Scientific Session 1: Specialty Contact Lenses and Dry Eye Management

MANAGING IRREGULAR CORNEA WITH MINI SCLERAL CONTACT LENS

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Introduction: Corneal disorders like keratoconus, Steven Johnson Syndrome, corneal dystrophy, corneal scar are the sight threatening conditions of the anterior eye. Optical management of these corneal disorders include use of spectacles and contact lenses like corneal lenses (GP) as well as corneo-scleral/mini scleral and scleral contact lenses. Mini scleral contact lens corrects most of the irregular cornea and provides maximum comfort with visual rehabilitation. It also halts the corneal transplant in many cases to provide better vision and comfort when other lenses do not work. So the purpose of this study was to determine the demographic as well as clinical profile and visual outcome of mini scleral contact lens in different corneal disorders. **Methods**: Hospital based cross-sectional study was conducted between July 2022 to December 2023 in the Contact Lens Department of a tertiary eye hospital in eastern Nepal. During the study period a total of 207 eyes from 128 patients were included. The eyes of different corneal disorders in which mini scleral contact lens trial was performed were included in the study. Ethical clearance was taken from the institutional review committee. Data was collected from the clinical evaluation sheet, entered in excel and analysis was done using SPSS version 23. **Results:** The mean age (±SD) of the patients was 21.03 (6.7) ranged between 11 to 42 years. 94 (73.4%) were male, and 116 (90.6%) were up to 30 years of age. Majority of eyes were keratoconus 180 (87%). Mean average keratometry reading was 54.9 (±7.7) dioptre in the right eye and 54.82(±8.2) dioptre in the left eye. Mean astigmatism was 6.3 (±3.8) dioptre in the right eye and 5.5 (±3.3) dioptre in left eye. The mean sagittal depth of mini scleral contact lens was 4.55(±0.47) mm in the right eye and 4.47 (±0.38) in the left eye. After use of mini scleral contact lens, the majority of the eyes 183 (88.4%) got normal vision (0-0.3 log MAR) among them 84 (40.6%) eyes had 0.0 log MAR visual acuity. **Conclusions**: Keratoconus is a common corneal disorder and the majority of eyes get normal vision with mini scleral contact lens so it is the most suitable device for visual rehabilitation in corneal disorders.

MANAGEMENT OF SYMBLEPHARON IN A 13-YEAR-CHILD USING A PIGGYBACK SCLERAL LENS: A CASE REPORT

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Background: A 13-year-old child diagnosed with epidermolysis bullosa simplex presented with severe limbal stem cell deficiency (LSCD), corneal opacity, and symblepharon, precluding surgical intervention. Scleral contact lenses were considered for visual rehabilitation. Initial attempts with larger scleral lenses (16 mm Boston Sight, 14 mm PROSE) failed due to edge lift and inferior symblepharon. A Notch Scleral lens also proved unsuccessful. Subsequently, a piggyback scleral contact lens system, combining a soft contact lens with a 13 mm PROSE lens with minimal vault, was successfully tried. **Clinical Problem:** The child's condition necessitated non-surgical management of symblepharon and severe LSCD to improve vision. Conventional scleral lenses failed due to anatomical challenges, including inferior symblepharon causing poor lens fit and stability. **Existing solution(s) and its shortcoming:** Scleral lenses are effective for managing ocular surface diseases but can be challenging in complex cases like this due to anatomical irregularities. The piggyback system, though effective in this case, requires precise fitting and ongoing monitoring for stability. **Clinical pearls:** 1. Surgical options for symblepharon were not viable due to skin fragility associated with epidermolysis bullosa simplex. 2. Initial trials with larger diameter scleral lenses failed due to edge lift exacerbated by inferior symblepharon. 3. The Notch Scleral lens failed due to air bubble entrapment. 4. The piggyback scleral contact lens system provided a successful alternative, enhancing stability and visual acuity. **Take home message:** 1. The piggyback system offers a promising solution for managing challenging cases of corneal opacity and LSCD with symblepharon where traditional scleral lenses fail. 2. This case highlights the effectiveness of innovative approaches in ocular surface disease management, underscoring the need for tailored solutions in complex clinical scenarios.

UNVEILING HIDDEN CONDITIONS: SUCCESSFUL CONTACT LENS INTERVENTION IN PATIENTS MISDIAGNOSED WITH AMBLYOPIA

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Background: Amblyopia is often diagnosed in patients with subnormal vision, leading to referrals for vision therapy. However, other underlying conditions such as high myopia and keratoconus can present with similar symptoms, leading to misdiagnosis and ineffective treatment. **Clinical Problem:** This presentation examines two cases where patients were initially referred for amblyopia. Upon thorough examination, one patient was diagnosed with high myopia and the other with keratoconus. Both conditions required different treatment approaches than amblyopia. **Existing solution(s) and its shortcoming:** Traditional vision therapy for amblyopia would not have addressed the unique challenges posed by high myopia or keratoconus. Misdiagnosis could result in continued visual impairment and patient dissatisfaction due to ineffective treatment. **Clinical pearls:** Importance of comprehensive diagnostic evaluation to differentiate between amblyopia, high myopia, and keratoconus. Utilisation of corneal topography, refraction tests, and other diagnostic tools to accurately identify underlying conditions. Contact lenses, specifically designed for high myopia and keratoconus, can significantly improve visual acuity and patient quality of life. **Take home message:** Accurate diagnosis is crucial in managing visual impairments and ensuring effective treatment. Optometrists should employ thorough diagnostic methods to distinguish between amblyopia and other conditions such as high myopia and keratoconus. Tailored contact lens solutions can provide optimal visual outcomes for patients with these conditions, highlighting the importance of precise and individualised patient care.

ASSOCIATION BETWEEN ELECTRONIC DEVICE USAGE AND DRY EYE DISEASE AMONG STUDENTS IN ASMARA, ERITREA 2023-24

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Introduction: Dry Eye Disease (DED) is a prevalent ocular condition characterised by insufficient tear production or excessive tear evaporation, leading to discomfort and visual disturbances. The widespread use of electronic devices has raised concerns about their potential association with DED. **Methods**: An observational cross-sectional analytical study was conducted and a total of 294 students were sampled using stratified random sampling. A pre-developed self-administered questionnaire and clinical evaluation methods were used. The data were directly entered into SPSS (version 26), and cleaned. Crude Odds ratio (COR) and Adjusted Odds ratio (AOR) with 95% CI were used to measure the direction and strength of association between explanatory variables and the outcome variable. P-values less than 0.05 were considered statistically significant. **Results:** The median age of the participants was 21 years, with 86.7% of them being 25 years or less years. The frequency and intensity of symptoms of DED were also assessed, revealing that 25.5% of students reported problems with their eyes when watching screens often or always. Moreover, the study examined the duration of electronic device usage, finding that almost half of the students (50.3%) spent 6 to 10 hours per day using electronic devices. The prevalence of DED was computed with 29.9% of students identified as having DED. Spending 6 to 10 hours per day using electronic devices increased the likelihood of DED by 14 times compared to spending less than 5 hours. Additionally, spending more than 10 hours per day increased the likelihood by more than 45 times. However, age, sex, year of study, and department were not associated with DED. Tear film parameters were compared between students with and without DED, revealing significant differences ($p<0.001$) in Schirmer's test and tear breakup time. **Conclusions**: This study concluded that the dry eye was prevalent as near one student in every three and directly linked to excessive use of electronic devices. Given the established link between excessive screen time and DED, implementing educational programs specifically aimed at college students becomes crucial.

MEIBOMIAN GLAND DYSFUNCTION AND DRY EYE MANAGEMENT USING THERMAL PULSATION THERAPY

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Background: Meibomian Gland Dysfunction (MGD) is a chronic abnormality of the Meibomian gland that leads to Meibomian duct obstruction, resulting in qualitative and quantitative changes in glandular secretion. The reduced lipid secretion from the Meibomian Gland results in the quick evaporation of the tear in the atmosphere, resulting in Dry Eyes. Thermal Pulsation Therapy is widely being used these days in treating the MGD's and curing the symptoms of dryness. **Clinical Problem:** The most common method for therapeutic treatment for MGD and dry eye has been regular hygiene, warm compression, and using lubricating eye drops. However, these methods have limited efficacy and can also be burdensome. The symptoms and challenges faced by the patient, such as irritation, pricking sensation, burning sensation, ocular fatigue, and so on, still persist even after following the treatment methods as observed during the clinical examination. **Existing solution(s) and its shortcoming:** In the current scenario, the advancements in the field of dry eye treatment have made it possible to examine every parameter of dryness, such as the measurement of lipid layer thickness using interferometry, non-invasive breakup time, tear meniscus height, and meibomian gland loss in both the upper and lower lids, with the help of the latest technology software. These help to determine the severity of the dryness. Dryness caused by the Meibomian Gland Dysfunction can be treated with the use of thermal pulsation therapy, which is being practised at Netradham Eye Care Center. This pulsation system works by applying heat to the inner eyelid, facilitating efficient heat transfer directly to the meibomian gland. This helps to melt down the lipid and open the obstructed ducts. Also, expressing the meibomian ducts after therapy helps further in smooth flow of the lipid secretion. Although Thermal Pulsation Therapy is used in the treatment of MGD, the cause of dry eyes is not solely the meibomian gland dysfunction. Many other reasons, such as reduced lacrimal secretion and various systemic diseases, still may trigger the condition of dryness. Not only that, the durability of the thermal pulsation therapy remains uncertain. **Clinical pearls:** In the clinical practice, after the Thermal Pulsation Therapy, the re-evaluation of the parameters has shown improvements. The response from the patients has been positive, and the symptoms being faced by the patients have been reduced to some extent. **Take home message:** Thermal Pulsation Therapy definitely has benefits over warm compression therapy and eyelid hygiene to help patients relieve from conditions like MGD and Dry Eye.

CENTRAL CORNEAL THICKNESS IN NEW CASES OF DRY EYES: A CASE-CONTROL STUDY

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Introduction: Loss of homeostasis and chronic inflammation result in ocular surface damage and dry eye symptoms, which is also associated with corneal thinning in established cases. Yet, the correlation between corneal thickness and new cases of dry eyes remains inadequately supported by evidence. **Purpose:** This study aims to compare the central corneal thickness of new cases of dry eyes to that of age- and gender-matched controls. **Methods**: A total of 45 dry eye patients were compared with 61 age- and gender-matched non-dry eye individuals. The Ocular Surface Disease Index (OSDI) questionnaire was used to evaluate symptoms, and the central corneal thickness was measured with a Nidek CEM-530 specular microscope. Patients were grouped based on disease severity (OSDI scores), and the clinical findings were compared between groups for slit-lamp examinations, Schirmer's I test, and tear film breakup time. **Results:** The median age of patients was 25.0 (interquartile range [IQR], 20.0 to 32.0) and 27.0 (IQR, 20.0 to 32.0) years in the control and dry eye groups, respectively ($p=0.63$). The median (IQR) values of the OSDI scores, tear film breakup time scores, and Schirmer's test measurements in the control groups were 10.4 (8.3 to 10.4), 12.0 (11.0 to 14.0) seconds, and 16.0 (13.5 to 19.5) mm, respectively, which differed from the dry eye groups ($p<0.0001$). These values in the dry eye group were 29.1 (25.0 to 39.5), 4.0 (3.0 to 8.0) seconds, and 8.0 (3.5 to 11.0) mm, respectively. Patients with dry eyes had lower central corneal thickness than controls ($p<0.01$). The mean ± standard deviation of central corneal thicknesses in patients with dry eyes and the control group were 520.3 ± 26.8 and 545.3 ± 18.8 µm, respectively. **Conclusions:** The central corneal thickness in dry eyes was significantly reduced compared with the control group. These findings may be useful in monitoring and managing dry eyes and should be considered in intraocular pressure measurements and refractive surgical procedures.

SCLERAL LENS IN VARIOUS PATHOLOGICAL CONDITIONS OF EYES: A CASE SERIES

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Background: Scleral contact lenses are wide-diameter, rigid, gas-permeable systems that vault over the cornea. It has a significant role in visual rehabilitation in patients with corneal irregularities, scarring, ectasia, and ocular surface diseases. It vaults corneal irregularities and provides a smooth, clear optical surface, which can lead to substantial improvements in visual acuity and quality of vision and comfort. Here, we present a case series of visual rehabilitation in patients with Stevens-Johnson Syndrome, corneal scars, and severe keratoconus with scleral lens. **Clinical Problem:** Visual impairment due to corneal ectasia, irregularities, severe dry eyes and ulcer **Existing solution(s) and its shortcoming:** Scleral lens vaults corneal irregularities and provides a smooth, clear optical surface, which can lead to substantial improvements in visual acuity and quality of vision and comfort. **Clinical pearls:** The main indications for scleral contact lens (SCL) are visual rehabilitation in patients with corneal irregularities due to ectasia like keratoconus, pellucid marginal degeneration, corneal injuries, corneal melting due to pathological condition and infections, the treatment of severe dry eye like Sjogren Syndrome, Stevens-Johnson Syndrome and other ocular surface disorders; correction of refractive errors with high and irregular astigmatism and various corneal surgeries complications including Post-penetrating keratoplasty (post-PK), laser-assisted in situ keratomileusis (LASIK), Radial Keratotomy (RK), Deep anterior lamellar keratoplasty (DALK) etc. **Take home message:** Scleral lenses present a revolutionary visual rehabilitation option for those with irregularities of the anterior surface of the cornea, irregular astigmatism, and corneal ectasia, corneal scars, offering a pathway to clear vision and improved quality of life and has considerably reducing the number of corneal transplant surgeries.

Scientific Session 2: Myopia and Ocular Biometry

COMPARISON OF THE EFFICACY AND CLINICAL APPLICATIONS OF THREE DIFFERENT MYOPIA CONTROL METHODS: RLRL, 1% ATROPINE, AND OK LENS IN ADOLESCENT CHILDREN

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Background: Myopia has become a global public health problem. It is predicted that by 2050, approximately 50% of the world's population will suffer from myopia, and up to 10% will suffer from high myopia. If myopia is not prevented and controlled, the progressive growth of the axial length (AL) brought about by myopia, especially pathologic myopia, can lead to various ocular complications, including retinal detachment, neovascular haemorrhage of the choroid in the macula, cataract, and glaucoma, which may lead to permanent visual impairment or blindness. Therefore, treatments to slow the progression of myopia have become an important research area. **Purpose:** To compare the efficacy and clinical application of repeated low-level red light (RLRL), 1% atropine gel, and orthokeratology lenses for myopia in adolescent children. **Methods:** This study investigated 600 children aged 8–16 years with a spherical equivalent (SE) of −0.50 to −7.00 diopter (D) treated in the past 1 year. They were divided into four groups using a randomized number table. In the RLRL group, a wavelength of 650 nm was used, and the adjustable settings were 3/6/9, corresponding to powers of 0.35/0.65/0.95 mW. The other three groups were 1% atropine (1% atropine gel applied alternately to each eye once a week), orthokeratology lens (OK group), and control (single-vision spectacles [SVS]). Each group comprised 150 patients (150 eyes, data from the right eye). **Results:** Before the intervention, the AL of the RLRL, 1% atropine, OK, and SVS groups were not significant difference($P > 0.05$). After 1 year, the AL of the four groups increased by 0.05±0.21, 0.07 ± 0.16, 0.25 ± 0.19, and 0.41 ± 0.18 mm, When the OK group was compared with the RLRL, 1% atropine, and SVS groups, the difference was statistically significant($P < 0.05$). In the RLRL group, the AL progression of the 0.35, 0.65, and 0.95 mW subgroups was −0.02 ± 0.19, 0.05 ± 0.21, and 0.11 ± 0.21 mm after

1 year; the difference between 0.35 mW and 0.95 mW was statistically significant (P < 0.05). Pre-intervention and after 1 year K1 and K2 was not statistically significant (P >0.05). Before the intervention, the SEs of the RLRL, 1% atropine, OK, and SVS groups were −2. 73 ± 1.65, −2. 67 ± 1.52, −2.77 ± 1.51, and −2.73 ± 1.49 D, respectively, and were not significantly different (P >0.05). After 1 year, the four groups showed SE increases of −0.07 ± 0.40, −0.06 ± 0.35, −0.44 ± 0.44, and −0.70 ± 0.36 D, respectively. The differences between the OK, RLRL, and 1% atropine groups and SVS group were statistically significant (P <0 .05). **Conclusions:** RLRL, 1% atropine, and OK lenses were effective in controlling AL and SE increase in adolescents compared with SVS, with RLRL and 1% atropine exhibiting better outcomes than OK lenses. RLRL was effective at controlling myopia progression at powers of 0.35, 0.65, and 0.95 mW.

RATE OF MYOPIA PROGRESSION IN URBAN SETTING OF NEPAL

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Introduction: Globally, myopia stands out as a common refractive condition that poses a significant health concern. Presently, myopia is recognized as a major public health challenge. The occurrence and advancement of myopia exhibit variations due to factors such as age, onset age of myopia, its severity, geographical location, race, and ethnic background. In Nepal, prevalence varied significantly, ranging from 0.6% to as high as 27.1%, owing to substantial differences in study timelines, locations, and ethnic compositions. There is a lack of epidemiological data concerning myopic children in Nepal, especially regarding the progression of myopia. Therefore, this study aimed to retrospectively investigate myopia progression in children in urban settings of Nepal. **Methods**: This retrospective study was conducted at Drishti Eye Care Centre, Kalanki, Nepal. The required data of individuals who visited at least twice to any of the Drishti Eye Care Centers located in Kathmandu from January 2017 to December 2023 for ophthalmic consultation was extracted for analysis from the electronic medical records database of Drishti Eye Care. Individuals aged 5 to 30 years and only with the diagnosis of "myopic refractive error" in their first/baseline visit were included in the study. The data was collected using Microsoft Excel having variables like age, gender, age of onset of myopia, demographic details and refractive error (sphere, cylinder and axis). **Results:** Overall, the mean progression ranged from -0.01 ± 0.019 D (standard error) to -0.369 ± 0.10 D, with the most significant changes in refractive error observed in children aged 6–10 years and the least in adults aged 26–30 years. An early onset of myopia was associated with high myopia in adulthood. **Conclusions**: The rate of myopia progression in urban Nepalese children falls within the lower spectrum compared to Caucasians and Chinese. However, with changing lifestyles and other risk factors, future trends could become concerning, highlighting the necessity for early anti-myopia strategies.

INFLUENCE OF THE TIME OF DAY ON OCULAR BIOMETRY CHANGES FOLLOWING SHORT-TERM READING TASK: A PILOT STUDY

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Introduction: Extensive near-work is a major environmental risk factor for myopia, with significant axial elongation observed after short-term near-work as well. Notably, the axial length of the human eye varies diurnally, being longest at midday and shortest at night. Therefore, we aimed to investigate the influence of these diurnal variations on ocular biometry changes following a reading task, performed using a smartphone and hardcopy, at two different times of the day (morning and evening). **Methods**: Eight young adults participated in this pilot study. The participants completed 15-minute reading tasks: reading text from a hard copy and a smartphone at a distance of 20 cm from their eye level. Both tasks were done in the morning and evening on two different days. Ocular biometry was measured using a non-contact biometer (Lenstar-LS 900; Haag Streit, Köniz, Switzerland) before and immediately after each 15-minute reading session. **Results:** The increase in axial length (mean ± standard error of the mean) from baseline was relatively greater after reading from hardcopy in the morning (6.25 ± 4.19 µm, p = 0.180) compared to the evening (3.75 ± 3.75 µm, p = 0.351). The mean change in axial length after reading on a smartphone in the morning was -1.25 ± 2.95 µm (p = 0.685), and 2.50 ± 3.13 µm (p = 0.451) in the evening. However, the changes in axial length were not statistically significant between any of the tasks, both in the morning and evening (p > 0.05). **Conclusions**: In this pilot study, axial length changes following 15-minute of reading tasks do not indicate a significant interaction between the time of day (morning and evening) for either task.

VISUAL PROBLEMS AMONG VISUAL DISPLAY TERMINAL USING CHILDREN IN NEPAL DURING THE PANDEMIC PERIOD AFTER COVID-20

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Introduction: During the pandemic, children were more compelled to spend more time at home. Therefore, as the duration of pandemic extends, children overuse these devices in daily life which causes various eye issues such as asthenopia, dryness, and eye fatigue. And it affected others factors such as accommodative insufficiency, convergence insufficiency and so on. The objective of this study was to identify visual problems among VDT-using children in Nepal following the COVID-19 pandemic, to ascertain the level of accommodation among VDT users and to investigate the relationship between time of use, refractive status, and BSV status in children following a COVID pandemic. **Methods**: This was hospital based prospective, observational descriptive study carried in paediatric OPD of Nepal Eye Hospital with consecutive 70 children attending OPD. Patient particulars along with detailed history, slit lamp examination, refraction and visual acuity measurement, and orthoptics evaluation were done and documented. **Results:** A total of 70 cases of children who were using digital devices during their pandemic were included in this study. Among them male were 51% males and 49% females. The most common symptom was headache seen in 49% of patients, followed by tired eye, sore eye, dryness, blur vision respectively in digital devices users. Categorical comparisons between the two groups showed a significantly higher number of children with the symptomatic CISS score in the group of children using digital devices for 4 hours/day (n=39) or more than in the group of children using digital devices for less than 4 hours/day (n=15, P=0.04). **Conclusions**: Digital eye strain was more common among the VDT users. The three commonest ocular abnormalities were accommodative Insufficiency, accommodative facility, and refractive error. The mean CISS scores were 21.73±12.81 for children less than 4 hours and 30.34±13.0 for children using digital devices more than 4 hours or more with P value 0.019. The mean values of near exophoria (P=0.03), NFV (P=0.02), NRA (P=0.02) and AA were significantly different between the two groups.

CORRELATION OF OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY WITH MULTIFOCAL ELECTRORETINOGRAPHY IN HIGH MYOPIA

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Introduction: Myopia is the most common ocular condition and refractive error worldwide and is a significant global public health and socio-economic issue. The primary aim of this research study involves assessing and establishing correlations between the retinal vascular parameters and retinal functional parameters in Nepalese subjects with high myopia. **Methods**: A cross sectional hospital based, descriptive study was carried out at HEH with 40 high myopic and 40 age-sex matched controls. Each subject underwent OCTA followed by mfERG. Axial length, spherical equivalent refractive error, mfERG parameters (Amplitude and Implicit time), and OCTA parameters (vessel density, was measured, compared and correlated topographically with mfERG ring 1 correlated and compared with OCTA ETDRS foveal zone, mfERG ring 2 correlated and compared with OCTA ETDRS parafoveal zone (3mm), and mfERG ring 3 correlated and compared with OCTA ETDRS perifoveal zone (6mm). **Results:** A positive correlation was noted between amplitude and the severity of myopia and axial length, whereas implicit time exhibited a negative correlation with these factors. Moreover, the mean SCP-VD, DCP-VD, as well as retinal thickness (both parafoveal and perifoveal), were significantly diminished in high myopes compared to controls. Conversely, the FAZ area and perimeters were notably larger in high myopic individuals. SCP-VD, DCP-VD, and retinal thickness displayed a significant negative correlation with the degree of myopia and axial length. Additionally, mfERG amplitude exhibited a positive correlation with vessel density in both SCP and DCP, while mfERG implicit time demonstrated a significant negative correlation with vessel density in SCP and DCP. Multiple linear regression analyses unveiled a noteworthy association between axial length and DCP-VD with mfERG amplitude, whereas latency was solely linked with axial length. **Conclusions**: This study concludes that there is a significant association between structural changes observed via OCTA and functional alterations detected with mfERG in high myopia. Reduced vessel density, particularly in deeper retinal layers, significantly influenced mfERG outcomes.

COMPARISON OF GANGLION CELL COMPLEX AND RETINAL NERVE FIBRE LAYER THICKNESS IN LOW, MODERATE AND HIGH MYOPIA WITH RTvue SD-OCT

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Introduction: Myopia is one of the most common and increasingly prevalent ocular abnormalities worldwide. Retinal evaluation in myopia has gained a specific focus of interest based on the possibility of early involvement in the disease process. The objective of our study is to compare ganglion cell complex and RNFL thickness in low, moderate and high myopia by RTVue SD-OCT. **Methods:** In this hospital based cross-sectional study was conducted at B.P Koirala Lions Centre for Ophthalmic studies, IOM. 180 eyes of 180 subjects were investigated where 80 subjects were low myopic, 60 subjects were moderate and 40 subjects were highly myopic. The average, superior ,inferior, nasal and temporal RNFL thicknesses and RNFL in all the eight directional sectors were also measured. Average, superior , inferior GCC ,focal loss volume and global loss volume were also measured. The axial length was measured .The correlation between RNFL and GCC parameters with axial length in different types of myopia were evaluated. **Results:** Axial length was significantly higher in high myopia groups than low myopia groups (p=0.000). The average superior, inferior, nasal and temporal RNFL thickness of high myopic eyes were found to be significantly lower (p=0.000, p=0.001, p=0.000, p=0.000, p=0.031) than the low and moderate myopia. The average inferior GCC and GLV were found to be significantly lower in high myopia groups(p=0.041, p=0.016, p=0.036). Superior GCC and FLV were found to be lower in high myopia but not statistically significant (p=0.077, p=0.080). **Conclusions**: The RNFL and GCC parameters were found to be negatively correlated with axial length. Temporal RNFL was found to be positively correlated with axial length in low and high myopia groups(p=0.217,p=0.099) respectively.

VISUAL IMPAIRMENT AND BLINDNESS IN INDIAN MYOPES: A MULTI-CENTRE HOSPITAL BASED STUDY

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Introduction: Pathological myopia (PM) causes both visual impairments and blindness at a productive age, unlike other retinal disorders. Estimation of the visual impairments and blindness due to PM are pivotal to inform optimal eye health care planning and allocation of medical resources. The objective of this study is to investigate visual impairment and blindness due to myopia based on age, gender and magnitude of myopia. **Methods**: Methods: Patients who had myopia and visited two tertiary eye care centres (L.V. Prasad Eye Institute, Hydrated and Sankara Nethralaya, Chennai) between January and December 2018 were retrospectively analysed using their electronic medical record data. Subjects underwent comprehensive ophthalmic examinations, which included manifest refraction, best-corrected visual acuity (BCVA), and dilated-fundus assessments using an indirect ophthalmoscope. Visual impairment and blindness were defined using their BCVA according to the World Health Organization (WHO) criteria (visual impairment: <20/40 - ≥20/400; blindness: <20/400). **Results:** Results: A total of 46,162 myopic individuals included for final analysis. According to WHO definitions, the proportions for unilateral visual impairment and blindness among Indian myopes were 2.5% and 0.6%, respectively, whereas those for bilateral visual impairment and blindness were 1.03% and 0.004%, respectively. **Conclusions**: Conclusion: Myopia is an important cause of irreversible vision loss or even blindness according to WHO standards. It contributes up to 1.03% of visual impairments and 0.02 % of blindness among young Indian myopes. Older age and very high myopic refraction are risk factors.

Scientific Session 3: Primary Eye Care and Public Health

EFFECTIVENESS OF THE SUNDAR SANSAR PROGRAM IN IMPROVING EYE HEALTH AMONG SCHOOL CHILDREN IN MORANG DISTRICT, NEPAL

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Introduction: The Sundar Sansar program, implemented by Nepal Netra Jyoti Sangh (NNJS)/Lahan Eye and Ear care System (LEECS), was developed in response to the significant public health challenge posed by uncorrected refractive errors and hearing impairments. Aim of the study was to find out the impact of the Sundar Sansar programme in improving eye health among school children. **Methods:** A mixed-method design, incorporating both qualitative and quantitative approaches. The data collection was in December 2023. From the 318 schools, 10 schools were selected randomly and from each school 38 students were selected for data collection. Total sample size was 374 students. Informed consent was taken from the schoolteachers and students before the data collection. Ethical approval was taken from IRC of Biratnagar Eye Hospital. **Results:** Among the 374 students 51.6% were male, maximum participant was from grade ten followed by grade nine and eight. A total of 33.16% belongs to Brahimin/Chhetri followed by Janjati and Madeshi. Ninety-four percent of the students reported being aware of the screening camp among them 318 (87%) took part in the screening camp. The majority of students, 274 (86.16%), received a normal diagnosis, 9.12% were given spectacles and 3.77% were referred to base hospital. Among the children who received and using spectacles from those level of satisfaction was assessed among them 57.14% said slight improvement in their vision, 32.14% significant improvement in their vision, 7.14% observed no changes in their vision status, 3.57% worsened since receiving spectacles. Regarding the screening program 51.76% said moderate satisfaction, 39.41% reported being very satisfied, 5.29% remained neutral, 3.53% unmet expectations within the screening process. Spectacle compliance rate was 40.21% and referral compliance was 48.57%.Primary Outcome of the Sundar Sansar Project 120,185 children were screened from 318 schools in the project period. Furthermore, 3,228 children benefited from spectacles,

998 medicines dispensed, and 25 children got surgical interventions illustrating the program's extensive reach. **Conclusions**: The program was effective for improving eye health among school children which is helpful in early detection, management for preventable blindness.

QUESTIONNAIRE VALIDATION FOR KNOWLEDGE, ATTITUDE AND PRACTICE OF EYE CARE PRACTITIONERS FOR EVALUATION AND TREATMENT OF AMBLYOPIA

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Introduction: The evaluation and management pattern of amblyopia depends upon the level of understanding of the clinicians about amblyopia. There are different levels of ophthalmic human resources (paediatric ophthalmologists, general ophthalmologists, optometrists, etc) involved in evaluating and managing amblyopia in Nepal. It is assumed that the evaluation and management pattern differs with the human resource involved. Hence, there is need to enquire about knowledge, attitude and practice (KAP) of clinicians on evaluation and management of amblyopia. To date, there is no such questionnaire available for investigating the KAP of practitioners on evaluation and management of amblyopia. **Purpose:** The objective of the study was to prepare a valid questionnaire for Knowledge, Attitude and Practice of the eye care practitioners for evaluation and management of amblyopia. **Methods**: A 3-members committee identified and finalised different constructs of the questionnaire. Drafts of questions were prepared and sent to experts for content and construct validation process. Content validity index (CVI), Average variance extracted (AVE), composite reliability (CR) and Cronbach's alpha value were calculated and analysed to determine the validity of the questionnaire. **Results:** There were 5 constructs in the questionnaire with a minimum of three and a maximum of eleven questions in each construct. The CVI was more than 0.7 for both item wise content validity index (ICVI) and scale-wise content validity index (SCVI). Similarly, the average variance extracted, composite reliability and Pearsons's correlation values for the domains were well beyond the standard guidelines for the construct validity of the questionnaire. **Conclusions**: The study results yielded a valid and reliable questionnaire for the evaluation and management of amblyopia.

CONTRAST SENSITIVITY FUNCTION IN ANISO-HYPEROPIC AMBLYOPIC EYES WITH EMMETROPIC EYES AFTER REDUCING THE EFFECT OF MAGNIFICATION

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Introduction: Contrast Sensitivity Function (CSF) was found to be affected by amblyopia, but its reduction was dissimilar in strabismic and anisometropic amblyopia. A study by Pang et al in accordance with Freeman et al, showed that the contrast deficit was similar in anisometropic and strabismic amblyopes i.e. deficit at all except low spatial frequency when the magnification effect of the eye was considered. The best way to reduce the magnification effect of the eye would be by the correction of refractive error with contact lenses. Hence, in this study, to assess the reduction of contrast in anisometropic amblyopic eyes, CSF of aniso-hyperopic amblyopic eyes corrected with contact lenses was compared to CSF of emmetropic eyes. **Methods**: The hospital-based quantitative comparison cross-sectional study was conducted at Tilganga Institute of Ophthalmology (TIO). All the patients falling under the inclusion criteria between September 2023 and February 2024 were included in the study. A total of 92 subjects, including 46 aniso-hyperopic amblyopes and 46 age-matched emmetropic subjects were enrolled in the study. The CSF was measured using the Functional Acuity Contrast Test (F.A.C.T.). The LogCS of amblyopic eyes while wearing contact lenses was compared to LogCS of emmetropic eyes. **Results:** The aniso-hyperopic amblyopia was found to be more prevalent in males (76.2%) than females (23.8%). Reducing the magnification in amblyopes significantly improved contrast sensitivity at all spatial frequencies except 12 cpd ($p<0.05$). However, the contrast sensitivity function in aniso-hyperopic amblyopic eyes was found to be reduced at all spatial frequencies when compared to emmetropic eyes ($p<0.001$). **Conclusions**: The magnification was found to have significant effect on CS at all except 12 cpd. The CS of aniso-hyperopic amblyopic subjects was found to have reduced at all spatial frequencies with greater reduction at higher spatial frequency. The reduction of contrast at lower spatial frequency was found to be only present in patients with high degree of hyperopia. Thus, the significant reduction of contrast sensitivity at low spatial frequency could be associated with either high degree of hyperopia or the discrepancy found in CS among myopia or hyperopia.

AN OBSERVATIONAL STUDY ON THE VISUAL FUNCTION OF ADOLESCENT CHILDREN OF VARIOUS AGES WITH AUTOMATIC FLIPPER

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Background: The relationship between sustained close work and the development of myopia has been well established, and prolonged close work not only leads to ciliary muscle accommodation spasm, causing pseudomyopia and disturbances in accommodation parameters, but also to hyperopic defocus, which in turn leads to true myopia. **Purpose:** To evaluate the training effect of the automatic flipper on children with abnormal visual function in various age groups by comparing the measurement and training results of the automatic flipper and the manual flipper. **Methods:** 1. 300 children aged 6-18 years, with an equivalent spherical of -0.50D ~ -6.00D were included in the study. In group A, accommodative facility (AF) was measured twice (cycle/minute) with manual flipper; in group B, AF was measured twice with an automatic flipper; in group C, AF was measured first with manual flipper and then with an automatic flipper, with a 5-minute rest with the eyes closed in the middle of the two measurements, and the results were averaged, 2 those with abnormal accommodative facility measurements in the three groups were subjected to the second stage of visual function training, in which 68 people in group A had abnormal visual function and were trained with the manual flipper, 72 people in group B were trained with the automatic flipper, and in group C, 65 people were trained without any measures for 15 minutes once a day. **Results:** Pre-intervention AF measurements for 6 years in ABC groups. The difference was not statistically significant. After 3 months of training, MAF and BAF were statistically improved ($P < 0.05$) ; in the three ABC groups, the pre-intervention AF measurements of 7 year were not being statistically significant, after 3 months of training, the MAF were 5.5cpm vs. 7.8cpm vs. 4.3cpm , respectively, BAF were 6.7cpm vs. 8.2cpm vs. 5.5cpm, the difference was statistically significant ($p<0.05$. Pre-intervention AF measurements for children aged 8-12 years, MAF and BAF were statistically significant differences ($P < 0.05$). 3 months after the intervention, MAF increase from pre-intervention was: 2.5cpm vs. 4.8cpm vs. 0.8cpm , and in both eyes respectively 2.7cpm vs. 5.2cpm vs. 0.8cpm vs. 0.5cpm, the difference was statistically significant ($P < 0.05$) . The pre-intervention AF measurements of children aged 13-18 years in the three ABC groups were statistically significant differences ($P < 0.05$) , 3 months after the intervention , monocular and binocular increased, with a statistically significant difference ($P < 0.05$); according to the questionnaire survey of parents and children, during the 3-month training period. In group B, 70 persons (97.2%) trained daily and 2 persons (2.8%) trained 4-5 times per week. The difference was statistically significant ($P < 0.05$), and the adherence to the manual flipper was poor. **Conclusions:** The automatic flipper can be used as a new tool to measure children's accommodation sensitivity, and there is variability in measurement across age

groups, and myopic children trained with the automatic flipper can effectively improve accommodation sensitivity, with good compliance with both.

PREVALENCE OF NON-STRABISMIC BINOCULAR VISION ANOMALIES IN EASTERN NEPAL

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Introduction: Binocular vision leads to single vision, stereopsis, enlarged visual field and compensation for blind spot and several other differences. A normal binocular vision depends upon the anatomy of the visual apparatus, the motor system that coordinates movement of the eyes and the sensory system through which the brain receives and integrates the two monocular signals. Anomalies in any of these are considered as binocular vision anomalies. The non-strabismic binocular vision dysfunctions are more prevalent in school going population and are also affecting their academic performances. The rates of these dysfunctions increases with the increasing age. As very little prior research on the prevalence of non-strabismic binocular vision anomalies among Nepalese children has been conducted, it is imperative to ascertain the prevalence estimates of non-strabismic binocular vision anomalies among school going children in the country. Therefore, the main goal of this study was to determine the prevalence estimates of various non-strabismic binocular vision abnormalities in eastern Nepal. **Methods**: The study conducted was a prospective cross-sectional study. A total of 995 subjects in the age range of five to 18 years from 15 schools of the Eastern region of Nepal were enrolled in the study. Cluster sampling technique was used. Comprehensive binocular vision assessment was performed on all the subjects to find out the prevalence of non-strabismic binocular vision anomalies. **Results:** Non-strabismic binocular vision abnormalities were reported to be 50.35% in the eastern part of Nepal. The mean age of the subjects was 12.85 years with a standard deviation of 2.72 years. Of the subjects, 465 (46.73%) were males and 530 (53.12%) were females. The most common non-strabismic binocular vision anomaly was found to be convergence insufficiency (25.23%). **Conclusions**: Non-strabismic binocular vision anomalies are one of the most commonly observed visual disorders among school children in clinical practice other than refractive error. Thus, a comprehensive binocular vision assessment is a very essential aspect of vision assessment among the school going population as it can affect the academic performance of children.

A SPECTRUM OF STRABISMIC AND NON- STRABISMIC BINOCULAR VISION DISORDERS AT BINOCULAR VISION THERAPY CLINIC OF A TERTIARY EYE HOSPITAL

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Purpose: To Study the spectrum of strabismic and non-strabismic Binocular Vision Disorders reported at the Binocular Vision Therapy Clinic of a tertiary eye care hospital in North India. **Design:** A retrospective cross-sectional study design was employed. **Method:** Records of 513 individuals attending the Clinic between March 2019 and February 2020 were reviewed. Comprehensive ocular examinations, including retinoscopy, subjective refraction, and motor and sensory assessments, were conducted. Tests such as the prism-cover test, Titmus stereo acuity test, and Worth Four dot test were utilised to assess binocular vision. Additionally, fusional vergence, accommodation parameters, and Near Point of Convergence were measured. **Result:** A total of 513 subjects aged 6 to 60 years participated, with 53.61% males and 46.39% females. Binocular vision disorders fell into two categories: strabismic and non-strabismic. Among them, 309 (60.2%) had non-strabismic disorders, and 204 (39.8%) had strabismic disorders, including various diagnoses like esotropia and exotropia. Additionally, 24 (4%) patients sought post-strabismus surgery treatment. In the non-strabismic group, diagnoses included convergence and accommodative issues, with 41 (8%) cases of computer vision syndrome, 2 of esophoria, and 8 of exophoria. This retrospective cross-sectional shows the spectrum of binocular disorders through comprehensive examinations and specialised tests, proving beneficial for early detection. **Conclusions:** Effective management of binocular vision disorders requires accurate diagnosis, individualised treatment, interdisciplinary collaboration, patient education, and the use of advanced technologies. A comprehensive approach ensures optimal care, addressing both strabismic and non-strabismic conditions, thereby enhancing visual function and patient quality of life. Effective management of binocular vision disorders hinges on precise diagnosis, personalised therapy, and interdisciplinary collaboration. Integrating patient education and advanced technologies enhances outcomes, addressing both strabismic and non-strabismic conditions for improved visual function and quality of life.