



e200

Dublin2022

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Abstracts

Oral Presentations

Telemedicine in Optometry and Ophthalmology

Sigrid Mueller-Schotte, OD, PhD, FAAO, University of Applied Sciences in Utrecht, Netherlands

The COVID-19 pandemic challenged eye care providers to deliver eye care to patients as well as optometric educational institutions in the way they teach clinical skills. The Optometry department of the University of Applied Sciences in Utrecht (UASU) was faced with the need to cancel clinical teaching and change to online education. At the same time, the Ophthalmology department of the University Medical Center Utrecht (UMCU) with more than 85,000 appointments annually, was forced to cancel patients with non-urgent care needs. A unique, collaboration between the two departments of the UMCU and the UASU was born serve both needs: the TeleTriageTeam (TTT).

The presentation will describe an interprofessional approach to deliver appropriate eye care and retain continuity of care for patients in need of physical health care in times that resources are scarce.

From the idea, through pilot testing to implementation. Which steps were taken? Which challenges were to overcome? What are the benefits for the optometric students? What are the limitations? How can telehealth be used to provide eye care? What are future challenges?

Communication between Eye Care Practitioner and Parents

David Berkow, Berkow Optometrists, Haifa, Israel

Purpose:

According to Professor Ian Flitcroft, myopia has become a pandemic. We, as Eye Care Practitioners, must either consider engaging in Myopia Management or refer to a colleague who does. Unfortunately, most parents are not aware of the importance of treating their myopic child. Therefore when examining a child and revealing a problem we must engage in a conversation with the parents explaining the risks of myopia progression, the projection of the myopia progression in the case of their child (Using the myopia calculator designed by BHVI), the importance of axial length measurement and the different treatment interventions.

Setting/Venue:

According to Professor Ian Flitcroft, myopia has become a pandemic. We, as Eye Care Practitioners, must either consider engaging in Myopia Management or refer to a colleague who does. Unfortunately, most parents are not aware of the importance of treating their myopic child. Therefore when examining a child and revealing a problem we must engage in a conversation with the parents explaining the risks of myopia progression, the projection of the myopia progression in the case of their child (Using the myopia calculator designed by BHVI), the importance of axial length measurement and the different treatment interventions.

Methods:

Review Articles related to the title of my presentation

Results:

Myopia Management is a Key issue

Conclusions:

Myopia Management is very important

Blended Learning in Optometry

Rupal Lovell-Patel, Academic Lead - Vision Sciences, School of Medicine,
University of Central Lancashire, Preston, UK

Background:

With an ageing population, the demand on the provision of eyecare is increasing globally. The world report on vision by WHO shows that 42% of 'blindness' is due to uncorrected refractive error. To reduce preventable vision loss, there needs to be an increase in the resources dedicated to eyecare provision including an increase in training and education of eyecare professionals. Optometry can play an important role in the eyecare provision as optometrists can diagnose and correct refractive errors in countries where the scope of practice is restricted but they can investigate, diagnose, and treat a range of ocular conditions.

Aim:

To develop a 'Learn as You Earn' model of Optometry training for students who are already working in the optical sector.

Methodology:

Based on Online teaching theories, a blended learning course for opticians working in optical practice to develop their careers as an optometrist was designed. The blended delivery format was: Asynchronous online weekly lectures with formative assessment and one week a month on campus face to face clinical/practical skills teaching. Students can carry on working in the optical practice throughout the course allowing for an experiential learning element to the course.

Conclusion:

A blended learning Optometry has been running for the past three years and students will be joining the national professional body as fully qualified optometrists in the next few months.

This presentation will take the attendees through some of the agreed principles that the academic teaching team followed along with the teaching technologies utilised to make the online theory lectures more interactive in the development of a blended learning optometry course.

Utilising internationalisation for the Development of an International Masters Program of Optometry at Hadassah Academic College

Liat Gantz, Hadassah Academic College, Jerusalem, Israel

Co-Authors: Y. Catalan, A. Gordon-Shaag

Purpose:

Israel's Council of Higher Education (ICHE) is promoting internationalization of higher education so graduates will obtain global skills, which include communication, cooperation and collaboration with people of diverse backgrounds, cultures and ethnicities. Hadassah Academic College received a grant from ICHE to implement internationalization throughout its departments. The grant was used in the Masters of Optometry (M.Optom) program as a segue to the development of an international M.Optom curriculum.

Setting/Venue:

Hadassah Academic College

Methods:

The Pediatric Optometry, Glaucoma, Retinal Diseases, and Vision in Dyslexia courses that were always taught in English, were offered online due to the pandemic. The grant was used to develop infrastructure to allow international registration to these courses. Additional English courses were developed, including Sports Vision, Treating Patients with Autism, and Optometric Neurorehabilitation. Courses were offered in either concentrated, live, online modules, or hybrid learning. Asynchronous lectures were supplemented with online activities ensuring comprehension and application, as well as monthly live online sessions that were recorded to allow offline viewing. International courses also incorporated panel discussions about optometry across the globe.

Results:

Online international courses have each attracted up to 20 participants from worldwide, including Holland, Cyprus, Greece, Canada, USA, Philippines, Nigeria, Iceland, and the Palestinian Authority. Registrants that return to additional courses have encouraged the development of an international M.Optom program, currently submitted to the ICHE for accreditation. The two-year, four- semester program will include 37 credits. Hands-on laboratories and workshops will be offered in two- 10-day concentrated modules requiring live attendance once per academic year. Courses that are taught in Hebrew will either be translated simultaneously or offered in Hebrew and English, alternating the languages every other year.

Conclusions:

The successful implementation of the ICHE internationalization grant has led to the modification and adaptation of courses in the M.Optom program to an international audience. This process is now being further developed into a full international M.Optom curriculum.

Why Another Peer Reviewed Optometric Journal?

Timothy Wingert, Rosenberg School of Optometry, San Antonio, USA

Co-Authors: P. Freeman, W. Miller

Purpose:

Clinicians can learn something new every day in their efforts to improve the quality of peoples' lives by staying abreast of current developments. They may learn from a patient with a unique presentation of an ophthalmic concern, about new materials or technologies becoming available for patient care, or from new systems which are put into place to facilitate health care delivery. A way to stay current is with accurate and credible information from a peer reviewed publication.

Setting/Venue:

Given the dearth of peer reviewed optometric publications, a journal which allows optometric clinicians, researchers, and those in public health to share current information for the health and well-being of patients is an excellent forum for worldwide sharing.

Methods:

Optometric Clinical Practice (OCP) is an online peer reviewed journal that is accessible to anyone in the world (at no cost) and housed in the University of the Incarnate Word Rosenberg School of Optometry library (San Antonio, Texas, USA). With an editor, two associate editors, a journal review board which consists of faculty and practitioners from around the globe, and a statistician, it is an excellent source of clinically relevant material for any optometrist in practice.

Results:

As of October 2021, Optometric Clinical Practice has released five issues. The Journal is the first to publish the American Optometric Association's Evidence-Based Clinical Guideline: Comprehensive Pediatric Eye and Vision Examination. The AOA Evidence-Based Clinical Guidelines, which help to

determine the standard of care for the entire profession, will continue to be part of the journal's offerings in future editions. Attesting to its relevance, a link to the Journal is now on the World Council of Optometry Website.

Conclusions:

As David A Heath, OD, EdM wrote in an editorial in Optometry JAOA in August 2006, "...developing and managing optometry's knowledge will forever be a shared responsibility of faculty, practitioners, and the profession's leadership." OCP will give all eye and health care individuals the opportunity to do just that. This publication is designed to be written by all who have a desire to share, and read by all who want to stay current with peer reviewed literature.

A new algorithm for Keratoconus; (Prevalence, prognosis & pathways) Langis Michaud OD FAAO FEAOO, Professor & Dean at Université de Montréal, Canada & Tim McMahon AAO President, FAAO, USA

This conference aims to provide an update on keratoconus by revisiting data on prevalence, the latest knowledge in terms of etiology, and diagnostic methods. In a second part, treatment options, including cross-linking, as well as new surgical options will be covered. Finally, an algorithm will be suggested to help professionals select contact lenses according to the patient's parameters.

Intra-professional education in action - a review

Catherine Porter, Senior Lecturer in Optometry at the University of Manchester, UK

Abstract: A number of different healthcare practitioners are involved in delivering primary eyecare: optometrists, GPs and pharmacists. It is only recently undergraduate students have become involved in inter professional education. In 2015 we designed a workshop for undergraduate pharmacy and optometry students to explore common ocular conditions, and ocular side effects of common medications.

The three hour workshop consisted of: a jigsaw puzzle (systemic conditions, medications and ocular side effects), and three case studies of common eye complaints that may present to pharmacists or optometrists. The students worked in groups of ten.

For the first three years we used students' qualitative feedback to understand their IPE learning experience in order to develop the teaching session. In 2019 we decided to formally evaluate the session. This talk explores how we evaluated the learning outcomes and explores the results from the 2022 workshop.

Diagnosis & management of non-strabismic BV anomalies - why are there so many approaches?

Prof Bruce Evans, Institute of Optometry London, UK

Purpose:

To review and contrast the main approaches to diagnosing non-strabismic binocular vision anomalies, and the main protocols for correcting and treating these anomalies. An additional purpose is to reflect on differences in diagnosis and management between countries and professions. Another aim is to consider the cause of variation and implications for patient care.

Setting/Venue:

The literature search used PubMed and leading textbooks on binocular vision anomalies in the English language.

Methods:

A literature search was undertaken to determine the main methods of diagnosing and correcting or treating non-strabismic binocular vision anomalies. Findings from leading textbooks were compared with research literature published in refereed journals. Evidence was also sought from studies evaluating what actually happens in clinical practice. The data from these literature searches were filtered by country and by profession to investigate factors that may contribute to diversity of clinical practice.

Results:

The literature searches reveal marked variation in the methods recommended for diagnosing binocular vision anomalies. There is agreement concerning the interventions available (refractive correction, prisms, vision therapy). However, there are diverse opinions concerning the criteria for determining when treatment is required. For refractive correction or prisms, the different methods used for determining the correction required will lead to different prescriptions. To some extent, the variation can be attributable to national differences, However, even within some countries, very diverse diagnostic criteria and prescribing philosophies are evident. A wide variation sometimes is present within as well as between the different eyecare professions.

Conclusions:

There is a lack of research measuring what practitioners do in everyday clinical practice. Research with standardised patients indicates, clinical practice is likely to be different to the findings of this review, which largely relate to what is taught. The wide variation means that even within a country/profession, a patient may consult two practitioners and receive different diagnoses, or dissimilar interventions. One reason for the variation is likely to be the historical influence of prominent clinicians/teachers. Evidence-based scrutiny should be applied to old methods as well as new. Research is required that compares different philosophies for diagnosis and prescribing.

Quality of life assessment before and after cataract surgery

Zane Jansone-Langina, University of Latvia, Riga, Latvia

Co-Authors: A. Solomatin, R. Truksa, M. Solomatins, M. Jurjane, I. Solomatins

Purpose:

Cataract is an opacity in the lens or lens capsule of the eye which progressively reduces visual functioning. In the daily life patients feel visual acuity changes in the far and near distances, increase glare, reduced contrast vision and changes color vision. But sometimes for ophthalmologists and optometrists it is hard to understand if the cataract surgery gave improvement of life quality. Objective data can show better results (visual acuity, contrast vision test, refraction) but patient's subjective responses are not that positive. Or aim was to evaluate changes in patients' quality of life before and after cataract surgery.

Setting/Venue:

In our research participated 200 patients with cataract (mean age 64+/-6). All the patients were divided in 4 groups depending on cataract type (nuclear (n=75), cortical(n=70) , posterior subcapsular (n=55). The cataract removal surgery was performed with Femto-Laser. The research was done at the Dr.Solomatin eye center. Patient with additional eye diseases (glaucoma, diabetic retinopathy, AMD) were excluded from research.

Methods:

The patients were interviewed before and 2 weeks after cataract surgery. We used Visual Function Index (VF-14) questionnaire to determine if there were any subjective changes in quality of life. We analyzed addition tests as visual acuity (decimal units) in the far and near distances, average refraction in far and near distances.

Results:

The mean VF-14 was 47.0 before and 94.1 after cataract removal surgery. Statistically the biggest difference was absorbed in reading abilities (score before: 2,3+/-2,1; after 3,75+/-1,5;p=0,03). Cataract surgery gave subjectively bigger improvement in cortical cataract patients (mean VF-14 score before 42,7+/-6,1, after: 78,9+/-8,1), but objective measurements did not showed statistically significant difference (p=0,08). The mean improvement of the distance visual acuity change after the surgery was 0,32+/-0,2 decimal unit; improvement of near vision visual acuity - 0,25 +/-0,30 decimal units.

Conclusions:

2 weeks after cataract removal surgery patients experience statistically significant improvement in life quality. Cortical cataract patients experience the bigger subjective life quality improvement then nuclear or posterior supcapsular patients.

Vision and reading: why we need to go beyond “20/20” - an evidence-based approach

Dr. Patrick Quaid, MCOptom(UK), FCOVD(USA), PhD (CAN)

Founder & Director of Optometric Services, VUE Cubed Vision Therapy Clinics

Immediate Past President, College of Optometrists of Ontario (Regulatory Board)

Executive Board, COVD International (College of Optometrists in Vision Development)

In this lecture, Dr. Quaid will outline the vital importance of a much more in-depth assessment than a routine eye examination on children with reading and spelling-based learning difficulties. He will highlight key visual skills “other than simple 20/20 acuity” such as tracking skills, visual memory skills and vergence / accommodation functional skills to name but a few. Research pertaining to reading and vision will be presented (2013, Graefes Archives of Clinical & Experimental Ophthalmology publication) in addition to a model of reading. A discussion of how Optometric Vision Therapy and Speech & Language interventions interleave will be discussed in addition to how issues like ADHD and visual issues overlap. Dr. Quaid has published in peer reviewed journals and medical textbooks to re-enforce that the myth of “20/20 is perfect vision” must be dismissed. Videos of real-life cases will also be shown, something that Dr. Quaid insists be in all his lectures to really make the messages in his lectures “human” and hit home.

At the end of the day, a child ability to succeed in our modern age is critically linked to their ability to learn effectively. We do not teach children how to read to be clear, but as a profession we must ensure that the visual skills are present and intact to facilitate the reading reflex emerging in the “orchestra” required for reading skills to develop in children. If visual skills are not optimal, this success is severely limited. These visual skills can be remediated in the vast majority of cases and this is the message that Dr. Quaid really wishes to hammer home today. There is something we can all do for these children, and we need to step up as educators, parents, and healthcare professionals. Neuro-visual rehabilitation (a.k.a. Optometric Vision Therapy) put quite simply “teaches developing brains how to use eyes”. We need to stop over-complicating BV/VT and use this simplified message when educating the public and our colleagues on how we can help children especially with dyseidetic reading-based learning difficulties.

Goals of presentation:

1. To give research background on how vision affects reading and the difference between dysphonetic reading issues and dyseidetic reading issues.

2. Discuss research published clearly showing associations between several impaired oculomotor metrics and poor reading skills when measured objectively.
 3. Make it clear that as a profession, Optometry is in the driving seat with these cases from a visual standpoint and to encourage the profession to engage with these cases using the backing of evidence-based research.
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Impact of BV anomalies, accommodation disorders and ocular surface disease on the accuracy of autorefraction

Justyna Kiermasz, Faculty of Physics, University of Warsaw, Warsaw, Poland

Co-Authors: M. Sobol, J. Pniewski

Purpose:

The purpose of the study was to evaluate if binocular vision anomalies, accommodation disorders, and ocular surface diseases influence the differences between automated refraction (AR) and subjective refraction (SR). We also analyzed if the technology of autorefractors (open- or and closed-field) causes this effect. We also analyzed the short-term refractive state variations in orthogonal three-dimensional space to verify if any disorders can determine the specific patterns of refractive state variation.

Setting/Venue:

Autorefractors are often used to give a starting point for successive optometric procedures and in screening programs, therefore they must provide reliable results. Many studies confirmed the reliability of non-cycloplegic autorefraction, however in some cases the autorefractors failed and the difference between subjective refraction and autorefraction exceeds 1,00 diopter.

Methods:

64 subjects (38 females) aged 23–60 (mean 37.5 ± 10.8) took part in the study. A closed-field auto-refractometer Nidek ARK-510A and an open-field auto-refractometer Shin-Nippon NVision-K 5001 were used to obtain non-cycloplegic refractive error measurements. Comprehensive optometric examinations were carried on, and Ocular Surface Disease Index (OSDI) was assessed. AR and SR results were analyzed in the negative cylindrical form. The results were transformed from conventional notation ($FS/FC \times \alpha$) to h-vectors, according to Harris (1991). The statistical analysis was performed using Statistica Software, and scatter plots presenting short-term refractive state variation were made using Mathworks Matlab Software.

Results:

The mean differences between AR and SR of RE were $0.38/-0.12 \times 92^\circ$, and $0.06/-0.12 \times 92^\circ$ for ARK 510, and NVision-K, respectively. 17 subjects demonstrated differences between AR and SR bigger than 1,00 diopter, from whom only one did not demonstrate any of the analyzed abnormalities. In most cases, changes of refractive state during autorefraction appeared in the sphere power, which indicates accommodative state changes. 30 subjects demonstrated at least one outlier and/or polymodality of refractive state distributions. The study showed that binocular vision anomalies affected results from open-field autorefractor, whereas the accommodative disorders impacted closed-field refraction measurements. However, the influence was weak.

Conclusions:

The study showed that short-term refractive state variation depends on the target type and viewing conditions. The presence of accommodative disorders or binocular vision anomalies might increase the range of short-term refractive state variation and reduce the accuracy of autorefraction. The automatic mode used typically in autorefractors with 3 to 5 readings may not accurately represent

the refractive state of the eye when averaged due to polymodal distribution of the readings and the presence of outliers.

Evaluation of a New 1-Day SiH Contact Lens

Prof Bruce Evans, Institute of Optometry London, UK

Purpose:

To evaluate practitioner and patient acceptability of a new one day disposable contact lens (sorafilcon A).

Setting/Venue:

Community optometric practices in Hungary, Finland, Netherlands, and UK.

Methods:

Following ethical approval, 138 patients who were already wearing one day spherical contact lenses for myopia were refitted with a new one day silicone hydrogel lens (sorafilcon A). At the fitting, the practitioner completed a questionnaire using visual analogue scales (VAS) to grade vision and fit and, if these were acceptable, issued 10 pairs of sorafilcon lenses. After 10 days of wear the patient completed a VAS questionnaire describing lens performance and asking participants the “bottom line” question, whether they would change to sorafilcon if the same price as their habitual lenses.

Results:

Participants (aged 18-69 years; 61% female) were wearing a broad range of brands of daily disposable lenses. Practitioners judged fit and vision acceptable in 96.4% and 98.5% of cases, respectively. The VAS gradings were scored 0-100, higher indicating better performance with sorafilcon. Mean participant gradings for comfort were 69.7 (CI, 66.1-73.4) and for 60.9%, gradings favoured sorafilcon over habitual lenses. The mean grading for vision was 75.8 (72.9-78.7) and for 73.9% the grading favoured sorafilcon. For 72.5% lens handling gradings favoured sorafilcon. For the “bottom line” question, 48.6% preferred sorafilcon, 26.8% preferred their habitual lenses, and 24.6% could not decide.

Conclusions:

Further analyses indicate, those whose habitual lenses were hydrogel (N=44) reported significantly more improvement on changing to sorafilcon in both comfort (t-test, $p=0.01$) and handling (t-test, $p=0.003$). For all wearer questionnaire responses, the broad range from 5th to 95th percentile responses shows that clinicians should never assume that a patient’s current lenses are optimal. In summary, a new one day disposable contact lens, sorafilcon, performs well in comparison to popular brands of one day lenses, and is particularly likely to be favoured by patients wearing hydrogel lenses.

Glaucoma - going beyond IOP

Dr. Patrick Quaid, MCOptom(UK), FCOVD(USA), PhD (CAN)

Founder & Director of Optometric Services, VUE Cubed Vision Therapy Clinics

Immediate Past President, College of Optometrists of Ontario (Regulatory Board)

Executive Board, COVD International (College of Optometrists in Vision Development)

In this lecture, Dr. Quaid will outline research published in Investigative Ophthalmology & Vision Science (IOVS, #1 impact journal world-wide in ophthalmology) which stemmed from a simple clinical observation at the University of Waterloo School of Optometry & Vision Science (UW) in 2012; namely “why did every NTG patient tend to be female and have ice-cold hands when greeted”. This simple clinical observation led to 2 years of tracking 122 patients labelled “suspected OAG” at

the UW Ocular Health clinic to see what factors better predicted progression between IOP, CCT, and BP. The findings will surprise you, but the metrics attained, paying strict attention to quality of imaging, led to a useful clinical formula that can be “applied tomorrow in clinic. This is the true value of research – when it becomes solid “clinical translational research” in that the results can be immediately applied to improve patient care. Being born in Limerick and leaving Ireland at 18 years old (and yes, getting an A1 in Honours Level Gaelic) to receive an education in both the UK and Canada and having served as the President of the largest regular in Canada, has always been firmly rooted in “practical approaches”. Sometimes we do not have to “build a spaceship to cross the road. Good old fashioned common sense and clinical observation can change the landscape of patient care. Dr. Quaid hopes you enjoy the story behind his journey into Optometry though this lecture topic!

Goals of presentation:

1. Give research background on blood pressure and how it pertains to primary open angle glaucoma.
 2. Allow understanding of how IOP and DBP interact to affect perfusion and what to pay attention to.
 3. How to make an educated decision on “Target IOP” for effective treatment to give best chance for stability for POAG cases.
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Concussion and Vision: More Than Checking Pupils!

Dr. Patrick Quaid, MCOptom(UK), FCOVD(USA), PhD (CAN)
Founder & Director of Optometric Services, VUE Cubed Vision Therapy Clinics
Immediate Past President, College of Optometrists of Ontario (Regulatory Board)
Executive Board, COVD International (College of Optometrists in Vision Development)

Dr. Quaid will present an overview of vision and oculomotor dysfunction in traumatic brain injury in addition to a review of current published research literature on this topic illustrating why many other facets of vision are problematic in brain injury other than simple “visual acuity on an eyechart”. These oculomotor deficits and visual perceptual deficits will also be discussed in terms functional implications, symptomatology on presentation in addition to therapy-based interventions that can often substantially improve dynamic visual skills, mobility, and quality of life. Visual skills deficits can lead to issues such as headaches, tracking problems, double vision, gait issues, intolerance of screens and scrolling on screens, photophobia and poor ability to handle visually busy environments. These symptoms are quite prevalent in post-concussion syndrome (PCS) cases and can present in both adult and pediatric cases. How vision can impact gait will also be discussed in addition to how lenses, prisms and tints can be used effectively to significantly reduce symptomatology and how the involvement of neuro-visual rehabilitation can be invaluable to the rehab strategy overall.

A medical textbook chapter, recently published in mid-2019 and authored by both Dr. Quaid and Dr. Eric Singman (MD PhD, then Head of Neuro-Ophthalmology at Johns Hopkins) with over 230 peer-reviewed references, will be discussed. This landmark textbook has over 35 chapters, with each chapter delving in-depth on topics related to functional issues often seen in brain injured patients. Real life clinical video recordings of patients will also be shown with an anatomy-based explanation as to how the functional improvement was attained in such a short period of time.

Goals of presentation:

1. To give research background on visual rehabilitation and how it pertains to brain injury.
 2. Allow understanding of how the visual system interacts with vestibular function and proprioception, and what can happen when this interaction is affected in brain injury.
 3. Show real life patient cases to demonstrate the usefulness of neuro-visual rehab overall.
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The Enigmatic Vitreous: Look at it and not Through it

Prof John Nolan, Ireland & Dr Emmanuel Ankamah, Nutrition Research Centre Ireland, Waterford Institute of Technology, Ireland

Purpose:

Vitreous describes the homogenous gel that fills the posterior segment of the eye. Degeneration of this exquisite gel is ubiquitous during life and leads to the entoptic phenomenon, vitreous floaters or myodesopsia. Emerging evidence have shown that symptomatic vitreous degeneration impact negatively on both quality of life and visual function of sufferers.

Setting/Venue:

Further, the treatment options for floaters, pars plana vitrectomy and laser vitreolysis, are accompanied by sight-threatening complications and are not readily proffered to patients unless the benefits far outweigh the risks. It follows from the foregoing that a low-risk yet effective therapy is warranted for the management of symptomatic vitreous degeneration.

Methods:

Recently, targeted dietary intervention with selected micronutrients has been pursued as a plausible strategy for managing vitreous floaters.

Results:

This talk is aimed at, first, exploring the evidence regarding the impact of vitreous degeneration on visual function, specifically contrast sensitivity, and its relevance for optometric practice. Next, the evidence regarding the impact of vitreous degeneration on quality of life will also be discussed. Furthermore, the evidence-based treatment options for vitreous floaters will be examined.

Conclusions:

Aside these, the micronutrients present within the human vitreous that contribute to the integrity of the vitreous will be discussed. Lastly, the results of the Floater Intervention Study (FLIES; ISRCTN15605916) will be presented, and its implications for eyecare will be highlighted.

Hoya Keynote

Myopia control in children wearing DIMS spectacle lens: 6 years results

Prof. Carly Lam, The Center for Myopia Research, Hong Kong

DIMS spectacle lens is found to be effective in slowing myopia control in a 2-years randomized clinical trial. The efficacy was around 60% less in myopia progression and axial elongation when compared to the subjects wearing single vision lenses.

We followed these children for a period of 6 years and evaluate the changes in refraction and axial length. Myopic children who had completed the 2-year randomized clinical trial of DIMS lens were included in this follow-up study. Their cycloplegic refraction and axial length (AL) were measured up to 6 years. Children who changed to other myopia control methods were excluded. Ninety children completed the data collection at for a period of 6 years. The children (n=36) who had worn DIMS lenses throughout the study had $-0.92 \pm 1.15D$ of myopia progression and $0.60 \pm 0.49mm$ of axial elongation. The mean annual changes were 0.15D and 0.10mm.

When these children continued to wear the DIMS lens for a period of 6 years, the myopia control effect was sustained that both annual myopia progression and the axial length changes were similar to the findings in the 2 years RCT.

Childhood myopia: diagnosis and therapy

Birte Graff, M.Sc., Ophthalmic Optics and Psychophysics, Internationale Innovative Ophthalmochirurgie, Germany

This talk gives an overview of different kinds of treatment options and its individual characteristics. Own experiences with the MiYOSMART lenses are shared. The importance of measuring ocular biometry when performing myopia therapy will be highlighted and questions concerning myopia therapy itself will be addressed: What is the specific goal of myopia therapy? When should an additional therapy be considered?

Assessing the School Age Child for Accommodative Problems

Christine Allison, Illinois College of Optometry, Chicago, USA

Purpose:

The surge in screen time and overall near work in children since the COVID pandemic has increased concerns about the accommodative systems of school-aged children. It is important to understand the questions to ask during the case history, and the tests to do during the exam that will fully assess the accommodative system. Once the accommodative system is fully examined, appropriate diagnoses must be made in order to properly manage these conditions to keep children comfortable and symptom-free on a daily basis.

Setting/Venue:

The pediatric patients this lecture will be based on are from the clinical experience of a large urban clinic with patients from a lower socioeconomic group. The majority of the patients in this clinic are covered by the public aid system in Chicago, IL, USA.

Methods:

This lecture will address the types of questions to ask during the case history of a school-aged child, including questions regarding screen time, the type of screens used, as well as overall performance in reading and school-work, in general. The accommodative testing that will be discussed will emphasize accommodative amplitudes, accommodative lag, and accommodative facility testing. The way the accommodative system works with both the oculomotor and vergence systems will be addressed, as well.

Results:

After addressing the common diagnoses of Accommodative Insufficiency, Accommodative Excess, Accommodative Infacility, and Accommodative Spasms, we will discuss the management options for these patients. When to use treatments such as decreased screen time, the use of plus lenses in reading only or bifocal form, and vision therapy will be addressed. The importance of prescribing refractive error appropriately for patients with symptoms of distance blur when the actual problem is a near accommodative issue will be stressed.

Conclusions:

School-aged children throughout the world are spending more and more time with near work and computerized devices. It is important that when they have their vision assessments that the accommodative system is thoroughly investigated in relation to their symptoms. Mis-management of accommodative problems can cause further visual discomfort in these patients in the future if not fully addressed in the present."

Why Visual Optics is Important in the Clinic or Things I Forgot that I Should Remember

Dinah Paritzky, Hadassah Academic College Jerusalem, Israel

Purpose:

Optics is defined as a science that deals with the genesis and propagation of light, the changes light undergoes, and other closely associated phenomena. Visual optics is a branch of optics relating to the eye and is typically studied during the first year of optometry studies. The principles of visual optics are often forgotten over the years, although they are very relevant in the optometric clinic. This presentation will cover optical principles that influence the optometric examination

Methods:

Content: This presentation will deal with four major topics: visual acuity and blur, anisometropia and aniseikonia, reading with contact lenses vs reading with glasses, and the effect of pupil size on visual acuity. For each topic the essential optical principles will be explained, and compared and contrasted to results from clinical research. Cases will be presented in which understanding of visual optics is essential for patient care.

Results:

Conclusion: Visual optics is one of the basic sciences from which optometry is derived. It is as important to be familiar with these optical principles as it is to be familiar with clinical research, and this knowledge may well affect the day-to-day clinical practice of optometrists.

Conclusions:

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Anisometropic Amblyopia: Influence of Variations in Axial Length and Macular Parameters

Ana Díaz, Hospital Sant Joan de Déu (Barcelona) / Universidad Politécnica de Catalunya (UPC)
Spain

Co-Authors: C. González, J.C. Ondategui, S. Font, J. Prat

Purpose:

To determine the influence of axial length in patients with amblyopia anisometropic and possible macular variations.

Setting/Venue:

This is an observational, cross-sectional and prospective study of non-consecutive cases performed with pediatric patients from the ophthalmology service of the Pediatric Hospital Sant Joan de Déu in Barcelona.

Methods:

21 pediatric patients (mean age: 7.86 ± 1.91 years) with anisometropic amblyopia were examined in the amblyopia unit of the Ophthalmology Department of Sant Joan de Déu Hospital (Barcelona). All patients underwent an optometric examination stipulated by the amblyopia unit of the Hospital. The statistically analysed variables are: visual acuity (VA), refractive error (Rx), axial length (AL) (using IOL Master 500 optic biometer) and average macular thickness (MT) and its layers (using the DRI OCT Triton device).

Results:

In sound eyes, a mean and standard deviation of 22.25 ± 0.95 mm for AL, 0.86 ± 1.21 for Rx and 0.94 ± 0.11 for VA have been found. For MT: 286.11 ± 14.21 µm in macula, 37.35 ± 5.30 µm (RNFL), 72.61 ± 6.75 µm (GCL+), 109.97 ± 9.78 µm (GCL++), and 265.86 ± 50.31 µm (choroid). In amblyopic eyes, a mean and standard deviation of 22.17 ± 1.50 mm for AL, 1.42 ± 3.92 D for Rx and 0.77 ± 0.18 for VA. For MT: 287.69 ± 15.83 µm in macula, 36.68 ± 6.50 µm (RNFL), 72.64 ± 6.76 µm (GCL+), 109.04 ± 10.70 µm (GCL++) and 279.56 ± 54.80 µm (choroid). Statistically significant correlations have been found between AL and Rx ($r = -0.876$, $p = 0.000$), and between AL and ET ($r = -0.609$, $p = 0.003$).

Conclusions:

AL increases both in amblyopic and sound eyes with age and influences Rx in anisometropic amblyopia during childhood. There is a relationship between AL and some retinal structures. Finally, the severity of amblyopia and axial length are not related. It is necessary to increase the number of patients to achieve more strong results."

Computer Vision Syndrome

David Berkow, Berkow Optometrists, Haifa, Israel

Summary:

Computer Eye Syndrome is a common phenomenon amongst computer users. It is also known as digital eye strain or visual fatigue. This phenomenon includes symptoms resulting from hours in front of the computer screen which are associated with visual symptoms, eye surface irregularities, eye fatigue, pain in the eye or related areas around the eye, blurred vision and headaches. There are solutions to these symptoms which include multiple possibilities including treating the ocular surface, the vision, residual astigmatism, accommodation and issues of convergence. One must also change the position of the computer screen relative to the viewing angle and more.

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Optometric Practice & Research - What Colour Vision Test Should I use

Ben Evans, University of London, UK

Co-Authors: M. Rodriguez-Carmona, J. Barbur

Purpose:

Small changes in chromatic sensitivity are often the earliest signs of retinal and/or systemic disease and colour plays a vital role in a range of occupational and clinical environments. As such, the diagnosis and detection of colour vision deficiencies is an important element of optometric practice and research. Colour vision tests are sometimes selected based upon familiarity rather than suitability, despite fundamental limitations of some commonly used tests. The purpose of this study was to produce reliable colour assessment outcomes to examine the efficacy of commonly used methods of colour vision assessment.

Setting/Venue:

The colour research laboratory and Advanced Vision and Optometric Tests (AVOT) clinic at City, University of London.

Methods:

Data for 1827 participants were abstracted from anonymized records collected through the AVOT clinic service at City, University of London. The sample included 350 normal trichromats, 1012 deuterans and 465 protans with ages ranging from 10 to 65 years. Colour vision was assessed using the Ishihara and American Optical Hardy-Rand-Rittler (AO HRR) pseudoisochromatic plates, Farnsworth Munsell D-15 (D-15), City University (2nd Edition), computerised Colour Assessment and Diagnosis (CAD), and Nagel anomaloscope tests.

Results:

Eighty-one per cent of normal trichromats and less than 1% of those with congenital colour vision deficiency pass the Ishihara test when no errors are accepted. 93% of normal trichromats, 4% of those with congenital colour vision deficiency, and no individuals with acquired loss pass the AO-HRR when no errors are accepted. The D-15 and City University tests pass all normal trichromats, 50% of participants with congenital colour vision deficiency, and between 16% to 25% of those with acquired loss.

Conclusions:

The results reveal the trade-off between sensitivity/specificity. The potential sensitivity of pseudoisochromatic plate tests is high, but this advantage is severely diminished due to the tests failing many normal trichromats. The D-15 and City University tests fail to reliably dichotomise participants based upon the severity of colour vision loss - many participants who fail are found with more reliable tests to exhibit less severe loss than others who pass. A good understanding of the capabilities and limitations of any test, particularly those used in the assessment of colour vision, is required to maximise their efficacy in optometric practice and research.

The Challenges of Unexplained Vision Loss in Three Young Patients

Dorothy Thompson, Sight and Sound Centre, Great Ormond Street Hospital for Children, London, UK

Co-Author: E. O'Neill

Purpose:

Unexplained or non-organic visual loss, malingering, or visual conversion reactions are ways of saying we don't believe a patient's vision is as bad as they report. This aim of this presentation is to describe what can be done next if test room tricks don't detect positive proof of vision.

Setting/Venue:

Children's hospital eye department (Great Ormond Street Hospital for Children, London, UK)

Methods:

A retrospective case series followed three girls with striking visual complaints and asymmetric vision loss profoundly affecting one eye who were referred by optometrists to paediatric ophthalmologists. On further examination the eyes were reported to be structurally normal and the vision loss considered unexplained. The children went on to have visual electrophysiology tests to objectively test retinal and visual pathway function.

Results:

1. In a 10 year old under the care of mental health services, vision loss in one eye had been attributed to stress. 2. A 14 year old girl reported profoundly reduced vision in one eye. Healthcare

professionals suspected the visual loss was simulated/exaggerated to attain para-Olympic eligibility.

3. A 15 year old girl reported gradual bilateral visual loss over 2y. She then complained of profound unilateral visual loss. Visual electrophysiology (pattern ERG, pattern VEP) findings showed their complaints were genuine by identifying retinal ganglion cell and optic nerve dysfunction, associated with hereditary optic nerve disease, birth trauma and restricted diet respectively.

Conclusions:

Unexplained visual loss can be psychogenically created by the patient...or inadvertently by the clinician jumping to conclusions. Visual electrophysiology can identify the cause of a child's visual loss and provide explanations for symptoms which may be otherwise remain unexplained. Avoidant restrictive food intake disorder in children can cause insidious vision loss and asking about diet when taking the clinical history can be helpful.

Study Design of a Double-masked Randomised Controlled Crossover Trial of Precision Tinted Lenses for Visual Stress

Prof Bruce Evans, Institute of Optometry London, UK

Co-Authors: B. Evans, Z. Khan, A. Wilkins, P. Allen

Purpose:

In 2016 two literature reviews of visual stress (VS) were published. One concluded that VS may affect 1 in 5 people with reading difficulties and can be alleviated with individually prescribed precision tinted lenses (PTL). The other attributed the benefit from filters to placebo/Hawthorne effects. Both reviews recommended a large RCT using the Intuitive Colorimeter to control for placebo effects. The authors have designed such an RCT to help resolve the issue. The purpose of this presentation, as recommended by the CONSORT statement, is to detail the proposed protocol to encourage peer review and feedback on the study design.

Setting/Venue:

Clinics that receive referrals of patients for an ophthalmic assessment for one or more of the following reasons: the patient is struggling to learn, reports symptoms on viewing text, or is suspected of having a visual problem that may be impacting on the perception or comfort of text.

Methods:

Participant selection criteria: aged 9-18y; diagnosis of VS (Evans et al., 2017, Journal of Optometry, p.161); no clinically significant refractive, binocular, accommodative or ocular health anomalies; not previously used precision tinted lenses. For each participant, the Intuitive Colorimeter will be used to determine two precision tint colours, optimal and sub-optimal. Participants will randomly receive optimal or sub-optimal precision tinted spectacles first. Participants and researchers will be masked. After one month, the first pair of tinted spectacles will be taken from the participant for a one-month washout period. Then, participants will crossover to receive spectacles tinted with the other colour.

Results:

VS is thought to be a neuro-optometric condition causing symptoms when reading which may impact reading indirectly (discomfort deterring reading) or directly (via visual perceptual distortions). The primary outcome measure of the research therefore will be symptom diaries. The secondary outcome variable will be a reading test that isolates visual aspects of reading (Wilkins Rate of Reading Test). An additional outcome variable will be parent and teacher surveys of academic behaviours. Analysis will use an intention-to-treat basis and attrition will be minimised by a formal agreement at the outset and frequent contact from the researchers throughout the study.

Conclusions:

The CONSORT (2010) statement stipulates that trial protocols should be readily available. Increasingly, reputable conferences encourage presentation of protocols before a study is commenced for peer review and feedback. The presentation will include full details of the protocol, including a sample size calculation, and invite critical appraisal of the study design and methods. An adequately powered study with minimal attrition will make a significant contribution to the evidence base on this important clinical question. This will further delineate the role of the optometrist in improving the academic outcome for children who are in their prime years of education.

Contrast Sensitivity - Obscure Lab-style Measurement or a Useful Tool in Modern Practice

John Nolan, Macular Pigment Research Group at Waterford IT, Ireland & Martin O'Brien, Chair of Education & CPD at Optometry Ireland, Optometrist.

Abstract: In both the eye examination and dispensing of corrective appliances the main goal is to improve vision. What is vision and how do we measure it? The Snellen Chart has been the mainstay of measuring visual acuity for generations of eyecare practitioners. However, the limitations of the Snellen chart are well recognised. But vision is far more than reading letters on a chart, the world is far more than black targets on a white background. Do we as eyecare practitioners have to do more to assess the quality of how our patients see.

Contrast sensitivity is another tool to assess quality of vision, but what is this and why is this tool not more widely utilised. Professor John Nolan and Martin O'Brien will debate the topic and invite feedback from the floor. One of the keystones of reflective practice in terms of CPD, is to see whether there is an impact on your practice. Will you change how you approach assessment of your patients vision as a result of this session (or on reflection, decide that no change is necessary)?

Ellen Svarverud is Assistant Professor at the National Centre for Optics, Vision and Eye Care at University College of Southeast Norway, where she is doing research as well as teaching and supervising optometry students. Her broad optometric background includes clinical practice, education, research and development of the optometric profession. She and has been a Fellow of the EAOO since 2015.

XR (eXtended Reality) technologies such as VR (Virtual Reality) and AR (Augmented Reality) have become increasingly commonplace. This is exciting from a visual function perspective because people have to rely on their vision when using 3D XR technologies. We know that having two good and cooperating eyes is necessary to take full advantage of using these technologies, which means that it is imperative to have fully functional stereo vision, good oculomotor control and corrected refractive errors. Further, in 3D displays, the visual system has to work differently from in the physical world, because the neurological link between vergence and accommodation is broken (vergence-accommodation conflict). Many studies have shown how visual cues can be used and manipulated in all types of visual displays, demonstrating how important it is to understand vision for optimal utilization of XR technologies. Nevertheless, not many papers on utilization and usage of XR technologies have acknowledged that the person's vision and potential vision problems affect comfort, performance and the ability to work over longer time periods. As these technologies continue to be more widespread, it is important for optometrists and vision scientists to understand what challenges and benefits XR displays pose for the visual system.

Poster Abstracts

Title: Tear osmolarity, its measurement and correlation with other tests for dry eye examination

Presenter

Petr Veselý, Masaryk University, Medical Faculty, Kamenice 5, 625 00, Brno, Czech Republic

Purpose:

To determine the values of osmolarity of tears of the right and left eye in individual probands.

Setting/Venue:

In our study, we had data from 20 probands, whose average age was 23.5 years.

Methods:

We presented the DEQ-5 questionnaire to the probands. Each proband underwent tear osmolarity using a TearLab instrument.

Results:

The average value of tear osmolarity in the right and left eye of all probands was 300.35 and 293.70 mOsmol/l.

Conclusions:

The results of our study show that there is no correlation between non-invasive break time test (nBUT) and tear osmolarity (difTL8, $R = 0.23$ at $p = 0.32$).

Title

Low Vision Therapy in the Czech Republic

Presenter

Pavel Beneš, Faculty of Medicine, Masaryk University, Kamenice 5, 625 00, Brno, Czech Republic

Purpose:

The aim of this poster is to inform about Low Vision therapy in the Czech Republic.

Setting/Venue:

As in other countries, also our low vision therapists are focused on many types of visual exercises, methods and support of rehabilitation and compensatory aids to improve clients' visual impairments.

Methods:

The therapy of the visually impaired is a long-term process of developing and maintaining the visual potential for obtain new information from the client environment.

Results:

During the training, we use a lot of special methods and tests.

Conclusions:

Low vision therapy is very important in cooperation in all helping professions.

Title

Validation of the Cobra HD Meibographer

Authors

R. Ifrah, L. Quevedo, L. Gantz

Presenter

Reut Ifrah, Hadassah academic college, Jerusalem, Israel

Purpose

Non-contact infrared meibography is a diagnostic technique that allows in vivo evaluation of the meibomian glands (MGs). MG loss is quantified in percentages, that are graded on a scale representing the severity of the loss progressing in steps of a minimum of 10%. This study examined the within-subject (intra-test), inter-examiner, and inter-session repeatability of the Cobra HD meibographer (bon Optic VerttiebsgmbH, Italy).

Setting/Venue

Hadassah Academic College Optometry Clinics, using the Cobra HD meibographer.

Methods

61 participants (mean age: 23.1 ± 4.6 years, range: 19-43, 48 female) and 42 participants (mean age: 23.0 ± 3.4 years, range: 19-37, 30 female) were recruited for the inter-session and inter-examiner experiments, respectively. Their upper and lower right eyelids were imaged with the Cobra meibographer three consecutive times, by two different examiners to calculate the percentage of the MG loss. Intra-test repeatability was assessed using standard deviations and the within subject standard deviation (Sw). Inter-examiner and inter-session repeatability was assessed using correlation and Bland and Altman (mean difference, and 95% confidence intervals- CI) analyses.

Results

Mean upper and lower eyelid MG loss and Sw was $12.5 \pm 8.5\%$, $6.4 \pm 4.9\%$, 9.5% and $12.0 \pm 7.4\%$, $8.1 \pm 6.4\%$, 7.6% for the two examiners, respectively. Inter-session measurements were significantly correlated (both R: 0.9) and not significantly different ($P=0.8$, $P=0.5$). The inter-session Sw and mean difference was 8.5% , $0.09 \pm 3.2\%$ (95%CI: -6.0-6.2) and 4.9% , $-0.03 \pm 2.1\%$ (95%CI: -4.1-4.0), in the upper and lower eyelids, respectively. Inter-examiner measurements were significantly correlated (upper R:0.9; lower R:0.7) and not significantly different ($P=0.2$), with Sw and mean difference of 3.9% $-0.76 \pm 4.2\%$ (95%CI: -8.9- 7.4), and 4.3% and $-0.66 \pm 4.2\%$ (95%CI: -8.9-7.6), respectively.

Conclusions

The differences in consecutive measurements of the same patient, the differences in measurements between the examiners and between two different sessions were all lower than 10%. Therefore, the Cobra HD meibographer demonstrates good repeatability and reproducibility.

Title

Ocular aberration detection by a photopolymer-based analog holographic wavefront sensor

Authors

E. Branigan, S. Martin, M. Sheehan, K. Murphy

Presenter

Emma Branigan, Centre for Industrial and Engineering Optics, School of Physics & Clinical & Optometric Sciences, TU Dublin, Ireland

Purpose

Aberrations or optical anomalies of a wavefront cause deviations from the ideal. The result of these wavefront anomalies is usually a degradation in the quality of the in-focus retinal image. The role of the wavefront sensor (WFS) is to detect the magnitude and type of the aberrations present in an incident wavefront and, for many years, has been used as an assistive technology for procedures such as laser refractive surgery. The construction and experimental testing of a rapid and efficient holographic WFS for the detection of these optical aberrations is presented here. The targeted aberrations were defocus and spherical aberration.

Setting/Venue

The Shack-Hartmann WFS (SHWFS) is widely used in routine human eye measurements for detecting ocular aberrations. However, the size, computational overhead necessary for wavefront fitting, and cost of these instruments often restrict their use to specialist clinics. Therefore, it is advantageous to construct an efficient, inexpensive solution for wavefront sensing.

Methods

The analog holographic wavefront sensor (AHWFS) is a highly-efficient and cost-effective alternative to the SHWFS. Optical aberrations, described by a set of modes, were recorded as holograms in a photosensitive medium. A minimum and maximum phase delay associated with each mode was recorded as a pair of multiplexed holograms. When a wavefront containing arbitrary aberration modes was incident on the sensor, they were optically decomposed into a set of paired diffracted beams for each mode. A normalised ratio of intensities at an array of photodetectors determined the magnitude of the aberration, while the angular position determined the aberration type.

Results

A biconvex-refractive lens was recorded holographically in an acrylamide-based photopolymer. The holographic optical element (HOE) was multiplexed with a maximum and minimum amount of the defocus mode, over a wide detectable range of $\pm 15.0D$. The result was the separate recording of a holographic converging lens and a holographic diverging lens (i.e. able to detect both myopia and hyperopia). Four amounts of defocus: +9.0D, +7.1D, +4.9D, and 0D were introduced to verify the detection accuracy of the sensor. All were successfully classified, within a percentage error of $\sim 5\%$, by measuring the normalised intensity ratio (NIR) produced when incident on the HOE.

Conclusions

An AHWFS was fabricated in an acrylamide-based photopolymer for the first time using only refractive elements in the recording process. This was achieved for a defocus aberration by multiplexing a maximum and minimum phase delay of a lens at two different carrier spatial frequencies. The measurement and classification of a test beam with defocus (i.e. myopia/hyperopia), within an error of $\sim 5\%$, is encouraging for the future success of the AHWFS as a cost-effective solution to wavefront sensing for ophthalmic practice. Current work on the sensor will

allow for the detection of spherical aberration, while future work will incorporate astigmatism sensing.

Title

Influence of sleep habits in the development of myopia in Spanish children

Authors

C. Martínez Pérez, M.Á. Sánchez-Tena, C. Villa-Collar, M. González-Pérez, A. González-Abad, C. Alvarez-Peregrina

Presenter

Clara Martínez Pérez, Institute of Education and Sciences, Portugal

Purpose

Sleep habits and the circadian rhythm may have a role in the development of myopia, especially during childhood. This study aims to analyze and compare the quality of sleep between myopic and non-myopic Spanish children.

Setting/Venue

Data collection has been carried out in 107 optical centers belonging to the Alain Afflelou Foundation in all the autonomous communities of Spain.

Methods

Multicenter pilot study, carried out in September 2021. The study population were children aged between 5 and 7 years, who underwent an optometric examination consisting of uncorrected distance visual acuity (AV), objective and subjective refraction, cover test, Worth test, accommodative delay, ocular motility and near point of convergence. In addition, the "Children's Sleep Habits questionnaire" was conducted. For the quantitative definition of myopia, the value of the spherical equivalent (SE) was used. So, children were classified as myopic if $SE \leq -0.50$. Statistical analysis was performed using the SPSS 27.0 software (SPSS Inc., Chicago, Illinois).

Results

A total of 1027 children were examined, of which 35 were excluded as they did not meet the inclusion criteria (children between 5 and 7 years old) or the histories were incomplete. Non-myopic children rarely (0-1 times/week) wake up in a negative mood ($p=0.042$) and usually (5-7 times/week) fall asleep in their bed ($p=0.029$) compared to myopic children. However, non-myopic children usually have more problems sleeping away ($p=0.007$).

The spherical equivalent becomes more negative in children who usually have hard time getting out of bed ($p=0.006$) and who sometimes (2-4 times/week) sleep in their brother's bed ($p=0.029$).

Conclusions

Myopic children have a more variable sleep than non-myopic children. The spherical equivalent becomes more negative with poor sleep. A multivariate study with a longer follow-up is necessary to assess whether there is a relationship with lifestyles.

Title

Characterization of the corneal profile in keratoconic eyes by means of Scheimpflug images and elevation data. Comparative analysis.

Authors

M. Larrosa, J. Gispets, N. Lupón

Presenter

Manel Larrosa, Universitat Politècnica de Catalunya, Violinista Vellsolà 37, 08222, Terrassa, Spain

Purpose

To describe and compare corneal sagittal heights obtained from both Scheimpflug images and elevation maps provided by Oculus Pentacam. To gain a better understanding of the topography of the cornea in keratoconus, including the periphery, and assist practitioners in the selection and fitting of large diameter contact lenses.

Setting/Venue

We used images and data obtained with the Pentacam HR instrument in the Optics and Optometry School of Terrassa (UPC, Spain).

Methods

Twenty eyes with keratoconus at different stages according to the Amsler-Krumeich classification were included in the study. The sagittal heights were manually measured on the Scheimpflug images at six different points located on three different meridians, and they were also determined from the data of elevation maps. In addition, the slopes and the angles in the peripheral zone were calculated from the two sets of data. The comparison was performed using a Bland-Altman diagram.

Results

The sagittal heights, the peripheral slopes and the angles obtained from direct measures on Scheimpflug images were, in general, slightly higher than the ones obtained from the elevation maps. The values of the difference ranged from -1.6 to 108 microns (mean 53.5 ± 28 microns), for the sagittal height, from -0.005 to +0.06 (mean 0.03 ± 0.017), for the peripheral slope, and from -0.1 to 2.8 degrees (mean 1.3 ± 0.7 degree) for the peripheral angles. In all three comparisons the differences were clinically insignificant, in terms of CL parameter calculation for eyes affected of keratoconus.

Conclusions

Clinically insignificant differences were found in the two sets of measurements, supporting the idea that both measuring approaches may be used for parameter calculation of a novel CL design for keratoconus.

Title

The Impact of Type 1 Diabetes Mellitus on Ocular Lens Density

Presenter

Klaudia Kalinayová, Masaryk university Faculty of Medicine, , Kamenice 5, 62500, Brno, Czech Republic

Purpose

The main objectives of the research are as follows: (1) to elucidate the impact of type I diabetes on the ocular lens density of patients participating in the study, (2) to determine the lens density values in the right and left eye of patients with type I diabetes and non-diabetic patients, by using the

Pentacam HR device, (3) to compare the values of lens densitometry measurements in both examined groups and find out whether the values differ.

Setting/Venue

The thesis deals with problems of type I diabetes and its impact on the ocular lens density.

Methods

The research part of the thesis is devoted to the measurement of ocular lens density by using the Pentacam HR in samples from the experimental and control group of patients. The age, duration of type I diabetes mellitus and the glycosylated hemoglobin levels were recorded. The research has established three main hypotheses.

Results

The patients with type I diabetes had statistically higher lens density values than subjects in control group. The value of lens densitometry measurements in right and left eye differ with every patient.

Conclusions

The patients with type I diabetes mellitus have higher lens density values than patients without diabetes. It is reasonable to think that these differences in the lens density values between experimental and control group are caused by type I diabetes mellitus.

Title

Anisoaccommodation in patients using spectacle correction

Authors

A. Gregarová, P. Beneš

Presenter

Anna Gregarová, Masaryk University, Komenského nám. 220/2, 662 43, Brno, Czech Republic

Purpose

The aim of this paper is to compare amplitudes of accommodation of the right and left eye without correction and amplitudes of accommodation of the right and left eye with habitual correction and to find out the occurrence of anisoaccommodation (hypothesis 1). The second hypothesis aims to determine whether the size of habitual correction-corrected anisometropia influences the size of anisoaccommodation. The objective of the third hypothesis is to verify the difference between the amplitudes of accommodation of the right and left eye when using the best tolerated correction performed with binocular accommodative balance test.

Setting/Venue

Data are measured in 21 probands, the mean age is 20.8 ± 0.6 years. Nine probands are myopes, one hypermetrope and eleven have astigmatism. The small number of hypermetropes is due to the age of group of probands, in the third decade there is usually no manifestation of hypermetropia yet.

Methods

The anamnestic questionnaire focuses mainly on subjective asthenopia. Digital focimeter is used to determine the optical power of spectacle lenses of habitual correction of probands. The best possible tolerated correction with binocular accommodation balance is performed. The refraction is performed using standard test frame and set of test lenses. The amplitudes of accommodation are measured separately in the right and left eye, first with habitual correction, then with natural vision

and lastly with the best possible correction using accommodative ruler of the RAF type and the method of choice is the push-up and pull-away method.

Results

The first hypothesis – spectacle correction reduces anisoaccommodation, was confirmed. With habitual correction anisoaccommodation decreased in 14 probands out of 21, ie in 66.7% of cases. The second hypothesis – differences between the amplitudes of accommodation of the right and left eye with habitual correction will be more significant with increasing anisometropia, was also confirmed. The correlation coefficient R is 0.77, which indicates a high degree of linear dependence of these quantities. The third hypothesis – after performing binocular balancing, there will be a reduction in anisoaccommodation, was also confirmed. The reduction of anisoaccommodation occurred in 62% of cases.

Conclusions

The aim of the research was to determine effect of current spectacle correction on anisoaccommodation. The issue of anisoaccommodation should not be neglected in optometry practice, particularly in anisometropic patients it can be a source of asthenopia. Furthermore, finding of unequal accommodation may be crucial in determining correct addition of presbyopic correction. A suitable solution for unequal accommodation is, above all, the prescription of the best tolerated correction with the implementation of binocular balancing. As proved in the first and third hypotheses, the prescription of such correction of refractive error reduces anisoaccommodation. Another option for therapy of anisoaccommodation is visual training.

Title

Objective and Subjective Evaluation of Novel Soft MiniScleral Contact Lenses for Keratoconus

Authors

L. Gantz, E. Gal, J. Gispets, M. Zyroff, E. Netanya

Presenter

Eyal Gal, Hadassah Academic College, 37 Haneviim St., 91010001, Jerusalem, Israel

Purpose

This prospective case series examined the objective and subjective visual quality of a new soft mini scleral contact lenses for keratoconus (miniScK, Cooper Vision, Israel).

Setting/Venue

Patients were fit with contact lenses in the clinics at Hadassah Academic College, and wore their lenses for two weeks. They were re-examined in the clinics after two weeks of wear.

Methods

Twenty one eyes of 11 keratoconic patients (8 females), with a mean age 38 ± 13 (range: 18-65) were fit with a miniScK. Physiological fit was assessed with a slit lamp and Efron grading scale. Low and high contrast distance and near Snellen visual acuity (VA), higher order aberrations (HOA), tomography (vx130 Wavefront aberrometer, Visionix Luneau, France), and Pelli-Robson contrast sensitivity (CS) were measured with the habitual and the miniScK. Participants reported daily hours of wear and graded visual quality and visual comfort on a scale 1 to 5. Results were compared using Mann-Whitney U tests.

Results

Participants reported a mean daily wear time of 6.44 ± 3.24 hours. Visual quality and comfort scored a mean of 3.9 ± 0.9 and 2.9 ± 0.9 , respectively. Itchy, dry eyes and secretions were reported. All Efron grading scale scores were lower than 1.2. Compared to the habitual correction, the lenses did not significantly improve the low contrast VA, but did significantly improve the high contrast VA (low: 0.37 to 0.39, $p=0.35$, high: 0.55 to 0.83 Snellen decimal, $p<0.0001$). The mini Sck lenses significantly improved the total RMS (4.7 ± 1.6 to 2.0 ± 0.7 , $p<0.001$) but not total HOA (1.3 ± 0.6 to 0.8 ± 0.5 , $p=0.08$) or CS (1.2 ± 0.5 to 1.5 ± 0.2 , $p=0.23$).

Conclusions

The lenses provided acceptable visual acuity with a mean wear duration of six hours and good subjective visual quality. However, lens comfort should be improved, with the majority experiencing itchy eyes and an overall score 2.9/5.

Title

Correlation between refractive errors and migraine

Presenter

Veronika Koňářková, Masaryk University Faculty of Medicine, Brno, Czech Republic

Purpose

The main aims of the study are: (1) Patients with headaches and migraines have higher levels of astigmatism compared to control subjects. (2) After proper correction is established, the frequency of migraine disorders is reduced. (3) Anisometropia is found in migraine patients.

Setting/Venue

Refractive errors and headaches are common and well represented in the population. Significant errors in the correction of refractive errors can cause problems associated with headaches.

Methods

Assessment of the client's subjective problems based on the questionnaire, which may be associated with refractive error and its correction. Distribution of clients according to age, gender, type of correction and subjective difficulties. Also according to the type of refractive error - spherical error, astigmatic error, uncorrected ametropia and anisometropia. Determination of the correct correction. After a certain period of time, the client is contacted for feedback.

Results

Based on research, I expect to see a reduction in the frequency of headaches and migraines in patients. Patients with difficulties will have higher degrees of astigmatism than the control group. Anisometropia is present in patients with frequent headaches.

Conclusions

Ophthalmologists and optometrists often meet clients who suffer from migraines and headaches. A possible relationship between the presenting headache and migraine and visual anomalies is still being sought.

Title

Solving Problems Caused by Aniseikonia

Authors

E. Machynková, P. Veselý

Presenter

Eliška Machynková, Masaryk University, Faculty of Medicine, Department of Optometry and Orthoptics, Komenského nám. 220/2, 66243, Brno, Czech Republic

Purpose

Research focuses on measuring the degrees of aniseikonia and the subjective difficulties of anisometropes. I have identified the following as the objectives of the research. Determine the magnitude of the anisometropia. Then using the questionnaire to determine whether the patient is experiencing some of the subjective problems related to the anisometropia. Further to monitor whether using size-lens reduces aniseikonia and eliminates subjective problems. I have established three hypotheses. Hypothesis 1: Subjective problems in anisometropia increase with the size of the aniseikonia. Hypothesis 2: Using size-lens will result in a reduction in aniseikonia. Hypothesis 3: Using size-lens will reduce subjective problems.

Setting/Venue

A total of 35 probands took part in the measurement. Based on gender, the examined group is divided into 27 women and 8 men with an average age of 26 years. The criterion for inclusion in the research is anisometropia >0.75 D.

Methods

Based on the questionnaire, the occurrence of subjective problems associated with aniseikonia of the probands is evaluated first. The magnitude of anisometropia is determined using objective and subjective refraction. The degree of aniseikonia with a habitual distance correction is measured using the Aniseikonia Inspector computer software. The suppression of the aniseikonia in patients experiencing various degrees of aniseikonia was achieved by using size-lenses. This was followed by verification of the remission of subjective difficulties using a questionnaire. All measured data are mathematically processed in Microsoft Excel and compared with research on the same topic.

Results

The first hypothesis was evaluated using a score of 1 point for each present symptom. This score was then plotted depending on the size of the anisometropia and backed up by the correlation coefficient $R = 0.77$. Consequently, first hypothesis was confirmed. The second hypothesis – using size-lens will result in a reduction in aniseikonia, was also confirmed. Overall, a reduction in aniseikonia was achieved in 84 % of those tested using size-lenses. Third hypothesis was also confirmed – using size-lens reduced subjective problems. The average score of symptoms with habitual correction was 4.66, after size-lens use it was 1.66.

Conclusions

The purpose was to demonstrate the relation of size of aniseikonia on the size of present subjective symptoms of anisometropes, than to verify the effect of size-lenses on decreasing the size of aniseikonia and reducing these subjective problems. Based on the measurements, it was found out that the number of present symptoms increases with increasing anisometropia. Size of aniseikonia was suppressed in most of those tested using size-lenses. The use of size-lens also reduces the subjective problems related to aniseikonia by more than half.

Title

The impact of the COVID-19 pandemic optometric and contact lens practice in Poland

Authors

A. Sawczuk, S. Kropacz-Sobkowiak, A. Przekoracka- Krawczyk

Presenter

Aleksandra Sawczuk, Adam Mickiewicz University, , Uniwersytetu Poanańskiego 2, 61-614, Poznań, Poland

Purpose

The study aimed to assess the impact of the COVID-19 pandemic on everyday optometric and contact lens practice in Poland. The impact of the COVID-19 pandemic on the scope of procedures performed during and after different lockdown periods and pandemic waves, compared to the scope of practice before the pandemic. Another objective was to examine the sense of safety in the workplace and willingness to receive the COVID-19 vaccination by optometrists in Poland.

Setting/Venue

The study was conducted from March till May 2021. The survey was created and conducted online using a Google Forms.

Methods

The internet survey among 103 optometrists consisted of 15 questions. Optometrists were asked about practice procedures before the pandemic and during the pandemic. The study distinguished four different periods with different restrictions and government recommendations. Additionally, respondents were asked about the frequency of personal protective equipment use, disinfection, and willingness to receive the COVID-19 vaccine. They were also asked about safety in the workplace and the possible positive effects of the pandemic on optometrists' profession in the future. Respondents were also asked about their level of education and number of years of experience as an optometrist.

Results

The analysis showed that the highest percentage of the respondents were optometrists with 1-3 years of experience. Optometrists with extensive experience practically did not cease their services during pandemic. 35% of optometrists limited their work with the elderly, children, people with disabilities and vision therapy. The highest decrease due to the pandemic was noted in the percentage of practitioners who performed contact lens fitting (from 86% to 20%). Over 85 % of respondents used a face mask in the office most of the time. 78% of respondents were already vaccinated or answered that they plan to be vaccinated soon.

Conclusions

Despite the lack of clear guidelines on the use of procedures during an optometric examination in Poland, most respondents have made significant modifications to their practice. Many practitioners have reduced the scope of services, particularly for procedures requiring longer chair time.

Title

Beyond COVID-19: The Future of Humanitarian Eye Care

Presenter

Jeffrey L. Weaver, VOSH/International, USA

Purpose

One of the overlooked consequences of the COVID-19 pandemic is its impact on humanitarian missions. Organizations such as Volunteer Optometric Services to Humanity International (VOSH/International) saw their operations completely curtailed. Globally, in eye and vision care alone, millions of individuals in underserved populations did not receive needed care. It is hoped that humanitarian teams can soon resume normal operations.

This study reviews the effect of the COVID-19 pandemic on five optometry groups involved in humanitarian activity. As the world emerges from this crisis, each of the groups projects their vision of the future of humanitarian aid in the post-pandemic era.

Setting/Venue

Interview of leaders of optometric organizations.

Methods

The authors reached out to leaders across and beyond the eye and vision aid sector to understand the full impact of the pandemic on operations and the populations served. Further, the leaders were asked to describe their visions for the future of humanitarian missions in eye care.

Results

As expected, there was a paucity of activity among the eye care groups during the COVID-19 pandemic. Only those who had transitioned from episodic to some level of sustained care in their humanitarian service had maintained some level of activity. Each of the groups has hope that normalcy will return during 2022. Most are looking at the benefit of sustained operations for improved long term care of chronic conditions.

Conclusions

The COVID-19 pandemic had a huge impact on humanitarian care, including those providing optometric services. Despite the curtailment of operations for two years, organizations are resuming operations with a new passion toward sustained care as an approach to chronic conditions and to combat the vision pandemic of myopia.

Title

Normative Reference Ranges for the Macula and Retinal Layer Thickness in Spanish Healthy Children

Authors

S. Font Armadans, A. Díaz Cortés, J.C. Ondategui-Parra

Presenter

Sara Font Armadans, Spain

Purpose

Create a normalized database reference ranges for macula and retinal layer thickness in Spanish healthy children using Optical Coherence Tomography (OCT). In order to avoid misinterpretations, it is necessary to define a normalized database that provides a reliable analysis, taking into account

variables such as age, spherical equivalent and axial length of the patient, where it has been observed that they may have a direct relationship with the obtained results.

Setting/Venue

Children were enrolled during a routine ophthalmological examination through primary health care centers: Hospital Sant Joan de Déu Barcelona and ALTHAIA, Xarxa assistencial universitària de Manresa (Barcelona, Spain). All subjects underwent a comprehensive ocular examination, that concluded that they are healthy eyes.

Methods

Prospective cross-sectional and descriptive study of non-consecutive cases. A total of 92 children (55 girls and 37 boys) aged 3-17 years were included in this study. Participants underwent a comprehensive ocular examination that included measurement of the best-corrected visual acuity (BCVA) of at least 0.2 log MAR, assessment of ocular motility and alignment. Following, macular scanning was performed using a DRI OCT Triton (Swept Source OCT, Topcon, Oakland, NJ) and Axial Length (AL) measurement using optical biometer AL-scan (NIDEK). Central and average macular thickness were recorded and related with age, spherical equivalent (SE) and axial length.

Results

The global mean age of the subjects was 9.33 ± 3.24 years with a global mean of SE $-0.10\pm 1.74D$, and a global mean of AL $23.00\pm 1.06mm$. Significant correlation was found between age of participants and axial length ($r=0.449$, $p<0.001$), and normalized database reference for axial length was defined by age and SE. An accurate relation was observed between SE and average thickness with a trend of increasing thickness on retina, ganglion cell layer +, ganglion cell layer + and choroid with the chance to conclude that a minimum value should be registered on different SE group, defined as pathological biomarker.

Conclusions

To conclude, the present study defines the normative healthy biomarkers in Spanish children using SS DRI-OCT Triton plus, that can be useful for early detection of retinal abnormalities on that range population. Contrary to expectations, a strength association was observed between average macular thickness with SE and AL, and less relevant association with age. The obtained information can provide the relevance of AL and ocular magnification on the analysis, and evidence that the issue has not yet been resolved by OCT manufacturers, so we must continue investigating to obtain a reliable database considering the patient's variables.

Title

Modern Spectacle Lenses to Myopia Control: Acceptance, Efficacy and Visual Performance

Authors

S. Escandón García, D. Lopes - Ferreira

Presenter

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Purpose

Recently arrived to market new spectacle lenses designed to prevent myopia progression. The aim of this work was to provide a compilation of most recent clinical trials evaluating different spectacle

lenses at level of myopia retention efficacy and also visual performance, accommodation facility and binocular function in children.

Methods

A search was performed using PubmedCentral and including all randomized clinical trials (RCT) that were found in search by “spectacle lenses to myopia control”. Results were filtered and only the results from the last 10 years were included. Results including bifocals, orthokeratology, atropine or progressive addition lenses (PALS) reports were excluded.

Results

Total of 9 articles and 3 types of lenses designed to prevent myopia progression were identified: Peripheral Defocus Management(PDM) commercialized by CarlZeiss as MyoVision, Defocus Incorporated Multiple Segments (DIMS) commercialized by Hoya as MiYOSMART and Highly Aspheric Lenslets (HAL) commercialized by ESSILOR® as Stellest. At this time, duration of studies varies between 1 (HAL) and 3 years (DIMS). The efficacy in myopia retention determined by refractive error was 15%, 52% and 63% respectively using PMD, DIMS and HAL. Not verified significant differences in distance and near VA high and low contrast, binocular function and accommodation between DIMS, HAL and SV.

Conclusions

DIMS and HAL are the most recent and efficient spectacle lenses designed to avoid myopia progression. Despite positive tolerance and acceptance by children with DIMS, HAL demonstrated lower impact on both Visual Acuity and Contrast Sensitivity.

Title

Using Humanitarian Missions to Improve Cultural Competency

Authors

T. Wingert, W. Miller

Presenter

Timothy Wingert, Rosenberg School of Optometry, 9725 Datapoint Dr, 78229-2384, San Antonio, USA

Purpose

The recent Summit on Optometric Education showed a concern from all countries for improving the cultural competency of optometrists. The literature contains numerous articles on the benefits of humanitarian missions as a vehicle for Interprofessional Education and Collaborative Practice. However, these trips also enhance the student’s cultural competency by being exposed to patients from many diverse backgrounds. The University of the Incarnate Word Rosenberg School of Optometry has faculty and students participate in multidisciplinary mission trips to numerous underserved areas. These trips are part of a larger effort to demonstrate cultural respect and establish good rapport with patients.

Setting/Venue

The Rosenberg School of Optometry is in San Antonio, Texas. Students participate in humanitarian missions within the city and state as well as in numerous other countries. Partnerships with other programs have students working alongside those with different worldviews.

Methods

After each trip, students are requested to write a reflection piece on their experience. This is designed to have the student look back on the experience and contemplate how it fits into their other educational experiences. In particular, they are asked to consider the cultural aspects of the trip, the care they provided and its impact, and the interprofessional experience they had during the trip. They are also asked to discuss what they learned apart from health care. Conversations with students from other programs exposes them to a different expectation and approach to patient care.

Results

In addition to the enriching experience of seeing a different set of clinical conditions, students also learned by interacting with patients and providers from other cultures. Their understanding of different expectations in the interaction expanded their perspective. They also reported favorably on what they were able to assimilate by interacting with health care students from other programs while providing patient care. They reported a greater understanding of how these different approaches could benefit patients they see in their normal clinical environment and an appreciation of the people they treated.

Conclusions

These experiences have shown that moving the care to an environment in which the clinicians have no familiarity reduces the desire to conduct their practice as usual and opens their professional minds to finding ways to cooperate and interact with others. Students and faculty return more open to approaching patients in a fresh manner and considering the care they provide in a more holistic way. Professional interactions with those trained in another school allow them to realize that alternatives to their worldview do exist and may prove to be beneficial.

Title

Academic Readiness Program: Aligning the Future for Underrepresented Minorities.

Authors

W. Miller, T. Wingert

Presenter

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Purpose

The Academic Readiness Program (ARP) is intended to be a pre-matriculation "boot-camp" for academically 'at risk' Latino and non-Latino students to prepare for the rigors of a challenging health professions program. Many of our Latino students are the first to go to college (First Generation) and thus the first to attend a health professions program. As such, the first semester tends to be challenging for these students and many have academic difficulties especially at the beginning of the semester.

Setting/Venue

The ARP experience was conducted at the University of the Incarnate Word, Rosenberg School of Optometry from 2017 to the present. University of the Incarnate Word is an Hispanic Serving Institution and is defined under United States federal law as having an Hispanic student enrollment of at least 25 percent.

Methods

The goal of ARP is to provide a 4-week intense program before the start of a matriculating student's first academic year to give them exposure to the rigor of their first semester. This was supplemented with faculty mentorship as well as non-formal events such as "Pastries with the Profs" and "Donuts with the Deans". The program ends with a capstone exam, encompassing material from each discipline taught during ARP. Sixty percent of faculty members teaching in the ARP were Latino, who provided mentorship and coaching. ARP was intended to increase success during the most challenging semester for an entering student.

Results

Four courses (Basic Optometry, Optics, Anatomy & Physiology and Clinical Physiology) are taken during ARP representing the most difficult of the first semester. These courses typically present a challenge to academically 'at risk' students. Data indicates that ARP students perform at or above non-ARP students in all Academic Readiness courses. Final course grades for ARP students were within 2 percentage points of non-ARP students. They tended to perform higher on the first few exams with the effect decreasing by final examination. A student survey post-ARP demonstrated an overall positive response in preparing them for their first semester of optometry school.

Conclusions

What is generally shown is that those taking ARP, both Latino and non-Latino, are helped in the first few exams of the fall semester by the Academic Readiness Program. This effect tends to decrease as you reach the final exam and thus the final course grade. However, the increased general performance during the first two exams provides confidence and an academic buffer before the final exam for those students not accustomed to a rigorous academic program. ARP represents a preparatory step in transitioning students from undergraduate to an unfolding future in a rigorous optometry program.

Title

Online e-learning during the COVID-19 Lockdown in Trinidad and Tobago: Prevalence and Associated Factors with Ocular complaints among schoolchildren aged 11-19 years.

Authors

K. Ekemiri, N. Ezinne, K. Kamalodeen, K. Pierre, B. Lalla, U. Osuagwu

Presenter

Kingsley Ekemiri, The University of the West Indies, St Augustine Campus, Trinidad and Tobago

Purpose

Before the COVID-19 lockdown, schoolchildren in Trinidad and Tobago (T&T) learnt in a typical classroom setting where students engaged in in-person, face-to-face activities, with minimal class time spent on digital devices (DD) during the school day. The increase in online learning during the pandemic has been linked to various ocular complaints, however, no data exist on the impact of internet use for online learning on the visual system of schoolchildren in the Caribbean and T&T in particular. This study determined the prevalence and factors associated with ocular complaints among schoolchildren aged 11-19 years during the COVID-19 lockdown in T&T.

Setting/Venue

There are 134 government-owned secondary schools in T&T, 124 (92.5%) of which are in Trinidad and are spread across the seven districts (Lochan & Barrow, 2008). The study population were

selected through a two-stage cluster sampling. A simple random sampling was used to select seven schools from Trinidad's seven districts.

Methods

A cross-sectional study was conducted between January and May 2021, during the COVID-19 lockdown in T&T among secondary school students studying remotely. A two-stage cluster sampling method was employed. A modified web-based Computer Vision Syndrome questionnaire was securely administered to students and their parents (students below 18 years). Data on demography, duration of digital device use, and ocular complaints were collected, and multilevel logistic regression was used to determine factors associated with ocular complaints among school-aged 11-19 years in T&T.

Results

The prevalence of headache, blurred vision, dry eyes, itchy eyes, and double vision were 75.0%, 65.1%; 56.8%; 46.4%; and 33.5%, respectively. Schoolchildren aged 11-18 years, those that used spectacles as treatment and spent more than 6 hours on average on DD, reported a high prevalence of any ocular complaints. The analysis also revealed that age (14 years) was associated with dry eyes, blurred vision, and headaches, while gender (girl) was related to blurred vision and headaches. Those who recently had an eye checkup and took action to resolve ocular issues were more likely to report almost all ocular complaints.

Conclusions

During the COVID-19 lockdown, over three in four students in T&T reported ocular complaints from digital devices for online learning. Tailored interventional messages to reduce all forms of ocular complaints should target older students, particularly girls who regularly examine their eyes. The appropriate sitting positions should be encouraged among schoolchildren working online while ensuring proper ergonomic practice with the devices. Since the post-pandemic era will likely see many schools continue to provide remote learning or adopt a hybrid pattern, this can increase the prevalence of these visual problems further and lead to more severe convergence issues among schoolchildren.

Title

Eye care services utilization in an underserved community in the South-East, Nigeria

Authors

N.E. Ezinne, K. Ekemiri, S.C. Ojukwu, I. Chukwuma

Presenter

Ngozika E Ezinne, Optometry Unit, Department of Clinical Surgical Sciences, University of the West Indies, St Augustine Campus, Trinidad and Tobago

Purpose

Accessing eye care services has been a major problem in many developing countries including Nigeria due to many barriers hindering the effective use of eye care services. This study was done to determine the utilization of eye care services in an underserved community in the South-East Nigeria

Setting/Venue

This descriptive cross-sectional survey was conducted in Ugbawka a rural community in Nkanu East Local Government Area of Enugu State in the South-East of Nigeria. Ugbawka is a clan with seven

rural communities including Isigwe, Ovuorie, Amuzam, Amafor, Imeama, Akpaa and Umuisu. The Igbos are the major ethnic group, and the predominant religion is Christianity (90%), but there are a sizable number of traditionalists as well as Muslims, making up about 5% each of the population. The communities have an agriculture-based economy with farming, fishing and wine tapping as their main occupation and there is only one health care facility.

Methods

A community-based cross-sectional study was done among adults ≥ 18 years in Ugbawka community in Enugu State. Multistage sampling technique was used to select 700 participants. A structured questionnaire was used to collect the data and utilization of eye care service was considered within the last two years. The collected data was analysed with Statistical Package for Social Science (SPSS) version 24. Pearson chi-squared test was used to assess variables correlations with eye care service utilization and P-value < 0.05 were considered statistically significant.

Results

A total of 500 adults with a mean age of 48 ± 10 years and a response rate of 71.4% (500/700) participated in the study. Out of the 500, 328 (65.6%) were females and a good proportion ($n = 149$, 29.8%) were between 18 to 30 years of age. Eye care service utilization rate within the last two years was 18%. Females (68.5%) utilized eye care services more than males though not statistically significant ($P > 0.05$). Utilization of eye care service was found to be associated with age, religion, occupation, marital status, monthly income, family history of ocular disease and history of ocular disease

Conclusions

Utilization of eye care service in this study is low when compared with other studies. Financial constraint is a big barrier to utilization of eye care services in this community; there is a need to make eye care services affordable and accessible to reduce socio-economic cost of blindness.

Title

Awareness, Knowledge and Attitude of Trinidad and Tobago Optometrists towards prescribing Blue-Light Blocking Lenses.

Authors

N.E. Ezinne, A. Rampersad, L. Joseph, K. Ekemiri

Presenter

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Purpose

Blue light-blocking lenses are used to reduce the amount of blue-light reaching the eyes. The recent increase in the amount of harmful blue light, from the visible spectrum, exposed to the eyes is believed to lead to sleep deprivation, retinal damage and digital eye strain. The use of these lenses to prevent dangers caused by the overexposure to blue light, is posed to be a controversial topic among optometrists due to the lack of high-quality evidence. This study was done to determine awareness, knowledge and attitude of optometrists in Trinidad and Tobago towards prescribing blue-light filtering lenses.

Setting/Venue

This study was done among optometrists in Trinidad and Tobago, a twin island in the southernmost part of the Caribbean. Trinidad is the larger of both islands and contains the majority of optical offices. There are 114 practicing optometrists in both public and private sectors.

Methods

All (114) registered optometrists in Trinidad and Tobago were invited to participate in this study. A 25-item structured online questionnaire was sent to them through their emails. Participants provided information regarding their demographics, knowledge about effects of blue light, attitudes towards prescribing blue-light blocking lenses and reasons why they may or may not prescribe them. Ordinal logistic regression analysis was performed to assess the predictive factors for optometrists prescribing blue-light blocking lenses.

Results

A total of 40 (35.1%) registered optometrists participated in the study. Twenty seven (67.5%) were females and most (72.5%) of the participants were between the ages of 21 to 30 years. All (100%) the participants were aware of the blue light blocking lenses and its uses. A good number (42.5%) of them believe that blue light blocking lenses are very effective against sleep deprivation (75%), eye pain (50%) and retinal damage (32.5%). Optometrists were significantly more likely to prescribe blue-light blocking lenses if they considered blue light to cause sleep deprivation (odd ratio, OR 9.5 (1.12, 80.57) P = 0.04).

Conclusions

Most of the Trinidad and Tobago optometrists are aware and had good knowledge of the effect of blue light and blue light blocking lenses. Although, the evidence to support the efficacy of blue light-blocking lenses is still lacking, majority of the optometrists still prescribe the filtered lenses based on the symptoms a patient portrays.

Title

Early detection of amblyopia at school age by visual screenings

Authors

M. Álvarez, C. Benedí, A. González, P. Concepción, C. Cano, J. García, M. Dosal, E. Chamorro

Presenter

Marta Álvarez, Clinical research department, Indizen Optical Technologies.SL, Madrid, Spain

Purpose

Amblyopia is a disorder of visual development that begins in childhood. Therefore, early detection and treatment is key to avoiding irreversible vision loss in the future. Previously, vision screening of preschool children has employed traditional methods based on subjective visual acuity to assess visual function, but new technologies, such as photorefractometry, have promoted the preliminary detection of refractive defects in a quick and easy way in the early school years. The aim of this study is to determine the age prevalence of amblyopia and refractive errors using a photorefractor device.

Setting/Venue

1325 children (4-12 years old) from Madrid (Spain) participated in a transversal study, consisted of an anamnesis and an autorefractometry with PlusOptix A12 (Plusoptix GmbH, Germany).

Methods

Binocular measurements were performed on all children at one meter by a trained optometrist. To improve the detection of the eye pupils during measurements, mesopic illumination conditions were maintained. Two consecutive measurements were taken per child to check repeatability; if they were differed by more than 0.50D, the measurements were taken again. Each measurement took 30

seconds and the total exam 5 minutes. Risk factors of the American Association for Pediatric Ophthalmology and Strabismus (AAPOS) were considered. When refractive errors were not corrected, they were considered as no detected potential amblyopia.

Results

Potential amblyopia was found around 20% of the population younger than 7 years old, while it was between 10 and 20% in the elder groups. Between of 90-66% of potential amblyopic participants younger than 8 years old hadn't been previously detected but this percentage decreased with age up to 53%.

Conclusions

The prevalence of uncorrected refractive errors is high among children, which in most cases leads to the development of amblyopia. These results show that it is necessary to reinforce school health programs to provide more information and better eye care services to improve this public health problem.

Title

Accommodative object space and progressive lens design

Authors

Amelia González, Marta Álvarez, Clara Benedí, Pablo Concepción, Paulina Dotor, Jose Miguel Cleva, Jose Alonso

Presenter

Amelia Gonzalez, Clinical research department, Indizen Optical Technologies.SL, Madrid, Spain

Purpose

The optimization of personalized progressive power lenses (PPLs) involves the consideration of the prescription, the individual wearer parameters, and the object space. Traditionally, a single object distance is assumed for each gaze direction. However, for any gaze direction, the individual can focus a range of object points by using accommodation. The volume of points in the object space that can be focused by the combined effect of power progression and accommodation is defined as accommodative space. The goal of this study is to compare lenses optimized considering the whole accommodative space vs lenses optimized for the traditional, static object space.

Setting/Venue

Evaluation of subjective visual performance was done in Madrid between August 2020 and May 2021 by means of satisfaction questionnaires in the everyday life environment of the users when using 2 pairs of spectacles: PPL-A (AlphaH45[®], DRP[®], IOT[®]) and PPL-B (EndlessSteady[®], DRP2[®], IOT[®]).

Methods

42 presbyopic subjects with experience using PPLs participated in this observational, prospective and double-masked trial. Users compared 2 lenses: personalized PPL optimized considering the most common personalization parameters and static object space (PPL-A); and a personalized PPL using the same personalization parameters but optimized in the whole accommodative space (PPL-B). Subjects were asked to score the designs in a scale from 1-5 for different tasks after 7 days of use. In addition, they were asked to choose the best lens for each task. Statistical analysis was performed using Statgraphics Centurion XVI.II[®] software.

Results

The analysis of subjective satisfaction provided statistically significant differences between both types of lenses for both questionnaires. Regarding the 7-day questionnaire, PPL-B got better score with statistical significance at intermediate vision (PPL-A: 4.14 ± 0.90 , PPL-B: 4.45 ± 0.67 , $p=0.03$), and showed a tendency to be preferred at near vision (PPL-A: 4.36 ± 0.73 , PPL-B: 4.55 ± 0.67 , $p=0.06$). PPL-B was also significantly preferred by 39% of wearers at far vision (vs 17% PPL-A, $p=0.03$), 46% at intermediate vision (vs 20% PPL-A, $p=0.01$), 51% at near vision (vs 12% PPL-A, $p=0.00$), and 50% in overall satisfaction (vs 23% PPL-A, $p=0.01$).

Conclusions

The oblique aberration compensation that considers a dynamic accommodative object space in the optimization of PPLs provides a greater vision satisfaction not only for near and intermediate distances where the accommodative capacity of the user is commonly activated, but also at far distance.

Title

The COSS (Community Ophthalmic Services Scheme) Contract: Is the contract fit-for-purpose, according to members of Optometry Ireland?

Presenter

Martin O'Brien FCOptom, FAOI, working within the COSS and a member of Optometry Ireland Council & Executive Committee.

Abstract

The majority of optical practices in Ireland provide services to patients remunerated under the COSS (Community Ophthalmic Services Scheme). The contract uses open and vague terminology that does not specify the what "tests" must be carried out by an optometrist and what "tests" are included in the remuneration.

Methods

Optometry Ireland members were invited to participate in an online survey in relation to the COSS contract and the results analysed.

Results

Only 3% of respondents deemed the contract to reflect modern optometric practice and to be fit for purpose. Participants were asked to rank "Tests" as being either Basic (included in COSS), Additional (should be remunerated as an extra item) or Exempt (not covered at all by COSS).

Conclusion

The current COSS is out of date and does not reflect the reality of optometric practice in respect of remuneration and the additional equipment / investigative techniques in modern optometrists' practices.

Title

WIVI Automated Optometric Visual Screening in a Public Hospital Pediatric Service

Authors

J.C. Ondategui Parra, A. Martínez Mejías

Presenter

Juan Carlos Ondategui Parra, Universitat Politecnica de Catalunya, Spain

Purpose

The Spanish health system is a benchmark in relation to pediatric protocols for the detection of pathology in routine well-child check-ups. But in most of the autonomies of the Spanish territory, these pediatric protocols for visual evaluation from the age of 7 include tests of color vision, but no test that evaluates binocular, accommodative or visual reading abilities.

The objective of this study is to determine the prevalence of binocular dysfunctions and reading skills including a visual screening within the protocol of the routine check-up of the well child in the public health system.

Setting/Venue

Taking into account that children and adolescents present the highest prevalence values of binocular dysfunctions, the inclusion of instrumentation to be able to evaluate in an automated and objective way, allows a massive arrest of this type of alterations.

Methods

It is a prospective cross-sectional observational study of non-consecutive cases. A total of 198 individuals have been included. All of them were evaluated by the pediatric team of the Consorci Sanitari de Terrassa (CST) performing the routine pediatric visual assessment: visual acuity, covert test, color vision and stereoacuity and an optometric tests: visual acuity, phoria, fusional reserves, vergence facility, stereo acuity, color vision and visual reading skills, obtained with and objective and autonomous assessment carried out by the WIVI system (e-Health Technical Solutions). The results of each test and the diagnostic capacity for the detection of visual dysfunctions were compared.

Results

The age (mean and standard deviation) of the sample was 10.5 ± 2.3 years (range 6.8 to 14.4), of which there were 75 boys (37.9%) and 123 girls (62.1%). 114 cases (57.6%) of patients with alteration in any of the visual areas evaluated were detected, being the conditions of Inflexibility of Vergences, Insufficiency of Convergence and Excess of Convergence the most prevalent. 4% of patients with color alteration were detected (a value lower than that usually found in the pediatric protocol of 6%). 60 patients (30.3%) with alterations in visual reading skills were detected.

Conclusions

The results obtained are significant enough to assess the inclusion of this type of visual tests in the screening protocol for visual disturbances in children and young people in the health system. More studies are needed to optimize tests and criteria for different ages. Including objective and automated screening tests for alterations in binocularity and visual reading skills in routine in the healthy patient visits in pediatrics improves the detection rate of this type of alterations. WIVI system has been shown to be a useful equipment in the detection of this type of alterations in the pediatric population.

Title

Clinical case neurofibromatosis type 1 in pediatric age

Authors

C. Fresno, J. Gispets

Presenter

Carlos Fresno, Hospital Sant Joan de Déu, Spain

Purpose

To make known among optometrists the importance of knowing minority diseases such as neurofibromatosis type 1 in pediatric age.

Setting/Venue

Pediatric Hospital Sant Joan de Déu, Barcelona, Spain.
Ophthalmology service

Methods

A 4-year-old patient referred from oncology due to suspicion of poor distant vision.

AP: follow-up in oncology for multiple café au lait spots in armpits and groin.

Exploration:

Distance VA 0.6/0.7 (HOTV test)

CT Distance and Near orthotropia

Slit Lamp exam: multiple lisch nodules in both eyes

Dilated fundus eye: normal

Retinoscopy (under cycloplegia): -1,00 (VA: 1) /+0,00 (VA:0,7)

Ganglion cells OCT à RE: 100 // LE: 80

Macular OCT à RE: normal thickness and good foveal profile // LE: thickness slightly lower than RE and good foveal profile. Hyperreflective areas with IR at the posterior pole.

Results

Cranial MRI is requested for suspected optic glioma.

Diagnosis: Neurofibromatosis type 1 with optic glioma in left Optical nerve.

Treatment: At the ocular level refraction and referred to oncology to assess chemotherapy treatment to preserve the visual pathway.

Follow up: Visits every 3 months to check de visual acuity and the ganglions cells OCT.

Conclusions

Neurofibromatosis is the rare disease with the highest incidence. That is why as visual health professionals we must be in constant training to know what possible visual involvement these patients may have, as well as their prognosis. It is very important to make an early diagnosis in order to improve the visual quality of these patients.

Title

Idiopathic Optic Neuritis Secondary to Bilateral Optic Atrophy: A Case of Low Vision.

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Purpose

Optic neuritis is an inflammatory demyelinating condition of the optic nerves. It can arise alone or as part of multiple sclerosis. Idiopathic optic neuritis (ION) occurs when no other systemic illnesses exist. According to research, 30–50% of ION patients suffer recurring attacks. Optic neuritis is most observed in women aged 10-50 years. The patient in this case report has ION since she was 13 years old, and a recent exam revealed optic atrophy related to ION. This report summarizes the ION findings and highlights the patient's goals, which were met at the end of the low vision evaluation.

Setting/Venue

A 32-year-old female presented in a Low Vision Clinic located in Trinidad and Tobago.

Methods

Chief Complaint: Glare problems, Photophobia, Night vision problems, Depth Perception and Contrast problems.

Ocular History: Diagnosed with idiopathic optic neuritis of the OD at 13 years old at the Port of Spain General Hospital. Patient was treated with steroids and 1 month after, her OS was diagnosed with the same condition and similar treatment was administered.

Last low vision examination if any: No previous intervention.

Medical History: DM-, HTN-, CVD-, Asthma-

Family Ocular History: Grandparents were blinded by diabetic retinopathy.

Other Salient Information: OCT & VFT was performed

Patient goals: Want to read, watch T.V and move independently.

Results

Unaided Visual acuity: Distance OD 1.34 LogMAR; OS 1.20 LogMAR

Near OD 1.30 M; OS 1.60 M

Final Prescription: OD -3.25/-0.50×165; OS -3.25/-0.50×160

BCVA: 1.10 LogMAR OD, 1.00 LogMAR OS.

Anterior Segment: Unremarkable

Posterior Segment: Optic disc pallor with undefined margins.

Colour Vision Test: Ishihara Test- Patient could not identify plates.

Amsler Grid: Patient claims to not see any issues around centre of box.

Contrast Sensitivity: Patient could not identify letters

OCT results revealed optic nerve pallor along with significant RNFL thinning OU.

VFT results revealed a significant amount of peripheral vision loss OU.

Laboratory Test: None.

Conclusions

It affects the optic nerve, which transmits vision to the brain. Optic neuritis is diagnosed based on signs and symptoms. Steroids can be given orally or intravenously. It can damage any visual area. Her Optic Neuritis with Bilateral Optic Atrophy was controlled, and her assessment goals were met. Optical instruments were used for the patient's visual goals, and social information was offered. The patient's vision was improved at a distance using a power spec and at a close range using an illuminated handheld 8D magnifier and a contrast-enhancing Yellow Filter.
