Life (LVQOL) mobility sub-score increased significantly from a baseline of 52.7% to 71%.

Conclusions:

This significant improvement indicates that SEVA smart glasses successfully served as a highly effective adaptive technology, restoring navigational independence and facilitating a substantially better quality of life for the patient.

Keywords:

Retinitis Pigmentosa, Low Vision Rehabilitation, Smart Glasses, Assistive Technology, Independent Mobility, Low Vision Quality of Life (LVQOL).

Title: Structural Optic Nerve Head and Retinal Nerve Fiber Layer Characteristics in Myopic Glaucoma and Glaucoma Suspects

Authors: Wan Nor Akma Wan Zain^{1,3}, Yaakub Azhany¹, Ungku Noor Aqilla Ungku Hassan¹, Siti Hajar Abdul Razak¹, Wan Nur Amirah Ibrahim^{1,2}, Hussein Waheeda-Azwa¹

¹ Department of Ophthalmology and Visual Sciences, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kota Bharu, Kelantan

² Centre of Optometry Studies, Faculty of Health Sciences, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, 42300 Selangor, Malaysia

³ Unit Optometri, Klinik Pakar, Hospital Slim River, 35800 Slim River, Perak

Background:

Diagnosing glaucoma in myopic eyes remains difficult due to structural alterations of the optic nerve head (ONH), which can imitate glaucomatous damage. Optical coherence tomography (OCT) provides quantitative structural assessment that may aid in differentiating true glaucomatous changes from myopic anatomical variations.

Objective:

To compare ONH and retinal nerve fiber layer (RNFL) characteristics between myopic patients with primary open-angle glaucoma (POAG) and glaucoma suspects.

Methods:

This prospective cross-sectional study included 68 myopic patients (28 POAG, 40 glaucoma suspects) recruited from a tertiary ophthalmology center. All participants underwent a comprehensive ophthalmic examination, including axial length measurement, standard automated perimetry, and spectral-domain OCT imaging (Cirrus HD-OCT 5000). For statistical independence, one eye per subject was analyzed. Group comparisons were performed using independent t-tests. Multivariable logistic regression, adjusted for age, was used to identify structural predictors of POAG.

Results:

POAG eyes demonstrated significantly worse visual field indices, including a lower mean deviation (-7.72 vs -3.94 dB, $p = 0.019$) and a higher pattern standard deviation (5.11 vs 3.38 dB, $p = 0.002$). Structurally, average RNFL thickness was significantly reduced in POAG eyes compared with glaucoma suspects (68.4 μm vs 86.8 μm , $p < 0.001$), with consistent thinning across all quadrants (all $p < 0.05$). POAG eyes also exhibited a smaller neuroretinal rim area ($p = 0.001$) and a higher vertical cup-to-disc ratio ($p = 0.006$). No significant differences were observed in axial length, disc area, or cup volume ($p > 0.05$). In multivariable analysis, RNFL thickness parameters showed the strongest association with POAG, although the association was attenuated after adjustment.

Conclusion:

Significant RNFL thinning and neuroretinal rim loss distinguish myopic POAG from

glaucoma suspects. OCT-derived structural parameters remain valuable diagnostic tools in myopic populations, independent of axial length. Cautious statistical handling of inter-eye correlation is essential to ensure strong inference.

Keywords:

Myopia; Glaucoma; Retinal nerve fiber layer; Optic nerve head; Optical coherence tomography

Title: Axial Elongation as a Mediating Pathway Between Peripheral Defocus Changes and Myopia Progression During 36-Month DIMS Lens Wear

Authors: Siti Nurdiana Yusop ^{1,2}, Bariah Mohd Ali¹, Mizhanim Mohamad Shahimin¹, Woi Pui Juan¹

¹Optometry and Vision Science Programme, Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia

²Hospital Seri Manjung, 32040, Perak, Malaysia

Background:

Peripheral optical signals are believed to influence ocular growth. However, the pathway linking peripheral defocus changes to refractive progression during long-term Defocus Incorporated Multiple Segments (DIMS) lens wear remain unclear. This study aimed to evaluate whether axial elongation (AL) mediates the association between changes in horizontal relative peripheral refraction (RPR) and myopia progression over 36 months.

Methods:

Twenty Malay myopic children (baseline age 9.55 ± 1.61 years) who wore DIMS lenses continuously were followed for 36 months. Cycloplegic spherical equivalent refraction (SER), axial length (AL), and horizontal peripheral refraction were measured at baseline, 3, 6, 9, 12, and 36 months. RPR was calculated across six eccentricities (30N to 30T). Correlation analyses were conducted to identify potential associations prior to mediation testing. Mediation analysis (PROCESS v4.2, Model 4) was used to evaluate the indirect effect of changes in RPR (Δ RPR) on changes in SER (Δ SER) through changes in AL (Δ AL).

Results:

Over 36 months, SER progressed by -0.42 ± 0.35 D, while AL increased by $+0.287 \pm 0.12$ mm. A significant RPR change occurred only at 30N ($p < 0.001$), whereas temporal eccentricities showed small, non-significant changes but demonstrated trend-level correlations with Δ AL (20T: $\rho = 0.436$, $p = 0.055$; 30T: $\rho = 0.437$, $p = 0.054$). Mediation analysis identified significant indirect effects at 20T (-0.0866 ; 95% CI, -0.1956 to -0.0198) and 30T (-0.0500 ; 95% CI, -0.1161 to -0.0082), while the direct effects were not significant, indicating full mediation. No significant mediation was observed at nasal eccentricities.

Conclusion:

Axial elongation was identified as a mediating factor in the relationship between temporal peripheral refractive changes and myopia progression over 36 months of DIMS lens wear.

These findings suggest regional variation in the association between peripheral refraction and ocular growth. However, the relatively small sample size may limit generalizability.

Keywords:

Peripheral defocus; axial elongation; mediation analysis; DIMS lens; myopia progression.

Title: Demographic Factors Influencing Management Preferences in Low Vision Services: A Registry-Based Study

Authors: Nur Hidayah Yusuf¹, Nur Adnin Razali²

¹Hospital Tuanku Ampuan Najihah, Kuala Pilah, Negeri Sembilan, ²Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang

Background:

Low vision rehabilitation involves interventions ranging from low vision aids to professional referrals to improve functional outcomes. However, their use may be influenced by demographic and socioeconomic factors. This study investigated demographic factors associated with patients' preferences for prescribed management in a low vision clinic using registry-based data.

Methods:

This cross-sectional registry-based study analyzed data from 605 patients in the Low Vision and Blind Registry from year 2022 to 2024. Demographic variables evaluated included age at notification, gender, race, employment status, area of residence, and education level. Prescribed management options were categorized into optical aids, non-optical aids, assistive technology, special techniques, and referrals to relevant departments. The associations between demographic characteristics and types of management prescribed were examined using the chi-square test.

Results:

The prescription of optical aids was significantly associated with age ($\chi^2(2) = 10.484$, $p = 0.005$) and area of residence ($\chi^2(4) = 10.057$, $p = 0.039$). Non-optical aid prescriptions were significantly associated with area of residence ($\chi^2(4) = 27.616$, $p < 0.001$) and education level ($\chi^2(3) = 8.301$, $p = 0.040$). Assistive technology prescriptions showed significant associations with employment status ($\chi^2(1) = 9.418$, $p = 0.002$), area of residence ($\chi^2(4) = 34.763$, $p < 0.001$), race ($\chi^2(6) = 17.684$, $p = 0.007$), and education level ($\chi^2(3) = 8.301$, $p = 0.040$). The prescription of special techniques was significantly associated with employment status ($\chi^2(1) = 4.064$, $p = 0.044$) and education level ($\chi^2(3) = 9.629$, $p = 0.022$). Referral was significantly associated only with age ($\chi^2(2) = 11.510$, $p = 0.003$). Area of residence and education level emerged as the most consistently associated demographic factors across multiple management modalities.

Conclusion:

Demographic characteristics significantly influence management preferences in low vision care. These emphasize the need for optimizing individualized rehabilitation strategies to ensure equitable and effective rehabilitation services.

Keywords:

Low Vision and Blind Registry; Management Preference; Demographic factors

Title: Corneal Higher Order Aberration Profiles in Myopic Patients Undergoing Laser Refractive Evaluation at HPUSM

Authors: Raja Nor Shahila Raja Mohamad¹, Azhany Yaakub¹, Mohtar Ibrahim¹, Julieana Muhammed¹

¹Department of Ophthalmology and Visual Sciences, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kota Bharu, Kelantan

Background:

Preoperative evaluation of corneal higher-order aberrations (HOAs) is an important component of optometric assessment in patients undergoing laser refractive surgery screening. Understanding baseline HOA profiles is essential for optimizing refractive surgery outcomes, because these aberrations cause visual symptoms such as glare, halos, and reduced contrast sensitivity that are not correctable with spectacles. This study aimed to describe the distribution and characteristics of corneal HOAs in myopic patients undergoing laser refractive screening at Hospital Pakar Universiti Sains Malaysia (HPUSM).

Methods:

A retrospective cross-sectional study was conducted on 60 eyes of myopic patients who screened for laser refractive surgery at HPUSM from Jun 2024 to Jun 2025. Corneal HOAs assessed included total HOA, spherical aberration, coma and trefoil. Assessment was done by using Schwind Sirius Tomographer over 6 mm optical zone. Descriptive analysis was used to look at the aberration patterns.

Results:

The age range of patients is between 20 to 52 years old with mean age 34.67 ± 7.42 . Females comprised 51.67% of the subjects, while 48.33% were male. The mean RMS value of total HOA, coma, trefoil, spherical aberration was $0.350 \pm 0.075 \mu\text{m}$, $0.1752 \pm 0.0824 \mu\text{m}$, $0.1540 \pm 0.0888 \mu\text{m}$ and $0.1898 \pm 0.0591 \mu\text{m}$ respectively. Based on mean keratometry values, 50.0% of eyes were categorized within the normal corneal curvature range, while 38.33% and 11.67% exhibited steeper and flatter corneal curvature, respectively. Total HOA RMS showed weak and non-significant correlations with age and mean keratometry ($p > 0.05$).

Conclusions:

Total HOA showed highest RMS value among the measured aberrations, followed by spherical aberration, coma, and trefoil. Higher total HOA may contribute to visual disturbances, highlighting the importance of assessing HOAs during preoperative evaluation to optimize surgical planning and patient satisfaction.

Keywords: TransPRK, Corneal aberration; Higher order aberration;

References:

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Title: Time-Gap-Related Axial Length Changes Over 5 Years

Authors: Rohaliza Binti Enet Ghani¹, Sit Jo Anne¹, Samsia Binti Lattang¹, Farah Wahidah Binti Hashim¹

¹MAIWP-Selayang Hospital Cataract Centre

Background:

Biometry is a common assessment among cataract patients. This raises a question: Does axial length (AL) remain stable over time? This study aims to examine AL change over time.

Methods:

We retrospectively analysed patients who underwent AL measurement over 5 years using IOLMaster 700 between 2020 and 2025 at MAIWP-Selayang Hospital Cataract Centre. Time gap between measurements was coded as whole years (dt_year, 0–5). The primary outcome was AL change (dAL = AL2 – AL1). A linear mixed model with random intercept assessed the association between dAL and dt_year (per-year slope). Clinically meaningful change was assessed using absolute change thresholds ($|dAL| \geq 0.10$ mm, ≥ 0.20 mm, ≥ 0.30 mm). Proportions were compared across time-gap groups using chi-square tests; Fisher's exact test was used when expected counts were small.

Results:

A total of 140 eyes were included; mean age was 67.1 ± 6.9 years, 54.3% were male. In the mixed model, AL change increased significantly with time gap ($\beta = 0.0192$ mm/year, 95% CI 0.0103 to 0.0281; $p < 0.001$), corresponding to ~ 0.10 mm over 5 years. The proportion of eyes with $|dAL| \geq 0.10$ mm increased from 7.8% at 0–2 years to 33.3% at 3–4 years and 50.0% at 5 years (χ^2 $p < 0.001$). For $|dAL| \geq 0.20$ mm, the proportion was 3.1% at 0–4 years versus 18.2% at 5 years (Fisher's exact $p = 0.004$). Changes ≥ 0.30 mm were uncommon (3.1% vs 6.8% for 0–4 vs 5 years; Fisher's exact $p = 0.384$).

Conclusion:

AL increases measurably with time in this cataract population. Clinically meaningful change becomes common after ≥ 3 years, with a significant rise in ≥ 0.20 mm change at 5 years. These findings support repeating biometry routinely at ≥ 3 years, and strongly at 5 years, to reduce refractive risk.

Keywords:

Cataract surgery; Optical biometry; Axial length change

Reference

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Title: Management Of Acquired Partially Accommodative Esotropia With Diplopia In A Child With Seizure Disorder: A Case Report

Ahmad Ziad Suradin¹, Syarmilla Che Shamsudin², Raja Nor Shahila Raja Mohamad³

¹Department of Ophthalmology Hospital Tanah Merah

² Department of Ophthalmology Hospital Raja Perempuan Zainab II

³Department of Ophthalmology & Visual Sciences Hospital Pakar USM

Purpose:

To report the clinical progression, orthoptic findings, and management outcome of acquired partially accommodative esotropia associated with diplopia in a child with a history of focal seizures.

Case report:

A 10-year-old Malay girl with a history of left focal seizures presented with right eye squint and diplopia since May 2023, noted during a seizure episode. Neuroimaging (CT brain) was normal. Initial examination revealed alternating esotropia measuring 45 prism dioptres (PD) at distance and 20 PD at near. Visual acuity was 6/6 in both eyes with minimal refractive error.

Cycloplegic refraction revealed significant hyperopia (RE +3.75 DS, LE +3.50 DS), and full hyperopic correction was prescribed. Deviation reduced with spectacles, but a residual esotropia of 20–30 PD remained over several visits despite good compliance. The patient continued to experience diplopia in all gazes. Stereopsis fluctuated during follow-up, initially measurable at 120 seconds of arc but later deteriorating.

As the non-accommodative component persisted, bilateral medial rectus recession was performed targeting a correction of 25 PD. On postoperative day one, the patient achieved orthophoria at distance and near with visual acuity of 6/6 in both eyes and the manifest deviation resolved.

Results :

Full hyperopic correction reduced but did not completely eliminate the esodeviation, confirming partially accommodative esotropia. Surgical intervention successfully restored ocular alignment and eliminated diplopia.

Conclusions:

This case highlights the importance of thorough cycloplegic refraction, ongoing orthoptic monitoring in children presenting with acquired esotropia. Early identification of accommodative and non-accommodative components is crucial, particularly in patients

with neurological history to optimize binocular outcomes and prevent prolonged sensory disruption.

Keywords:

Partially Accommodative Esotropia, Pediatric Strabismus, Diplopia

Longitudinal Changes in Refractive Error Among Malaysian Preterm Children With and Without Retinopathy of Prematurity

Authors: Haizan Farah Bt Hamzah¹, Arifah Nur Yahya², Majidah Zainal Abidin³, Khatijah Mustapa⁴

¹Department of Ophthalmology, Hospital Selayang

Background

Preterm infants are at increased risk of developing refractive errors due to incomplete ocular development, particularly in the presence of retinopathy of prematurity (ROP). With advances in neonatology allowing better survival of infants, long-term ocular outcomes, including the progression of refractive errors in preterm children, remain a concern. Limited data are available comparing refractive outcomes between preterm children with and without ROP in the Malaysian population. This study is to evaluate longitudinal changes in spherical equivalent (SE) and compare refractive outcomes between Malaysian preterm children with and without ROP.

Methods

A retrospective study was conducted at a tertiary hospital involving 54 preterm children (20 with ROP and 34 without ROP). The mean ($\pm$ SD) birth weight was 1.15 ± 0.32 kg, and the mean gestational age was 29.0 ± 1.8 weeks. Spherical equivalent measurements were obtained at three time points (SE_{y1}, SE_{y2}, SE_{y3}). A mixed repeated-measures ANOVA was performed using IBM SPSS Statistics to assess the effects of time and ROP status on SE. Greenhouse–Geisser correction was applied when sphericity assumptions were violated. Statistical significance was set at $p < 0.05$.

Results

Descriptive analysis demonstrated a progressive decrease in SE over time in both groups. In the non-ROP group, mean SE decreased from +1.02 D at SE_{y1} to +0.65 D at SE_{y3}, remaining hyperopic. In contrast, the ROP group exhibited a greater myopic shift, with mean SE decreasing from +0.21 D to –0.37 D over the same period. Repeated-measures ANOVA revealed a significant main effect of time ($p = 0.010$) and a significant main effect of ROP status ($p = 0.030$). However, the interaction between time and ROP status was not statistically significant ($p = 0.757$), indicating similar patterns of refractive change over time between groups.

Conclusion

Spherical equivalent changed significantly over time in Malaysian preterm children. Children with ROP demonstrated more myopic refractive outcomes compared with non-ROP children, although the longitudinal progression pattern did not differ significantly between groups. Continuous refractive monitoring is essential, particularly for children with ROP.

Keywords

Retinopathy of prematurity, Spherical equivalent, Refractive error, Myopia, Longitudinal study

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Title: Outcomes of a School Vision Screening Program: Refractive Error Patterns in Sabah Students

Authors: Nur Syuhaidah Mahfuzah Bt Saidil¹, Nur Syafirah Zalaiqah Ruslan¹, Dr. Chua Shee Wen²

¹Department of Ophthalmology, Hospital Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia.

² Department of Ophthalmology, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Kota Kinabalu, Sabah

Background:

Refractive errors (RE) are the major contributor to reduced vision among school students in Malaysia. In Sabah, challenging road conditions and limited transportation make school vision screening programs essential for early detection of visual problems. This study aimed to assess the prevalence and patterns of refractive errors among school students in Sabah and examine variations by age and gender.

Methods:

A cross-sectional school-based vision screening program was conducted across five districts in Sabah: Kudat, Kota Belud, Kota Kinabalu, Tenom, and Beaufort. All students aged 5-18 years in the selected schools were screened using Snellan Chart. Students with visual acuity of 6/9 or worse were included for non-cycloplegic refraction. RE were classified as myopia (spherical equivalent [SE] > -0.50D), hyperopia (SE > +0.50D), and astigmatism (cylinder power $\geq$ 0.50DC). Students with ocular pathology unrelated to RE were excluded. Data were analysed using IBM SPSS Statistics version 30.

Results:

Among 1610 screened students, 9.7% were identified with RE. Of these, 61% (n = 96) were primary school students and 39% (n = 61) were secondary school students, with mean ages of 10.15 years (95% CI: 9.82–10.47) and 15.64 years (95% CI: 15.15–16.13), respectively. Females comprise 60.4% of affected primary school students and 65.6% of affected secondary school students. In primary school, 37.5% had myopia, 22.9% had hyperopia, and 38.1% had astigmatism. In secondary school, myopia predominated (72.1%), followed by astigmatism (16.4%) and hyperopia (9.8%). One case of antimetropia was identified in each age group. There was no significant association between age and RE ($p = 0.451, 0.559$) or between gender and RE ($p > 0.05$).

Conclusion:

Myopia was the most common refractive error among school students in Sabah. Given the geographical and transportation challenges, targeted school-based screening programs and provision of free corrective glasses are essential to support students' visual health and academic performance.

Keywords:

School vision screening, Refractive Error, Prevalence, Sabah