

ENHANCING OPTOMETRY PRACTICE IN INDIA: SOLUTIONS FOR THE USUAL PROBLEMS FACED BY AN OPTOMETRIST

Jayant Jha

Optometry, SJ Vision Foundation, Muzaffarpur, India

Introduction: Optometrists in India constitute a major danger to the quality and effectiveness of eye care services. Some of those difficulties are patient related issues: patient's perception, understanding and compliance to medical advice, technological and equipment limitations, overcrowding of patients and bureaucratic procedures, concerns related to funding, and issues associated with referral systems. For this reason, tackling these challenges becomes mandatory in enhancing the practice environment and in the process the level of care being offered to patients. Therefore, the objectives of this research include reflecting on the listed barriers and coming up with suggestions on how to eradicate them to advance the optometry profession in India. **Methods:** 25 practicing optometrists were interviewed from different regions of India . The quantitative data collection process was done for problems faced by optometrists. This interview information was followed by quantitative analysis to establish the prevalence and the experience level of each problem respectively. **Results:** Patient Education and Compliance:72% of the optometrists believed that patients' lack of knowledge was a major issue. Technological and equipment limitations: we observed that the lack of the advancement in diagnostic facilities from 68% of the respondents. Workload and administrative burdens: 80% of optometrists reported that high patient turnover led to fatigue. Clinics which use EHR have seen a 30% increment in productivity, and staff fatigue is reduced by up to 20%. Economic constraints: 65% of the optometrists faced financing issues for eye care services. Referral systems: When asked about which aspects the referral system was perceived as having a strong barrier the overall response was inadequate structures at 60%. **Conclusions:** However, these solutions may significantly improve the practice environment of optometrists in India across the set options. This is the precise understanding of the factors such as education, technology, organizational structure, good systems of referrals that are needed to deliver achievable quality care and thus, improved results in patients.

A REVIEW OF AN IN-DEPTH ANALYSIS OF GLOBAL ACCESS ISSUES AND IMPEDIMENTS TO TAKING EYE CARE SERVICES

Debanjali Bhattacharjee

Optometry, Allied Health Science, Manipal Tata Medical College,
Manipal Education of Higher Education, Jharkhand, India

Introduction: Vision screening is defined as the brief examination of the eye which includes a series of eye tests to assess the vision and ability to focus. The World Health Organization (WHO) defines screening as "the presumed detection of an undetected disease or defect by the use of tests, examinations, or other rapidly applied methods". We sought to examine the data supporting global eye screening initiatives and assess the obstacles that currently stand in the way of screening attendance. **Methods:** This study browsed the published articles from March 2017 to August 2023 in Tylor & Francis, Research Gate, British and Irish Orthoptic, Scopus, Karger to get the idea about the current obstacles in attending eye screening from the patient perspective. The search was restricted to adults and older age groups, with a focus on global eye screening programs conducted in India, Africa, Australia, and the United States. **Results:** We used the keywords "eye screening," "barriers," and "challenges" to search the articles. We located 24 published papers where participants noted a variety of factors that described the difficulties and obstacles, they failed in attending the screening camp, including awareness, transportation, medical costs, accessibility of the screening spot, consultation-patient communication gap, trust to do eye check-ups in the screening spot, and social anxiety. Regardless of whether a person had glaucoma, cataracts, diabetic retinopathy, or any other visual problems, they were not allowed to participate in vision screening because of the obstacles they faced. Although there was a widespread visual burden, access to eye care was not optimal because of insurance and lack of awareness about the need for it. **Conclusions:** It is recommended to enhance the optimal framework for eye screening by addressing the obstacles that have been highlighted in multiple articles. This study is reducing the stigma associated with blindness and visual impairment by providing insightful information. This could lead to a higher attendance rate for eye exams if we address the difficulties that individuals encountered during the screening process.

VISION RELATED PROBLEMS IN WORKERS ENGAGED IN BRASS INDUSTRY IN MORADABAD - A WESTERN UP CITY, STUDY CENTER - C L GUPTA EYE INSTITUTE

Ruchika Sah

Ramlal Golchha Eye Hospital Foundation

Introduction: To detect vision impairment and ocular disorders among workers involved in brass and provide early management of vision impairment by accessing barriers for Refractive error and Presbyopia. **Methods:** Three hundred and fifty one workers from brass industry of Moradabad district were examined. Information related to their demographic data was collected and every participant underwent ophthalmic examination which include distance and near visual acuity, objective and subjective refraction, color vision test and torch light examination. A semi-structured questionnaire was taken at the end of the survey to collect the information on the barriers to uptake eye care services from all participants with refractive error and Presbyopia. **Results:** Of the 351 participants examined, most of the brass workers were male with an age range of 19 to 78 years. The mean age of participants was 38.5 years (SD \pm 12.1 years). Visual impairment was found to be in 29 workers (8.26%). The most common visual disorder was Presbyopia, refractive error followed by cataract and corneal degeneration. Color vision defect was found in 10 workers (2.84%). Only 21 (5.98%) brass workers were using their personal protective devices. Lack of eye care services were found to be the main reason for not utilizing optical services among the workers with refractive error and Presbyopia. **Conclusions:** Uncorrected refractive errors and Presbyopia are the main cause of visual impairment and blindness in brass workers. Large number of elderly populations with visual impairment can benefit from spectacles and cataract surgery. Strategies are needed to provide high quality services to this population.

VARIATIONS IN INTRAOCULAR PRESSURE DURING DIFFERENT PHASES OF MENSTRUAL CYCLE

Ambika Adhikari

Department of Optometry, A.J. Institute of Medical Sciences, Mangalore, India

Purpose: To evaluate intraocular pressure (IOP) variations during different phases of the menstrual cycle. **Methods:** In this prospective study 100 emmetropic female subjects aged between 18 to 25 years were included to understand IOP changes throughout the different menstrual phases. After a detailed ophthalmic examination, non-eligible subjects were excluded from this study. **Results:** ANOVA test showed the mean IOP for menstrual phase, proliferative phase and secretory phase in the right eye was 13.851 mmHg, 15.549 mmHg, 15.961 mmHg and in left eye was 14.748 mmHg, 15.692 mmHg and 16.062 mmHg respectively. Statistically significant IOP change was found during the different phases of menstrual cycle ($p < 0.05$). **Conclusions:** During a routine eye examination, this statistically significant IOP change between both eyes throughout various menstrual cycle stages needs to be considered.

AWARENESS OF EYE HEALTH AND DISEASE IN GHACHOWK, MACHHAPUCHHRE RURAL MUNICIPALITY: A COMMUNITY HEALTH DIAGNOSIS

**Umesh Belbase, Swechchha Sharma, Shrina Prajapati, Samana Budathoki,
Prastuti Khanl, Samagya Bhattarai, Anup Subedi**

Department of Optometry, Himalaya Eye Hospital, Gharipatan, Pokhara, Nepal

Background: This study was conducted to assess the awareness of eye health and common ocular diseases among the residents of Ghachowk, Machhapuchhre Rural Municipality. With a literacy rate of 70.7% and a predominant population engaged in agriculture, understanding the community's awareness is vital for planning targeted health interventions. **Methods:** A cross-sectional survey was carried out from 6th Shrawan to 11th Shrawan 2079, involving 352 participants (199 males, 153 females). Data were collected using structured interviews focusing on awareness of eye diseases, causes, and preferred treatment options. **Results:** The study revealed that 57.7% of participants associated vision blurring with eye illness. However, only 14.8% recognized all common eye conditions. Cataract awareness was moderate, with 45.2% identifying age as the leading cause. Despite this, 35.2% were unaware of any causes of cataract. Glaucoma awareness was low, with 69.6% being unfamiliar with the condition, and 75.6% unaware that vision loss due to glaucoma is irreversible. Awareness of strabismus was relatively high (69%), though misconceptions regarding its causes persisted. **Conclusion:** The findings indicate a significant gap in the community's awareness of eye health, particularly regarding cataract and glaucoma. This underscores the need for targeted educational programs to improve understanding and encourage early detection and treatment.

OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY VESSEL DENSITY IN HEALTHY, GLAUCOMA SUSPECT, AND GLAUCOMA EYES

Umesh Belbase¹, Indra Man Mahrjan², Anup Subedi¹

¹Department of Optometry, Himalaya Eye Hospital, Gharipatan, Pokhara, Nepal

²Department of Ophthalmology, Himalaya Eye Hospital, Gharipatan, Pokhara Nepal

Purpose: To evaluate and compare optical coherence tomography angiography (OCTA) retinal vasculature measurements in healthy, glaucoma suspect (GS), and glaucoma patients. **Methods:** One hundred fourteen eyes with good quality OCTA pictures were included from 38 healthy, 38 GS, 38 and primary open-angle glaucoma (POAG) participants. The information on retinal vasculature was summarized as a vessel density map and as vessel density (%), which is the fraction of the flowing vessel area over the total area examined. The superior, inferior, nasal, and temporal quadrants, as well as whole vessel density (wVD) and peripapillary vessel density (ppVD) data taken from the retinal nerve fiber layer, were studied. Global indices of the visual field were correlated with vessel density measurement. **Results:** Mean vessel density was significantly lower in POAG eyes compared with GSs and healthy eyes (wVD) $45.34\% \pm 6.64\%$, $50.06\% \pm 1.97\%$ and $53.06\% \pm 2.12\%$, respectively ($P < 0.001$), and ppVD $47.42\% \pm 7.73\%$, $47.42\% \pm 7.73\%$ and $56.07\% \pm 2.71\%$, respectively ($P < 0.001$). A linear relationship between vessel density (wVD and ppVD) and global indices of the visual field (mean deviation [MD] and pattern standard deviation [PSD]) shows a significant relation ($P < 0.001$). R^2 is 0.35, 0.36, 0.36, and 0.33 for MD and wVD, PSD and wVD, PSD and ppVD, and MD and ppVD, respectively. **Conclusions:** For distinguishing between healthy and glaucoma eyes, OCTA vessel density demonstrated near similar diagnostic accuracy to visual field tests. These findings imply that OCTA measurements reflect damage to tissues important in the pathogenesis of POAG.

OUTCOME OF TRITAN DISCRIMINATION AMONG DIABETIC RETINOPATHY WITH PSEUDOISCHROMATIC “C TEST” .

Ananta Raj Sharma¹, Hari Thapa²

¹*VIEW II, Bharatpur Eye Hospital, Bharatpur, Nepal*

²*Paediatric, Lumbini Eye Institute, Bhairahawa, Haiti*

Introduction: Diabetic retinopathy poses a growing concern in developed nations, affecting visual functions like acuity, color vision, and contrast sensitivity due to retinal changes. The retina contains cones and rods, with cones responsible for color vision through red, green, and blue pigments. Color blindness prevalence globally is 8% in males and 0.5% in females, with variations seen in different populations. Congenital deficiencies are linked to X chromosome genes and are permanent, while acquired color vision deficits can vary in severity and progression. Diabetic retinopathy, prevalent in type 1 and type 2 diabetes, leads to microvascular changes and can cause visual impairment, including diabetic macular edema and proliferative retinopathy complications. **Methods:** This study was conducted at the Lumbini Eye Institute and Research Center (LEIRC), Bhairahawa, from January 2022 to September 2022. Assessment for color vision in 160 patients (270 eyes) with pseudoisochromatic plates was used in diabetic retinopathy subjects with type 2 diabetes. A Performa sheet was used to record the patient's demographic profile as well as relevant clinical information. The data was analyzed using SPSS version 20. **Results:** A total of 160 patients (270 eyes) were included in the study, of which 100 (62.5%) were male and 60 (37.50%) were female. There were a total of 180 eyes (66.70%) with diabetic retinopathy, of which 90 (33.30%) scored 0 (Total tritan defect), and neither eye's C-test result was higher than 8, (Tritan Discrimination Test). The C-score showed a statistically highly significant correlation with stages of diabetic retinopathy ($r = -0.226$, $P < 0.001$) and DM duration 1-10 years and 11-20 years ($r = -0.136$, $P = 0.040$). Similarly, there was no statistically significant correlation between C-score and DR duration (0.015, $P = 0.803$). **Conclusions:** This study found that the severity of diabetic retinopathy (DR) affected Tritan color discrimination. Even though individuals with normal R/G color vision can have an impaired tritan defect. Research on the associations between color vision and other retinal or neurological conditions may benefit from the current findings in the future.

ASSESSMENT OF TEXTBOOK FONT SIZES FOR CHILDREN WITH LOW VISION IN MALAYSIA: A STUDY ON NEAR ACUITY DEMANDS

Zainora Mohammed¹, Pui Theng Yong¹, Norliza Mohamad Fadzil¹, Mohd Harimi Abd Rahman¹, Mohd Izzuddin Hairol², Sumithira Narayanasamy²

¹*Optometry and Vision Sciences Programme, Centre for Rehabilitation and Special Needs Study, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia*

²*Optometry and Vision Sciences Programme, Centre for Community Health Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia*

Introduction: Many educational materials in schools assume that readers have good vision, which can be a challenge for children with low vision. This study investigates the font sizes of textbooks used by school children with low vision in Malaysia. **Methods:** Font sizes from various textbooks in the Malaysian standard curriculum were measured using a ruler. Samples from the textbooks were categorized into chapter titles, sub-headings, main text, and small notes. The vertical letter heights and a standardized reading distance of 30 cm were used to calculate the near acuity demands within the textbooks. These demands were compared to the near visual acuity of the school children to assess their ability to discern the text. Participants were recruited from a special school for children with low vision in Kuala Lumpur, Malaysia. Near visual acuity was assessed using the ETDRS vision chart for near vision. **Results:** The mean letter height for chapter titles was 3.06 ± 1.15 mm (near acuity demand of $\log\text{MAR } 0.85 \pm 0.16$), for sub-headings it was 2.38 ± 0.52 mm (acuity demand of $\log\text{MAR } 0.75 \pm 0.09$), for main text it was 1.81 ± 0.37 mm (near acuity demand of $\log\text{MAR } 0.61 \pm 0.08$), and for small notes it was 1 mm (near acuity demand of $\log\text{MAR } 0.36$). Based on the subjects' near visual acuity, it was found that more than half (59%) were able to meet the mean near acuity demand for chapter titles. However, the percentage of school children meeting the near acuity demand decreased as font size decreased and acuity demand increased. Specifically, the percentage meeting the mean near acuity demand decreased to 44% for sub-headings, 21% for main text, and only 2% for small notes. **Conclusions:** The font sizes used in Malaysian standard curriculum textbooks impose near acuity demands that exceed the visual capabilities of school children with low vision. This mismatch becomes increasingly pronounced as font sizes decrease in the textbooks.

WHAT' S THE ACCURACY RATE OF SPECTACLES BEFORE DISPENSING IT AMONG PATIENTS?

Kajal Bhagat

OPD, Surya Eye Care, Dharan, Nepal

Introduction: The success of spectacle wear depends on the accuracy of prescription lenses, correct fitting of the lenses in the frame and appropriate frame alignment. Dispensing spectacles that are not verified can have intolerable errors, leading to poor visual outcomes, worsen the condition and patient's dissatisfaction. **Methods:** A hospital based cross-sectional study was conducted at Optical Department of Biratnagar Eye Hospital from May 2023-June 2023. Different parameters of the spectacles were verified by lensometry and visual inspection. Parameters under the tolerance level of ANSI Z80.1 2020 was considered accurate. Patients were asked whether they were satisfied with the new spectacle. Descriptive analysis was done using SPSS version 25. **Results:** Among 415 respondents, 52.8% were male, the mean age was 43.53 ± 16.05 years. 73.5% spectacles verified met ANSI standard. The major reason for the inaccuracy of spectacles, accounting for approximately 11.8%, was identified as dispensing errors. 79.3% and 71.6% patients were satisfied in terms of clarity and comfort respectively. There was a statistically significant association between spectacle accuracy and patient's satisfaction ($p < 0.001$). **Conclusions:** The study highlighted the importance of accurate dispensing processes, as well as the positive impact of accurate spectacles on patient satisfaction. These findings could have implications for clinical practice, suggesting that improving dispensing accuracy may lead to higher levels of patient contentment with their spectacles.

KNOWLEDGE AND ATTITUDE OF REFRACTIVE ERROR CORRECTION METHODS IN PATIENTS VISITING EYE HOSPITAL

Anup Subedi, Gyan Bahadur Basnet, Nabin Baral, Umesh Belbase, Anil Parajuli

Optometry, Himalaya Eye Institute, Pokhara, Nepal

Introduction: There are different types of refractive error correction methods that are either appropriate or appealing to all patients. Although spectacles appear to be the most common method of visual correction, there is no single method preferred for correction that is accepted by all patients. Knowledge and attitude towards methods of correction may influence the preferred method of correction. This study aims to determine the knowledge and attitude of patients towards refractive error correction methods and knowledge in difference between ophthalmologist and optometrist. **Methods:** One hundred and fifty subjects aged 18 and above who visited the refraction unit of Himalaya Eye Hospital were randomly interviewed using a structured questionnaire which consisted of open and close ended questions to gather information on demography, knowledge and attitude towards different eye care practitioners as well as spectacles, contact lens and refractive surgery for correcting refractive error and analyzed using descriptive statistics for frequency and chi-square test for analyzing association between variables. **Results:** Out of 150 participants, majority of the participants had history of ocular examination. Only 4.7% of the participants knew the difference between ophthalmologist and optometrist and 44.7% of the participants had history of using spectacles, whereas 22% of the participants knew about the contact lens. 14% of the participants were aware about the refractive surgery as a method of refractive correction. Lack of information and fear of side effects were the major reasons for not using contact lens and refractive surgery as a method of refractive error correction. **Conclusions:** The knowledge and perception about the refractive error correction methods, especially for contact lens and refractive surgery, was low among the participants. Most of the participants were not aware of the difference between ophthalmologist and optometrist.

KNOWLEDGE, ATTITUDE, AND PRACTICE REGARDING REFRACTIVE ERROR AND PRESBYOPIA WITH ITS PREVALENCE IN THE COMMUNITY PEOPLE OF HILLY REGION OF EASTERN NEPAL

Nisha Kumari Barnwal¹, Pankaj Ray Adhikari², Bibek Chaudhary¹

¹*Optometry, Biratnagar Eye Hospital, Biratnagar, Nepal*

²*Contact Lens and Low Vision, Biratnagar Eye Hospital, Biratnagar, Nepal*

Introduction: Refractive errors are one of the main causes of visual impairment worldwide (43%). Uncorrected refractive error represents more than half of the causes of visual impairment and 18.2% of blindness. Early detection and management of refractive error are very important to prevent visual impairment, blindness, and its sequel. Knowledge, Attitude, and Practice (KAP) assessment is an important and widely used indicator for measuring any morbidities. So, the purpose of this study was to assess knowledge, attitude, and practice along with the prevalence of refractive error and presbyopia among community members. **Methods:** A descriptive cross-sectional study was conducted in the Letang municipality of Koshi Province from July to December 2022. A total of 590 households were taken as the sample for the KAP study and a total of 1087 permanent residents (age >16 years) were taken as the participants for prevalence of refractive error and presbyopia. Before conducting this study, a thesis proposal was submitted to the Institutional Review Committee of Biratnagar Eye Hospital and ethical clearance was obtained. Defacto census type was used as a sampling technique. The data for KAP were collected using a pretested questionnaire in the KOBO App. However, data for prevalence were collected through a clinical examination and recorded in clinical proforma. Written consent was taken from each study participant. After the completion of data collection, data was entered into an Excel sheet and then the data was analyzed using SPSS software version 25. **Results:** Among 1087 participants, 64% were female and the average age group was 44.27±17.77 years. The KAP score for Knowledge was 34.19%, Attitude was 47.50%, Practice was 59.77% and the overall score was 40.96% among 590 respondents. The prevalence of refractive error was 9.75%, and presbyopia was 39.86% among 1087 respondents. **Conclusions:** The overall study found that the respondents of Letang municipality had poor knowledge, attitude, and practice towards refractive error and presbyopia.

KNOWLEDGE AND ATTITUDE OF SCHOOL TEACHERS REGARDING REFRACTIVE ERROR

Tinku Mukherjee

Optical, Biratnagar eye hospital, Biratnagar, Nepal

Introduction: Refractive error is a significant cause of correctable visual impairment worldwide, with a prevalence ranging from 1.75% to 20.7% among school children. Undetected and untreated visual problems can hinder children's full learning potential. Since children spend most of their time at school, teachers have easy access to them, presenting a valuable opportunity for identifying refractive errors. Thus, school teachers' knowledge of refractive errors is crucial in encouraging children to seek treatment and promoting eye health. Our aim is to assess school teachers' knowledge and attitudes regarding refractive errors among school children. **Methods:** A cross-sectional study was conducted between November and December 2024, involving 209 school teachers from 28 randomly selected private and government schools in the Sunsari and Morang districts where the Refractive Error Among Students (REACH) project had previously been conducted. The study used a pretested, structured, self-administered questionnaire. Any queries from the teachers were cleared during the collection of the questionnaires. For data processing and analysis, SPSS version 20 was used, and the Bloom's cut-off criteria were applied to assess the teachers' knowledge and attitude. **Results:** A total of 209 participants took part in this study, with a mean age of 23.05 ± 12.01 years, where majority 60% of them were female. Only 21.1% of the teachers demonstrated good knowledge, while 72% had a favorable attitude toward refractive error. There were no significant differences between education, types of school, teaching experience, previous knowledge of visual problem, training on eye health, family member using spectacles with ($p > 0.05$). **Conclusions:** The results revealed that school teachers had limited knowledge but a positive attitude towards refractive errors. This study highlights the need to educate school teachers about refractive errors and other ocular issues. It also emphasizes the importance of involving teachers in detecting vision defects and eye alignment problems among school children, especially in developing countries like Nepal, where access to ophthalmic care is limited.

PREVALENCE OF CONVERGENCE INSUFFICIENCY AMONG ASTHENOPIC SUBJECTS OF TERTIARY EYE HOSPITAL OF NEPAL

Purushottam Sah¹, Om Prakash Budhathoki²

¹*Orthoptic, Nepal Eye Hospital, Kathamandu, Nepal*

²*Investigation, Nepal Eye Hospital, Kathamandu, Nepal*

Introduction: Convergence insufficiency (CI) stands as a prevalent binocular vision disorder, contributing to muscular asthenopia and ocular discomfort, thereby holding considerable clinical importance. Given the variable nature of CI symptoms, relying solely on a few clinical signs may not accurately depict its actual prevalence. This study aims to assess the definitive prevalence of CI using the Convergence Insufficiency Treatment Trial (CITT) protocol. **Methods:** A prospective, cross-sectional study was conducted among a cohort of individuals presenting with asthenopic complaints at the orthoptic clinic of a tertiary eye hospital. Following a comprehensive eye examination, patients underwent detailed orthoptic evaluation, encompassing measures such as heterophoria, near point of convergence, fusional vergence, relative accommodation, AC/A ratio, and stereoacuity testing. The Convergence Insufficiency Symptom Survey (CISS) Score from the CITT questionnaire was recorded for each participant. Multi-variable regression analysis was employed to explore associations between CI and age, sex, refractive error, and gender. **Results:** Of the 168 subjects enrolled, the prevalence of definite convergence insufficiency was found to be 37.50%, with low suspect at 10.70%, high suspect at 20.80%, fusional vergence dysfunction at 8.30%, and non-CI associated vergence findings at 22.60%. No statistically significant relationships were observed between convergence insufficiency and age, sex, or refractive error through multi-variable regression analysis. **Conclusions:** The high prevalence of convergence insufficiency among asthenopic subjects, as revealed by the comprehensive diagnostic tests, underscores the importance of using standardized diagnostic criteria. Failing to do so may distort the actual burden of CI, potentially leading to underdiagnosis and undertreatment of other non-strabismic binocular vision disorders (NSBVDs).

REFRACTIVE ERROR AMONG HEALTHY INFANTS IN TERTIARY EYE CARE CENTRE OF NEPAL

Harikant Sah

Paediatric Department, R. M kedia Eye Hospital, Birgunj, Nepal

Introduction: Refractive errors occurs when the shape of the eye prevents light from focusing and forming image on the retina . The main objective of the study was to screen and determine the refractive error in Infants which can reduce the delay in effective therapy. **Methods:** This retrospective observational study was conducted among healthy infants attending the Departments of Paediatric Ophthalmology, Kedia Eye Hospital , Birgunj , Nepal. Informed consent from the infant's parents were taken. Cycloplegic refraction was performed using retinoscopy. Any subjects having hyperopia of $> +4.00$ D, myopia of > -1.50 D and astigmatism of > -1.75 D were included in the study. **Results:** A total of 966 infants (0-12 months) were enrolled in the study. Number of boys and girls infants were 594 (61.5%) and 372 (38.5%) respectively. The mean age was 6 months. Prevalence of refractive error in infants was 21.5%. Astigmatism was found in 92 infants (9.5%), myopia in 62 infants (6.4%) and hyperopia in 52 infants (5.6%). **Conclusions:** Detecting refractive error early in infancy is an advantage to the children education and quality of life .

NORMATIVE VASCULAR FEATURES ON OCT ANGIOGRAPHY IN HEALTHY NEPALESE EYES

Raju Kaiti¹, Ranjila Shyangbo², Priya Bajgai³, Gopal Prasad Pokharel³

¹Optometry, Nepal Eye Hospital, Kathmandu, Nepal

²Optometry, Tilganga Institute of Ophthalmology, Kathmandu, Nepal

³Ophthalmology, Nepal Eye Hospital, Kathmandu, Nepal

Introduction: Normative data on morphological characteristics and quantitative parameters of Foveal Avascular Zone (FAZ) is yet to be studied in the Nepalese population. Normative data are very necessary to compare and study other ocular disorders. This study was undertaken to establish normative data on morphological characteristics and quantitative parameters of Foveal Avascular Zone (FAZ) as well as their systemic and ocular associations using OCT angiography (OCT-A) in healthy Nepalese subjects. **Methods:** A prospective, cross-sectional, population-based study recruiting 210 healthy samples (420 eyes) aged 10 to 70 years was conducted. All the samples underwent a detailed comprehensive eye examination followed by Optical Coherence Tomography Angiography (OCTA) and Enhanced Depth Imaging performed in each eye using Spectral Domain Optical Coherence Tomography. Foveal avascular zone area and vessel density in superficial and deep retinal plexus and Sub foveal Choroidal Thickness (SFCT) were evaluated. Ocular and systemic associations of these parameters were also studied in a multivariate analysis utilizing linear regression. **Results:** The mean superficial and deep FAZ area was $459.96 \pm 124.75 \mu\text{m}$ (95% confidence interval [CI], 443.08-476.83) and $589.0 \pm 141.39 \mu\text{m}$ (95% CL, 570.77-609.02), respectively. The vessel density in superficial capillary plexus was $54.03 \pm 9.34\%$ (95% CL, 53.98-54.11) while the vessel density in deep capillary plexus was $25.91 \pm 38\%$ (95% CL, 25.85-25.96). The mean SFCT in this study was $308.89 \pm 68.87\mu\text{m}$ (95% CL, 299.64-318.14 μm). There was no statistically significant inter-eye difference in the FAZ parameters. Myopic eyes had smaller FAZ, lesser vessel density and thinner SFCT. Association was observed between superficial FAZ area and systolic blood pressure, and deep FAZ area and diastolic blood pressure. **Conclusions:** This study reports the normative data on FAZ parameters in healthy Nepalese subjects which can serve as references for interpreting these parameters in different retinal-choroidal diseases

STUDY OF CORNEAL THICKNESS, EPITHELIAL MAPPING AND MEIBOMIAN GLAND MORPHOLOGY IN SOFT CONTACT LENS WEARERS ATTENDING TERTIARY EYE HOSPITAL

Gauri Chaudhary

*The Fred Hollows Intraocular Lens Laboratory, Tilganga Institute of Ophthalmology,
Kathmandu, Nepal*

Introduction: Soft contact lens is widely used for refractive, cosmetic and therapeutic purposes. Long term use of soft contact lens brings about adverse effects on the ocular surface. This study aims to study corneal thickness, epithelial map and meibomian gland morphology in soft contact lens wearers and compare the results with healthy subjects. **Methods:** This cross-sectional comparative study included 31 participants having a history of soft contact lens use of at least 1 year (study group) and 64 healthy subjects (control group). All subjects underwent non-invasive tear film breakup time (NIBUT) evaluation. The meibomian glands were evaluated using the Bon-Sirius Topography instrument and meibomian gland drop outs were recorded. Cornea and epithelium over the entire cornea was topographically imaged using a novel optical coherence tomography system. Epithelial thicknesses of the central 2-mm, paracentral 2- to 5-mm, and mid peripheral 5- to 6-mm zones were obtained. **Results:** The NIBUT value was determined as 9.71 ± 4.81 seconds in the study group and 10.35 ± 4.60 seconds in the control group ($p=0.426$). In the upper lid meibography, loss of $44.27 \pm 12.59\%$ was determined in the study group and $19.31 \pm 9.70\%$ in the control group ($p = 0.0001$). In the lower lid meibography, loss of $47.45 \pm 14.70\%$ was determined in the study group and $20.10 \pm 9.36\%$ in the control group ($p=0.0001$). The average corneal thickness of the central, paracentral and mid-peripheral zones was $515.96 \pm 28.05 \mu\text{m}$, $532.10 \pm 27.61 \mu\text{m}$ and $553.01 \pm 28.86 \mu\text{m}$, respectively, in eyes wearing SCL and $533.85 \pm 26.12 \mu\text{m}$, $550.73 \pm 25.05 \mu\text{m}$ and $575.33 \pm 26.28 \mu\text{m}$, respectively in the normal eyes. The average epithelial thickness of the central, paracentral and mid-peripheral zones was $50.54 \pm 4.93 \mu\text{m}$, $49.53 \pm 4.79 \mu\text{m}$, and $49.01 \pm 4.67 \mu\text{m}$, respectively, in eyes wearing SCL and $55.46 \pm 3.06 \mu\text{m}$, $54.25 \pm 2.74 \mu\text{m}$ and $52.70 \pm 4.77 \mu\text{m}$ respectively, in normal eyes. Compared with normal control subjects, eyes with long-term SCL had significantly thinner corneal and epithelial thickness in all three zones ($p < 0.05$). **Conclusions:** Long term use of soft contact lens on daily wear basis leads to increase in meibomian gland drop outs, decrease in tear film break up time and corneal and epithelial thickness as compared to healthy subjects.

PROFILE AND VISUAL OUTCOME OF PATIENTS UNDERGONE KERATOREFRACTIVE SURGERY (KRS) AT TERTIARY EYE HOSPITAL, NEPAL

Bibek Chaudhary¹, Pankaj Ray Adhikari², Anil Kumar Sah³

¹*Diagnostic, Biratnagar Eye Hospital, Biratnagar, Nepal*

²*Contact Lens And Low Vision Unit, Biratnagar Eye Hospital, Biratnagar, Nepal*

³*Refractive Surgery and Myopia Clinic, Biratnagar Eye Hospital, Biratnagar, Nepal*

Introduction: Refractive surgeries are widely used globally to correct refractive errors. Various options include Photorefractive Keratectomy (PRK), Laser Assisted Keratomileusis (LASIK), Laser-Assisted Sub-epithelial Keratectomy (LASEK), Small Incision Lenticule Extraction (SMILE), and intraocular lens procedures. These surgeries aim to correct the refractive error that optical correction such as spectacles and contact lenses are not required. This study aimed to find out the profile and visual outcome of Keratorefractive surgery. **Methods:** The hospital-based cross-sectional study conducted was conducted at Biratnagar Eye Hospital from January 2019 to December 2021. Demographic data and comprehensive eye examination results were collected from hospital records. Patient selection for Keratorefractive surgeries (KRS) was based on predefined corneal assessment criteria. Eligible patients underwent a re-evaluation by experienced optometrists who were trained in particular the assessemtn for patients underwent refractive surgeries, all surgeries were performed by a single experienced Keratorefractive surgeon. Ethical clearance was obtained from the Institutional Review Committee of Biratnagar Eye Hospital. Data were entered into Microsoft Excel and analyzed using SPSS version 25. **Results:** A total of 81 eyes of 43 patients, 33 (17 right and 16 left) eyes and 48 (24 right and 24 left) eyes underwent LASIK and PRK surgeries respectively. The mean age of patients was 23.05 ± 3.72 years, and male-to-female ratio was 3:1. LASIK surgery outcomes showed significant improvements in uncorrected visual acuity (UCVA) and contrast sensitivity (CS). UCVA improved from 1.158 ± 0.19 logMar pre-surgery to 0.00 ± 0.01 logMar on day 1 post-surgery, maintaining stability over the first month. CS remained stable throughout the observation period, indicating a consistent enhancement in visual quality post-LASIK, i.e. 1.61 ± 0.9 to 1.63 ± 0.9 on day 1 and 1.63 ± 0.8 logMAR at 1 month. PRK surgery results also demonstrated substantial improvements in UCVA and CS. UCVA improved from 0.90 ± 0.37 logMar pre-surgery to 0.19 ± 0.15 logMar at day 1, further improving to 0.01 ± 0.03 logMAR at one month. CS showed progressive enhancement over time i.e. 1.59 ± 0.23 to 1.60 ± 0.29 on day 1 and 1.62 ± 0.37 logMAR at 1 month after surgery. **Conclusions:** The study affirms LASIK and PRK as viable

APOC 2024 - Poster Session Day 2

options for individuals seeking refractive error correction, emphasizing their role in enhancing visual outcomes and improving the quality of life for patients undergoing these procedures.

REFRACTIVE ERROR STATUS AFTER CATARACT SURGERY UNDERGONE PHACOEMULSIFICATION WITH FOLDABLE INTRAOCULAR LENS IMPLANTATION AT TERTIARY EYE HOSPITAL OF NEPAL

Kajal Deo, Pankaj Ray Adhikari

Biratnagar Eye Hospital, Biratnagar, Nepal

Introduction: Cataract is the main cause of blindness worldwide for which surgery is basis of treatment. Phacoemulsification is one of the best options for cataract surgery which involves clear corneal incision about 3mm by emulsifying internal lens using ultrasound energy. Success of cataract surgery can be determined with the improvement in visual acuity with least amount of refractive error. Residual refractive errors are usually seen after cataract surgery. So the purpose of this study was to assess postoperative refractive error status among patient had undergone phacoemulsification with foldable intraocular lens implantation. **Methods:** This was a cross-sectional study conducted between July -December 2022 in the outpatient department of Biratnagar eye hospital (BEH), which is a tertiary and high volume eye hospital in eastern Nepal. Patients having cataract and undergone phacoemulsification with foldable intraocular lens implantation surgery and came for more than one month of follow up were only included in the study. A total of 307 patients were included who met the inclusion criteria. Ethical clearance was obtained from the institutional review committee of BEH. Data were collected using clinical evaluation sheet, entered in excel spread sheet and analysis was done using SPSS version 23. **Results:** The mean age (\pm SD) of the patients was 57.8(\pm 8.9) years and 125 (40.7%) of the patients were in 60-69 years of age. Out of the total, 295 (96.1%) patients achieved good (0.0 -0.3 log MAR) best corrected visual acuity postoperatively at 1 month of follow up. Among total patients, 51 (16.6%) had no refractive error and 243 (79.1%) had astigmatism among them 139(57.2%) had astigmatism up to 1D. Astigmatism was present more in 50-69 years age group (n = 188, 77.4%). **Conclusions:** Majority of the patients achieved good best corrected visual acuity after phacoemulsification and foldable IOL implantation. So phacoemulsification has the advantage of early visual rehabilitation after cataract surgery. It is a better surgical option for cataract surgery for better visual outcome with less amount of refractive error.

PREVALENCE OF VISUAL PROBLEMS AND IT'S ATTRIBUTES AMONG HEARING IMPAIRED CHILDREN

Sanjeev Yadav

Optometry Department, Ramlal Golchha Eye Hospital, Biratnagar, Nepal

Introduction: Hearing loss, also known as hearing impairment, is a partial or total inability to hear. A deaf person has little to no hearing and hearing loss may occur in one or both ears. Studies shows that about two to three out of every one thousand children in the United States are born with a detectable level of hearing loss in one or both ears and approximately 15 % of American adults (37.5 million) aged 18 and over report some trouble in hearing. **Methods:** Inclusion Criteria: Students at Birat Bahira Madhyamik Vidhyalaya Age between 8 to 18 years, history of some types of hearing impairment. Exclusion Criteria: Unwilling to participate, unable to communicate as desired. The entire deaf student population studying in the deaf school of Birat Bahira Madhyamik from grade 5 to grade 10 were examined for ocular health assessment and visual functions. The examination included visual acuity assessment with Snellen's visual acuity chart for distance and N-notation reading chart at 33 cm for near. Anterior segment of eye was examined with a portable slit lamp and posterior segment with direct ophthalmoscope. Both objective and subjective refraction were performed for all the students. Colour vision test was performed on all the subject using Ishihara Pseudo-isochromatic chart. Cover test was performed on all the subjects for distance at 6 meter and 40 cm with accommodative target for near. **Results:** There were 100 participants included in this study and the mean age of the participants were 11.88 ± 2.50 years. The mean myopic refractive error among the participants was -1.68 ± 2.21 D in right eye and -1.68 ± 2.34 D in left eye. The mean hyperopic refractive error among the participants was $+1.42 \pm 1.44$ D in right eye and $+1.43 \pm 1.56$ D in the left eye. **Conclusions:** The most common ocular problem in hearing impaired children was refractive error and among the refractive error, hyperopia was the most common one. And hence this study concludes that vision related disorders have no any statistically significant relationship with the hearing impairment. But this study also highlights the need of routine eye examination for early detection and management of the ocular problems in hearing impaired children.

ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE ON COMMON OCULAR DISEASES AMONG THE POPULATION OF HILLY REGIONS OF EASTERN NEPAL

Abhishek Mishra¹, Pankaj Ray Adhikari², Rajiv Karn³, Siwani

Sah¹, Firoj Bhat¹, Naina Chaudhary¹, Akrima Riyaz¹, Bhawana Timalsina¹, Krishala Thapa¹,
Tirsana Subedi¹, Binita Pandit³

¹Optometry, Biratnagar Eye Hospital, Biratnagar, Nepal

²Contact lens, Biratnagar Eye Hospital, Biratnagar, Nepal

³Research, Biratnagar Eye Hospital, Biratnagar, Nepal

Introduction: According to the World Health Organization (WHO), the primary causes of visual impairment are uncorrected refractive errors, 43% of cases, followed by cataracts at 33%. Other significant causes include glaucoma, diabetic retinopathy (DR), and age-related macular degeneration (AMD). Understanding the interplay of knowledge, attitude, and practices (KAP) regarding common ocular diseases is crucial to addressing these challenges effectively as it will enhance eye health practices. This study aimed to investigate the KAP of common ocular diseases among the local community of Bhojpur municipality and compare it between community outreach (COR) intervention area and non-COR intervention area. **Methods:** An analytic cross-sectional study was done in which 498 participants were conveniently sampled from 2 distinct wards: one from COR intervention (ward no 1, 254 respondents) and the other from non-COR intervention (ward no. 2, 244 respondents). Ethical approval was received from the Institutional Review Committee of Biratnagar Eye Hospital and both ward offices. The study utilized a semi-structured questionnaire tailored for this research, including closed-ended and some open-ended questions. Data was collected using the Kobo-collect application and analyzed using SPSS version 20. **Results:** The respondents' mean age (\pm SD) was 45.81 ± 15.25 in Ward 1 and 43.81 ± 16.94 in Ward 2. The majority of respondents in Ward 1 had knowledge of refractive error 61.4% followed by cataract 54.3%, glaucoma 17.3%, and diabetic retinopathy 7.1%, whereas majority of respondents in Ward 2 had knowledge of cataract 48.4% followed by refractive error 42.6% glaucoma 9%, diabetic retinopathy 3.7%. The vast majority of the respondents (90.6% in Ward 1 and 95.9% in Ward 2) had a positive attitude toward Eye health. The majority of respondents had good eye health-related practices in both wards. **Conclusions:** The knowledge of common ocular diseases of Bhojpur municipality in Ward 1 was significantly

APOC 2024 - Poster Session Day 2

higher than in Ward 2. Positive attitude towards eye health in ward 2 was significantly higher as compared to ward 1. Practice related to eye health was equally good in both wards.

CHANGES IN CORNEAL ASTIGMATISM AFTER COLLAGEN CROSS LINKING(CXL)

Bhawana Timalisina¹, Nisha Kumari Barnwal², Bibek Chaudhary³, Pankaj Ray Adhikari⁴, Tirsana Subedi¹

¹*Biratnagar Eye Hospital, Biratnagar, Nepal*

²*Optometry, Biratnagar Eye Hospital, Biratnagar, Nepal*

³*Diagnostic, Biratnagar Eye Hospital, Biratnagar, Nepal*

⁴*Contact Lens and Low Vision, Biratnagar Eye Hospital, Biratnagar, Nepal*

Introduction: Keratoconus is a bilateral, primary, progressive, non-inflammatory, and non-symmetric corneal ectasia that induces declined visual acuity in young adults. It leads to continued myopia and irregular astigmatism, causing a reduction in best-corrected visual acuity (BCVA) and visual quality. Collagen cross-linking in keratoconus management lies in its ability to slow down or stop the progression of the disease. It creates a crossed bridge between the collagen fibrils (cross-linking), thus strengthening the cornea. Early diagnosis and intervention with CXL can effectively prevent or minimize the corneal thinning and steepening associated with keratoconus. This study aims to assess the changes in corneal astigmatism findings in pre and post-CXL patients. **Methods:** A hospital-based cross-sectional study design was used. Keratometric readings from corneal topography were recorded for the involved eyes pre and post-crosslinking at the time of the first follow-up in the diagnosed case of Keratoconus attending at Contact Lens Department of Biratnagar Eye Hospital and who met the inclusion and exclusion criteria were included as samples. Before the conduction of this study, a research proposal was submitted to the Institutional Review Committee of BEH and ethical clearance was obtained. The patient's data from hospital records were entered in Microsoft Excel and then the data was analyzed by using a Paired sample t-test using SPSS software version 25. **Results:** 195 eyes of 105 patients were taken in which the mean age of the patients was 19 years. The majority of the patients were male (71.43%). After cross-linking, the mean changes in Corneal astigmatism was found to be $0.02 \pm 1.56(D)$ and the level of significance was 0.85 which was statistically insignificant. **Conclusions:** Collagen cross-linking (CXL) is an effective and safe procedure for treating keratoconus, regarding stabilizing the condition.

VISUAL ACUITY SEVERITY AND BARRIERS TO ASSISTIVE DEVICE USAGE IN ADULTS WITH REFRACTIVE ERROR AND PRESBYOPIA: INSIGHTS FROM AIIMS, NEW DELHI

Sanjay Kumar Mishra¹, Bhawani Singh Meena², Suresh Kumar Yadav¹, Suraj Singh Senjam³, Gaurav Kumar Singh⁵, Lokesh Singh⁴, Sandip Kumar¹, Shiv Lal Khudia¹, Sanya Mishra⁵

¹*Dr R P Centre for Ophthalmic Sciences, All India Institute of Medical Sciences (AIIMS), New Delhi, India*

²*Visual Rehabilitation, Dr R P Centre for Ophthalmic Sciences, All India Institute of Medical Sciences (AIIMS), New Delhi, India*

³*Community Ophthalmology, Dr R P Centre for Ophthalmic Sciences, All India Institute of Medical Sciences (AIIMS), New Delhi, India*

⁴*Community Ophthalmology, All India Institute of Medical Sciences (AIIMS), Jodhpur, India*

⁵*Computer Sciences, Guru Gobind Singh Indraprastha University, New Delhi, India*

Introduction: Background: Refractive errors (myopia, hyperopia, astigmatism) and presbyopia are common causes of visual impairment. This study focuses on assessing the severity of visual acuity impairment and identifying barriers to the use of assistive devices among adult patients reporting to the Dr R P Centre for Ophthalmic Sciences, All India Institute of Medical Sciences (AIIMS), New Delhi OPD. Objectives: To categorize the severity of visual impairment (early, mild, moderate, blind) in the study population. To identify barriers to the use of assistive devices. **Methods:** Methods: Study design: Cross-sectional study. Participants: 500 adult patients diagnosed with refractive errors and presbyopia at the Dr R P Centre for Ophthalmic Sciences, All India Institute of Medical Sciences (AIIMS), New Delhi OPD from January to June 2024. Data Collection: Visual acuity was measured using a standardized Snellen chart. Structured interviews were conducted to gather data on the use of assistive devices (spectacles, contact lenses, magnifiers) and to identify barriers to their usage. Ethical considerations: Ethical approval was obtained from the Institute Ethics Committee. Study conducted in accordance with the Declaration of Helsinki. **Results:** Demographics: Mean age: 54.7 years (range: 40-70 years). Gender distribution: 55% male, 45% female. Visual impairment categories: Early impairment 10%, mild impairment 25%, moderate impairment 50%, blind 15%. Assistive device usage: Spectacles: 75%, contact lenses 20%, magnifiers 5%, no device 10%. Barriers to assistive device usage: Cost 40%, lack of awareness 30%, accessibility issues 20%, others 10%. **Conclusions:** Addressing financial and awareness barriers can enhance the use of assistive devices. Improved management and policy-making can lead to better visual outcomes and quality of life for patients with refractive error and presbyopia. Future directions: Further research to explore

APOC 2024 - Poster Session Day 2

interventions that can effectively reduce barriers. Policy changes to subsidize costs and increase the availability of assistive devices.

AN OBSERVATIONAL STUDY ON PREVALENCE OF COMPUTER VISION SYNDROME AMONG ENGINEERING AND NURSING COLLEGE STUDENTS OF BIRATNAGAR.

Santosh Thakur¹, Rozy Tripathi¹, Anil Kumar Sah², Pankaj Ray Adhikari³

¹*Out patient department, Biratnagar Eye Hospital, Biratnagar, Nepal*

²*Myopia management, Refractive surgery, Biratnagar Eye Hospital, Biratnagar, Nepal*

³*Contact lens, Biratnagar Eye Hospital, Biratnagar, Nepal*

Introduction: Computer vision syndrome (CVS) is a group of visual symptoms experienced in relation to the use of computers. Nearly 60 million people suffer from CVS globally, resulting in reduced productivity at work and reduced computer workers quality of life. The present study aims to find the prevalence of CVS and create an awareness about CVS at student level.

Methods: It is a prospective study which was conducted in Biratnagar Eye Hospital. Students in the age group of 17-35 years who met the criteria of inclusion and exclusion were recruited. A brief history on their general and ocular health status along with details on number of hours of usage of computer were collected. The routine optometry evaluation was done following detailed binocular vision assessment involving sensory, motor evaluation, accommodative and vergence function evaluation and dry eye evaluation. At the end of the session, each subject was asked to fill the questionnaire provided by James E. Sheedy for the symptomatic score. The diagnostic criteria was set from the past studies and the statistical analysis was done on SPSS v.23 software. **Results:** A total of 247 students between the age group of 15 to 35 years from Biratnagar were screened. Out of these students 108 students were from engineering and 139 students were from nursing college. Among these students, 62 were male and prevalence of CVS was found to be 79.03% and out of 185 female, prevalence was found to be 87.02%. The prevalence of CVS was found to be 85.03% (n=247). Prevalence of CVS in engineering students was 86.11% (n=108) and in the nursing students it was 84.17% (n=139). **Conclusions:** The present study revealed high percentage of students having CVS and more than three-fourth of the students complained of any one of the symptoms of CVS while working on the computer. The current study shows that Engineering students (computer science and information technology) were at higher risk of developing CVS compared to nursing students. There was no association between more numbers of computer usages with CVS.

TEAR FILM LAYERS AND MEIBOMIAN GLAND ASSESSMENT IN PATIENTS WITH RHEUMATOID ARTHRITIS USING A NONINVASIVE OCULAR SURFACE ANALYZER: A CROSS-SECTIONAL CASE – CONTROL STUDY .

Aanand Kumar Yadav¹, Garbita Chatterjee¹, Neha Kapur², Virender Singh Sangwan^{2,3},
Ramkailash Gujar³

¹*Department of Optometry, Dr. Shroff Charity Eye Hospital Daryaganj, New Delhi , India*

²*Department of Cornea and Refractive Service, Dr. Shoff Charity Eye Hospital Daryaganj New Delhi, India*

³*Eicher-Shroff Centre For Stem Cell Research ,Dr. Shroff Charity Eye Hospital Daryaganj New Delhi, India*

Introduction: To assess the tear film layers and Meibomian glands by a noninvasive ocular surface analyzer in patients with rheumatoid arthritis (RA). **Methods:** Thirty-seven participants were enrolled in this study: 17 patients with RA, and 20 patients as a control group, between 18 and 51 years old. Lipid layer thickness (LLT), tear meniscus height (TMH), blink quality, blink count, number of full blinks, first and mean noninvasive tear break-up time (FNIBUT and MNIBUT, respectively), and Meibomian glands loss (MGL) were assessment through the ICP Ocular Surface Analyzer (OSA). OSDI and DEQ questionnaires were also tested. **Results:** The RA group showed higher lower LLT ($p < 0.001$), TMH ($p < 0.001$), FNIBUT ($p < 0.001$), MNIBUT ($p < 0.001$), Blink quality ($p = 0.001$), number of blink count ($p < 0.001$), full blinks ($p = 0.001$) and number of partial blinks ($p < 0.001$) than the control group. A higher percent- age of MGL was found in the RA group in the upper ($p = 0.008$) and lower ($p < 0.001$) eyelids. Statistically significant differences were found in dry eye symptoms across the OSDI and DEQ questionnaires between the two groups. **Conclusions:** Patients with RA showed involvement of the mucoaqueous and lipid layers of the tear film, as well as a higher percentage of MGL, using a noninvasive analyzer. Dry eye disease in people with RA cannot be ruled out by subjective symptom questionnaires alone; therefore, these patients should undergo regular ocular surface examinations through non-invasive investigations.

COMPARISON OF NOVEL NIDEK A-SCAN, ULTRASONIC BIOMETER, MANUAL KERATOMETER, ULTRASONIC PACHYETER FOR MEASUREMENTS OF VARIOUS OCULAR BIOMETRIC PARAMETERS IN A TERTIARY EYE CENTRE OF NEPAL

Arun Prasad Dhungana

OPD, Nepal Eye Hospital, Kathmandu, Nepal

Introduction: The aim of the study was to compare Novel Nidek A-scan, ultrasonic biometer, manual keratometer, and ultrasonic pachymeter in measurement of various ocular parameters. This will also analyze the variation of different parameters on the basis of age, gender, ethnicity.

Methods: This study was done in Nepal eye hospital from July 2019 - April 2020. A total of 326 patients presenting to the cataract clinic in Nepal eye hospital with clinically diagnosed age related cataract were enrolled in this study. The comparison of axial length and IOL power calculation was done using ultrasound biometry and optical biometry. Comparison was done between optical and ultrasonic pachymeter, optical biometer and manual keratometer.

Results: The mean axial length in this study was 22.89 ± 0.85 mm in the optical biometry group and 22.72 ± 0.79 mm in ultrasound biometry group (range 21.38-24.44 mm and 20-24.27 mm respectively). The mean axial length difference between the two groups was 0.17 ± 0.30 mm which is statistically significant ($P < 0.05$). The mean IOL power in this study was 21.92 ± 1.73 D in the optical biometry group and 21.53 ± 1.76 D in ultrasound biometry group (range 17.50-26 D and 17-26 D respectively). The mean IOL power difference between the two groups was 0.39 ± 0.35 D ($P < 0.05$) which is statistically significant. The mean AL in female subjects was 22.73 ± 0.045 mm and the AL in male subjects was 22.92 ± 0.05 mm and the difference is 0.19 mm which is statistically significant with (P value = 0.00295). The mean IOL power in female subjects was 21.96 ± 0.09 D and the IOL power in male subjects was 21.41 ± 0.10 with p value < 0.001 . The mean AL in Aryan subjects was 22.82 ± 0.70 mm and the AL in Mongolian subjects was 22.87 ± 0.043 mm. **Conclusions:** Optical biometry has significant advantage over ultrasound biometry in measurement of axial length and determination of IOL power. There are variations in different ocular parameters with age, gender and ethnicity.

ACCOMMODATION AND CONVERGENCE STATUS OF NORMAL AND HEARING IMPAIRED SCHOOL CHILDREN: A COMPARATIVE STUDY

Sanjay Kumar Sah

Optometry, Biratnagar Eye Hospital, Biratnagar, Nepal

Introduction: Individuals with hearing impairments may rely more on their visual system to compensate for the lack of auditory input, which could influence accommodation and convergence. This study aims to investigate the difference in accommodation and convergence status between normal and hearing-impaired school children. **Methods:** This cross-sectional study involved 200 students aged 10 to 23 years. The participants were selected from schools for hearing-impaired children and schools for children without hearing problems in Biratnagar. All students underwent visual acuity assessment, objective and subjective refractions, binocular vision assessments including cover test, near point of convergence, accommodative function, stereoacuity, as well as anterior and posterior segments examination. All the binocular vision measurements were performed with their habitual refractive prescription and the criteria was set for non-strabismic binocular vision anomalies based on semen wick findings. **Results:** Among 200 students, 100 were with hearing impairments (15.78 ± 2.94 years) and 100 were normal with no hearing impairment (14.36 ± 3.16 years), The p-value was 0.004. The majority of participants (55.5%) were female, and 59.5% were in the age group of 15-20 years. Refractive error was slightly higher in children with hearing impairment (27%) than those without impairment (25%), with a p-value of 0.747. The mean Near Point of Accommodation was $10.04 \text{ cm} \pm 2.89 \text{ cm}$ for hearing-impaired students and $8.81 \text{ cm} \pm 2.80 \text{ cm}$ for normal students, showing a statistically significant difference ($p < 0.03$). The Near Point of Convergence break was $7.09 \text{ cm} \pm 2.10 \text{ cm}$ for hearing-impaired students and $8.23 \text{ cm} \pm 3.60 \text{ cm}$ for normal students, while the NPC recovery values were $8.96 \text{ cm} \pm 2.60 \text{ cm}$ and $10.03 \text{ cm} \pm 3.55 \text{ cm}$, respectively, both statistically significant ($p < 0.001$). Additionally, the prevalence of Non-Strabismic Binocular Vision Anomalies was (36%), higher among hearing-impaired children (51%) compared to normal school students (21%). **Conclusions:** Accommodation and convergence status of hearing-impaired school children are significantly poor compared to those with normal hearing. This finding suggests a possible connection between hearing impairment and binocular vision. Eye examination and appropriate treatments for binocular vision problems could prevent the worsening of visual problems alongside their hearing difficulties.

PATTERN OF OCULAR INJURY IN PAEDIATRIC PATIENTS VISITING TERTIARY EYE HOSPITAL, EASTERN NEPAL

Rajendra Mehta¹, Pankaj Ray Adhikari², Rahul Sharma², Rajiv Ranjan Karn³

¹*Paediatric, Biratnagar Eye Hospital, Biratnagar, Nepal*

²*Contact lens, Biratnagar Eye Hospital, Biratnagar, Nepal*

³*Research, Biratnagar Eye Hospital, Biratnagar, Nepal*

Introduction: ocular injuries are very common in paediatric age group and the leading cause of non-congenital unilateral blindness. The impact of ocular injury during childhood is severe resulting visual impairment and permanent blindness if not managed on time. The aim of this study was to determine the pattern of ocular injury in paediatric patients. **Methods:** A hospital based cross sectional study was conducted at Paediatric ophthalmology department of Biratnagar Eye Hospital (BEH), Biratnagar from 15th April to 15th June 2023. Ethical approval for the study was obtained from the institutional Review Committee of BEH. All ocular injury of pediatric age group up to 15 years were included with informed written consent. Relevant data was entered in Microsoft excel from a semi-structured proforma and Analysis was done by using Statistical Package for the Social Sciences (SPSS). **Results:** A total of 260 patient, male were 71%. Mean age (SD) was 8.06(3.79). Ocular injuries most commonly occurred in the age group of 6-10 years (43%). The main causes of ocular injuries were stick/woody pieces (32.4%). Out of the total injuries, 65.38% occurred at home. Only 1.1% patients presented at hospital within 24 hours. About 39% of patients found open globe injuries. Majority of patients 96.92% had zone-1 injury. Fifty-eight percentage of patients were treated with medication. **Conclusions:** Children between the ages of 5-10 years are most vulnerable to ocular trauma. The commonest place for ocular injury is home. By adopting some common safety factors and reducing the ocular injury risk factors, ocular trauma can be greatly reduced.

CLINICAL PROFILE OF PATIENTS PRESENTING WITH HEADACHE IN VISION THERAPY CLINIC OF TERTIARY EYE HOSPITAL OF NEPAL

Pankaj Ray Adhikari, Nirmala Chaudhary, Bal Krishna Chaudhary

Vision Therapy, Biratnagar Eye Hospital, Biratnagar, Nepal

Introduction: Headache is the most common problem nowadays and it has significant effect on quality of life, work productivity and academic performance. Common source of headache in young adults was uncorrected refractive error and Non-Strabismic Binocular Vision Anomalies (NSBVAs). NSBVAs are visual disorders that affect the subject's binocular vision and visual performance, especially when performing tasks requiring near vision. Undiagnosed binocular vision and oculomotor dysfunction may present with discomfort which can have a negative impact on also. The objective of the study was to assess clinical profile and presence of NSBVAs in patient presenting with headache attending at Biratnagar Eye Hospital. **Methods:** The hospital based cross-sectional study was done at vision therapy clinic of Biratnagar Eye Hospital (BEH), Biratnagar from July - December 2022. All consenting patient from age group 10-40 years having history of headache and referred to Vision Therapy clinic for further evaluation were included in the study. The data was entered in Microsoft Excel spreadsheet and analyzed using SPSS software, version 23. All categorical variables were reported using frequencies and percentages and continuous variables were expressed in terms of mean (SD). **Results:** During the study period, total 426 patients were examined among them analysis was done for 750 eyes of 375 patients who met the inclusion criteria. The mean age (SD) of the patient was 22.25 (6.03) and majority them were female 263 (70.1%). Majority of them were less than 30 years of age 257(84%) and most of them were students 227 (60.5%) referred for orthoptic evaluation presenting with headache. NSBVA was found in 365(70.7%) among them majority had convergence related problem 165 (58.5%). There was no statistically significant association between age group and gender with categories of NSBVAs. Different types of vision therapy exercise were advised to the needy patients. **Conclusions:** NSBVA was common problem in patients presenting headache. It was mostly present in female, below 30 years of age and in students. It was managed with proper vision therapy exercises.

PAEDIATRIC AMBLYOPIA AND LONG-TERM OUTCOMES OF IN-OFFICE VISION THERAPY: A SIX-MONTH FOLLOW-UP

Madhavi Tiwari

Optometry, Visual eyez, Noida, India

Introduction: Anisometropic amblyopia occurs when one eye experiences persistent blurriness due to a focus imbalance between the eyes. This condition can arise from even minor differences in astigmatism or farsightedness (hyperopia) between the eyes. Although amblyopia can be successfully treated with a variety of therapies, including patching and atropine penalization, there are few prospective studies on recurrence of amblyopia once it is successfully treated. Estimates of recurrence vary widely in the literature, from as low as 6% to as high as 75%. A recurrence of amblyopia could be diagnosed at any visit. The primary study definition of recurrence was 2 consecutive visual acuity measurements in the amblyopic eye that were 2 or more logMAR levels worse than the enrollment acuity, in the absence of a reduction of acuity in the sound eye of 2 or more logMAR levels. **Methods:** Ten children (under 18), are included in the study who are diagnosed with anisometric amblyopia. Stereoacuity and visual acuity (VA) are documented before and after therapy. Lower scores of stereoacuity mentioned in seconds of arc (SEC OF ARC) relates to improved depth perception. Subjective refraction, Vision, Stereoacuity have been measured and documented before and after therapy and repeated after 6 months to check the recurrency. **Results:** After comparing the values of vision and stereo before and after therapy notable improvement has been observed. The follow up has been made after 6 months to check recurrency which shown nearly no recurrency. **Conclusions:** The research shows there is improvement in the vision of anisometric amblyopia patients and the vision is persistent when check after 6 months. The detail step by step research will helping getting more details regarding the vision improvement and also it's persistency.

VISUAL PERFORMANCE AND QUALITY OF LIFE FOLLOWING LOW VISION MANAGEMENT OF PATIENTS HAVING CENTRAL FIELD DEFECT.

Helly Thakkar, Kinnari Kalaria

Optometry, Nagar School of Optometry, Ahmedabad, India

Introduction: In this study, visual functions have been assessed as a subjective perception and Quality of life is taken into consideration as a measure tool for improvement in their daily routine life activities. Visual functions and quality of life have been assessed before and after provision of low vision aids and on follow up of 2 months. The purpose of this study is to assess distance visual acuity, near visual acuity and reading speed and quality of life of low vision patients having central field defect on the time of first assessment (pre), after providing low vision intervention (post) and on follow-up of 2 months (post 2 months). **Methods:** Prospective and observational study was conducted in already diagnosed low vision patients having central field defect and were enrolled with baseline data of age, sex, refractive error, low vision cause, history and need of low vision aids. Visual acuity for Distance and Near have been measured with Log MAR chart and MN Read chart respectively. Quality of Life was assessed with the help of NEI-VFQ Questionnaire. All measurements were noted and compared with the Pre, Post and on follow-up of 2-months. Study was approved by Institutional Review Board (IRB), Smt. NHL medical college (NHLIRB). **Results:** Among 420 low vision patients, 63.57% were males and 36.43% were females. Age Related Macular Degeneration (ARMD) was found to be more as compared to other macular related disorders. Some of the low vision patients improved their distance visual acuity by just providing standard refraction either by distance correction or by contact lenses. Markedly improvements have shown in distance activities, social functioning, mental health, role difficulties, dependency and near activities whereas general health, general vision, ocular pain, driving and peripheral vision shown slight improvement after prescribing low vision devices. **Conclusions:** After surgical and medical management of any ocular condition, low vision rehabilitation plays a vital role in improving or enhancing their residual vision and showing positive impact on overall quality of Life.

VISUAL AND OCULAR STATUS OF WELDERS WORKING IN SMALL SCALE INDUSTRIES (SSI) AS WELL AS COMPLIANCE TOWARDS SAFETY EYE MEASURES.

Kinnari Kalaria, Helly Thakkar

Optometry, Nagar School of Optometry, Ahmedabad, India

Introduction: Long term exposure to welding arc produces ultraviolet radiation causes conditions like pinguecula, pterygium, photokeratitis, cataract, etc. Most of eye injuries and diseases can be prevented by appropriate correction of refractive error and presbyopia and proper eye protection in the form of Personal Protective Equipments (PPE). The purpose of this study is to determine visual and ocular status of welders working in small scale industry and also understand compliance towards safety eye measures. **Methods:** A cross-sectional study was conducted in various small scale industries in different industrial estate of Ahmedabad, Gujarat. An occupational history was recorded followed by a detailed ocular examination. Occupational history included working shifts, working hours, work experience, use and type of personal protective equipment (PPE). The ocular examination of welders included: torch light and slit lamp examination, visual acuity measurement for distance and near, objective and subjective refraction and fundus examination. Detailed explanation about safety eye measures, its training and its importance has been covered on the same day, as well as workers were counselled with importance of PPE use. Compliance towards safety eye measures was assessed after 3 month on the 2nd visit. Study was approved by the Institutional Review Board, Smt. NHL Municipal Medical College. **Results:** A total of 350 welders with mean age 45.26 ± 14.52 years were included in the study. The welders had shown several types of anterior segment diseases; among which 11.43% had congestion, 15.71% had pinguecula, 14.00% had pterigyum, 29.71% had cataract, 5.14% had corneal opacity and 8.29% had keratitis. 80.57% had refractive error, of which 44.68% were uncorrected. 63.43% had presbyopia, of them 47.75% were uncorrected. 17.71% welders had eye injury during worktime. Of the total, 73.71% welders were not using any PPE; 16.00% were using welding goggles and 10.29% were using welding helmet. After counselling session, 52.00% started using welding goggles, 42.29% were using welding helmets, and 5.71% didnot use any PPE. **Conclusions:** Study revealed that uncorrected refractive error and uncorrected presbyopia is a major concern in the population of small scale industry. Lack of awareness regarding PPE, eye health and safety are key risk factors to be taken in to consideration. Counselling of the need of PPE helped in increasing compliance rate.

VISUAL PERFORMANCE AND COMFORT WITH CORNEO-SCLERAL CONTACT LENSES

Bibek Yadav

Department of Optometry, Gopal Narayan Singh University, Sasaram, Rohitas, India

Introduction: Eye is the most sensitive and delicate organ which provides the sensation of sight. Vision is the most complex which may not functions well with ocular abnormalities. Cornea is avascular transparent structure of the eye and plays vital role in maintaining visual acuity and it is also most sensitive to the foreign bodies. In cases of corneal ectasia, severe dry eye (SJS), and post corneal surgeries, it is difficult to achieve adequate amount of vision and comfort level. In such cases scleral lenses play vital role for visual improvement. But due to large diameter of scleral contact lenses makes discomfort to wear. Thus corneo-scleral lenses arise with the hope of sunshine in the field of ocular health. **Methods:** Eighteen eyes with keratoconus, PMD, PKP, post DALK surgery and high myopia were fitted with corneo-scleral contact lenses. Before corneo-scleral contact lenses fitting we performed unaided, aided and best corrected visual acuity for distance and near, anterior and posterior segment evaluation, corneal topography, schirmer's test, W4DT, stereopsis, contrast sensitivity and colour vision. On 1 month follow up after with corneo-scleral contact lenses visual acuity, W4DT, stereopsis, contrast sensitivity and colour vision were recorded. And subjects were requested to fill CLIQ questionnaire. **Results:** The visual acuity with unaided, aided, contact lens and one month follow up shows statically significant changes with P-value= 0.00 in right eye and P-value =0.10 in left eye. The contrast sensitivity and colour vision with unaided, aided, contact lens and one month follow up shows no statically significant changes both eyes. The stereopsis with unaided, aided, contact lens and one month follow up shows statically significant changes with P-value= 0.01. The mean CLIQ questionnaire score was 51.75 after 1 month of C-SCL wear. **Conclusions:** Corneo-scleral contact lenses improve visual performance by increasing visual acuity and stereopsis by reducing the optical aberration of the eye. Insertion and removal of corneo-scleral contact lenses are easier than mini scleral contact lenses and full scleral contact lenses due to small diameter. And hence comfort level increase with corneo-scleral contact lenses. CLIQ score was high which indicates corneo-scleral contact lenses improves quality of life.

COMPARISON OF CHANGES IN CORNEAL BIOMECHANICAL PROPERTIES AFTER LASER-ASSISTED IN SITU KERATOMILEUSIS AND SMALL INCISION LENTICULE EXTRACTION

Prashant Anand¹, Manish kumar Prajapat²

¹*Optometry, Nims University Rajasthan, Jaipur, India*

²*Ophthalmology, NIMS University Jaipur, Rajasthan, India*

Introduction: Laser in Situ Keratomileusis (LASIK) and Small-incision lenticule extraction (SMILE) is the widely used procedure for refractive correction worldwide. SMILE was shown to be biomechanically more stable compared to LASIK and PRK, however; Reduced biomechanical strength was shown to occur after LASIK and SMILE. The biomechanical structure and function of the cornea is attributed to their mechanical properties and various biological processes. Corneal biomechanical strength is measured by Corvis-ST which uses non-contact tonometry with high speed scheimpflug visualization of the corneal deformation parameters through symmetrically metered air pulse. However, there is a paucity of long-term data on the efficacy and stability of LASIK when compared to SMILE. Also most of these studies are retrospective in nature with a small number of patients. **Methods:** This study compared 74 patients of LASIK and SMILE Surgery, divided into two groups. Patients underwent pre-operative and post-operative CBI and TBI, and underwent ophthalmic evaluations. Based on these evaluations, patients were categorized into routine SMILE or LASIK procedures and asked to report any vision changes. **Results:** The study found no significant changes in corneal biomechanical properties between the SMILE and LASIK groups at 1 year postoperatively. But there was statistical significant differences when comparing preoperative and postoperative values at 1 year ($p < 0.0001$). The results suggest that corneal biomechanical properties are significantly affected by both surgeries over time. **Conclusions:** These results suggest that both procedures have similar long-term effects on corneal biomechanical stability as measured by CBI and TBI at the 1-year post-operative mark.

END OF SESSION