abdo COLLEGE

Re:View

Keeping excellence in your sights | September 2022 | Issue 43

Latest research on myopia management

Green initiatives at Godmersham

New lecturers start work

Fall in love with autumn gold at tranquil Godmersham

Welcome to the autumn edition of *Re:View* magazine and a very warm welcome to ABDO College, whether you are commencing a course or returning after your summer holiday. Those attending the College for the first time have an exceptional experience to come. The College is set in such a tranquil setting, I cannot imagine a better place to study and I am sure all who have previously attended will agree with me.

This term we welcome two new lecturers to ABDO College, Callum Wills, a former student and Greg Cahill, a keen athlete. Between them they bring a wealth of knowledge and experience from their careers within the optical profession and industry. On the next page you can read more about them.

The college's optical assistant and senior optical assistant courses continue to grow in popularity. Since they were introduced three years ago, more than 400 people have enrolled and already 15 per cent of our optical assistants have progressed to the FBDO programme.

As well as education, research is also the future of our profession. It will lead us to even higher recognition and to a better professional position. Research is the result of the power of our knowledge and a source for new inspiration and advances. If we do our own research, we are the leaders in all those efforts. In this edition, read about recent research on executive bifocals and myopic defocus spectacles for myopia management.

We are forever thankful to all our sponsors. When attending the College, please digest any information available from our sponsors and remember a thank you goes a long way when you meet their company representatives in practice, at exhibitions and at CPD events.

I look forward to seeing those graduating on 23 November at Canterbury Cathedral. If you have not booked your place yet, I urge you to attend your special day in such an amazing setting.

Clive Marchant FBDO
Chair, ABDO College Board of Trustees

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Be inspired in your career choice

Renewal boost

Students at ABDO College will be learning all about lenses in the Hoya Ophthalmic Lenses Lab, thanks to renewed sponsorship from Hoya for another year.

Hoya's professional services director, Andy Sanders, said: "Hoya are delighted to extend their sponsorship of the Ophthalmic Lenses Lab in Godmersham which reinforces our commitment to support education within the profession.

"With innovative optical lens solutions, we believe that eyecare providers' education is key for patient care and Hoya is committed to training, education and upskilling."

College principal, Dr Robert Cubbidge, said: "I thank Hoya UK on behalf of the students and staff for their generosity in providing materials which will support our students in their optical education."

Make memories

ABDO's graduation and prize-giving ceremony will be held on Wednesday 23 November at Canterbury Cathedral. The memorable occasion enables students to celebrate their hard work and success with family and friends. ABDO will offer a broadcast of the event to family and friends who cannot attend.

Coach and former student take up their dream jobs

Two new lecturers, Greg Cahill and Callum Wills, started at the College this term.

In addition to being an optician, Greg is also a coach and personal trainer who has represented Great Britain in triathlon and has raced in multiple Ironman Triathlons.

Callum was so inspired by his experience as a student at Godmersham that it led him to his dream job as a lecturer at the College after just six years in optics.

Greg Cahill

Greg has worked in global manufacturing companies for contact lenses, eyewear and lenses. He has also been a locum working in the UK, Ireland and Europe.

He told *Re:View*: "The role at the College attracted me because, being a qualified dispensing optician has always given me plenty of opportunities and experiences.

Callum Wills

"I wanted to be in a position where I can lecture, teach and inspire people to enjoy a rewarding career with the same, if not more, opportunities in their future."

Callum's love of optics began with his first job at Boots Opticians. He wanted to advance further, so he moved to Specsavers and took the college's ophthalmic dispensing course.

"I've wanted to be a lecturer from my first block at the College," he revealed. "As a recent student, I know exactly what the students are going through and the pressures they may feel on the course, or from outside. I believe I can relate to them and will be able to help them with this."

To find out more, visit **www.abdocollege.org.uk**

Ceremony marks continuing alliance for education

The opening ceremony of the college's new IOT Dispensing Suite was held in July to celebrate the collaboration between Indizen Optical Technologies (IOT) and ABDO College, which will continue for the next three years.

IOT always wanted to further education in the profession and has provided the College with many training materials.

College principal, Dr Robert Cubbidge, said: "It was with great pleasure that we welcomed IOT and their partners to ABDO College. The high-quality teaching materials they have provided will ensure that our students are able to understand the latest technological advances being made in the ophthalmic lens industry and how they can benefit patients."

According to IOT, 'being able to support ABDO College, together with Caledonian Optical, Optimum RX Lens Specialists and Norville, will help drive knowledge and learning which can only lead to more innovations in the industry.'

New artwork to shine a light on the issue of lens waste

A sculpture is being created for the College from discarded demonstration lenses and factory lens swarf thanks to a collaboration between Millmead Optical Group and renowned sustainability designer Yair Neuman.

The creative partnership was announced in March when Millmead chief executive James Conway emphasised the volume of industrial lens waste which ends up as landfill each year.

Work has now begun on the artwork and the scope of the project has been widened to emphasise the company's Liverpool heritage, including an internship for a fine art student from Liverpool John Moores University.

Millmead's head of marketing, Peter Cronin, who is overseeing the project, said: "As someone born in Liverpool, it's exciting to see how various strands of the project are coming together. We couldn't be prouder of the opportunity to lead the way as a sustainably driven organisation."


Yair Neuman

The finished sculpture will be exhibited in Liverpool and at 100% Optical before moving to its permanent home at Godmersham.

College principal, Dr Robert Cubbidge, said: "We're thrilled that Millmead has chosen to donate their 'See the Light' sculpture to ABDO College and we're looking forward to its unveiling next year.

"The optical industry has really begun to understand the importance of sustainable actions and initiatives like this one will help shape the narrative in years to come."

Water way to use innovation for heating the College

If you have studied at ABDO College or stayed in the onsite accommodation, you probably haven't thought about where the hot water comes from, nor considered how the mansion house is heated. However, did you know that the Godmersham site is home to an innovative biomass converter which uses local wood to heat hot water which is piped across the estate?

A biomass convertor is a carbon neutral source of energy which is also renewable. At Godmersham the wood used is chestnut, which has natural oils that make it good for burning.

The local woods are coppiced in rotation, with the chestnuts regrowing in 15-25 years, compared to ash trees which could take 50 years. Any carbon released into the atmosphere is what was absorbed by the trees during their lifecycles and the new trees then absorb the same amount of carbon again.


The biomass converter and pipes

The project was kickstarted with a government grant and has a 20 year contract until 2034. The powerful pumps circulate 32 tonnes of water at 80 degrees across 3.5 miles of pipes. A computer controls the way the furnaces burn so that the process is as clean as it can be. The ash which is created as waste is mixed in with dung and returned to the fields as fertiliser.

ABDO College's buildings administrator, Justin Hall, said: "Our accommodation used to be heated by night storage heaters which needed to be boosted. Now the wet radiator system, which is controllable, ensures the accommodation is warm and the mansion has a ready supply of heat and hot water."

So, next time you turn on a tap at the College, or brush past a warm radiator, you will know that all the heat comes from a carbon neutral and renewable source produced locally.

Mother knows best and optics does have the right formula for a science enthusiast's successful career

In their final year, ABDO College degree students are all required to complete a dissertation which focuses on a research question of their choice. In this feature you can read about Jack Hearne and his research paper, '*A critical comparison between executive bifocals and myopic defocus spectacles for myopia management.*'

Graduate Jack Hearne turned away from choosing to do a master's degree in chemistry and credits his mum with steering him onto a different and rewarding career path in optics.

Jack is now a dispensing optician at Specsavers in Telford and it is all thanks to his mum, Deb, who works there. She first told him about the different roles within the practice and organised an interview with the store directors.

"The interview went well, and I started on the same day," said Jack. "I found the clinical aspect of the job very interesting and discovered there was a balance of the three core sciences which I had been looking for. I now take great pride knowing my actions in practice directly impact someone's quality of life, especially in the more complex cases."

For the first year, while doing his A-levels, Jack worked weekend shifts, helping with preliminary testing. He then transitioned to being a full-time optical assistant and dispenser and was later enrolled onto the college's ophthalmic dispensing course.

Jack travelled for five hours to get to Godmersham and was very nervous. "I was initially greeted by the lecturer Haydn and seeing how he interacted

Jack Hearne

with returning students put me at ease immediately," he said, adding: "I quickly met some amazing people, who I now consider friends for life."

Jack's favourite parts of the course were the block releases. "It was great having friends going through the exact same process as myself and things fell into place which I hadn't grasped during weekly distance assignments."

Jack's least favourite part of the course was the degree essays but with support from the lecturers he now considers them a strong point.

"It was also hard for me to juggle everything at once and it took a while to realise it is okay to put certain things on hold. I learnt how to time manage effectively to find a healthy balance of work and socialising. I found planning weekly checklists helped," he shared.

Jack initially found it a challenge to decide on a final research topic, however he remembered an article on myopia control from an earlier year. "It's so relevant in today's practice and I wanted to improve my understanding," he said.

To begin his research, Jack completed a mind map regarding keywords and topic areas. "I wanted three primary studies to compare and finding three relevant sources was the most time-consuming. I used a hierarchy of evidence to help with my source credibility and a critical framework to assist my critical analysis," he explained.

"The studies provide comparative results between all treatment types demonstrating similar treatment efficacies. However, more research is required into treatment success outside of trial conditions. This will improve the research validity and potentially push for myopia management options to be more readily available in community eyecare."

Jack's advice to college students following in his footsteps is to seek friendships at the start of the course as they become invaluable. "Enjoy your time on the course as it goes really quickly," he recommended.

"Remember it's all worth it as the role of a dispensing optician definitely brings huge job satisfaction, responsibility within practice and avenues for further professional development," he concluded.

A critical comparison between executive bifocals and myopic defocus spectacles for myopia management

By Jack Hearne BSc (Hons) FBDO

INTRODUCTION

Myopia can be defined as a refractive condition in which images of distant objects are brought to a focus in front of the retina in the uncorrected, unaccommodated eye (Millodot 2018). It is a result of axial elongation of the globe, relative to the refractive power of the eye (Carr and Stell 2017), (Chakraborty *et al* 2020). As myopia progresses to higher powers of refractive error, the excessive axial elongation of the globe causes mechanical stretching, which can lead to a variety of vision-threatening pathologies (Prousali *et al* 2019), (Wang *et al* 2021). This suggests that, as the prevalence of myopia increases throughout the population over time (Holden *et al* 2016), so will the frequency and extent of pathological myopia (Verkicharla *et al* 2015). Interventions, therefore, must be put in place to reduce the effects this has on the next generation.

A literature search provided three recent studies regarding spectacle myopia management methods in children aged from seven to 16 with their results, methodology and credibility critically appraised. An academic discussion ensued to debate the validity and reliability of the results, followed by a conclusion to the study.

METHOD

A mind map was conducted to expose associated keywords and phrases. Basic keywords from the mind map were used for initial literature searches noted in the search diary. Boolean operators were then used to broaden, or filter, the search results to find clearly focused literature on the research topic. Three main pieces of literature were uncovered during this process and have been critiqued using Hek and Moule's critical framework (2006). Grey literature has not been used, however, within the scope of this research, which may introduce publication bias to the research methodology.

FINDINGS

Three main studies were reviewed. Bao *et al* (2022) carried out a randomised control trial observing the relationship between concentric lenslets of varying asphericity in the midperiphery and their effect on myopic progression over a two-year study. Allocation to each study group was random and considered double-blinded, which conceals the subject and investigator to minimise selection bias to improve reliability (Hariton and Locascio 2018). However, 'double-blind' is not a definitive term and can be deemed ambiguous. More specifically, reports should state who was blinded, what they were blinded from, how it was conducted, and whether this was maintained throughout the whole experiment to reduce surveillance, expectation and ascertainment bias post group assignment (Lang and Stroup 2020). This was completed by Bao *et al* (2022).

Secondly, a randomised control trial study by Cheng *et al* (2014) measured the relationship between single vision spectacle lenses and bifocal, prismatic and non-prismatic, interventions and their effect on myopic progression. Finally, Lam *et al* (2020) presented results of a two-year 'double-blind' randomised control trial; hypothesising whether spectacle lenses using Defocus Incorporated Multiple Segments (DIMS) in the midperiphery affected myopia progression in children. Lenslet asphericity was not a variable being scrutinised in this study.

All the studies observed data of post cycloplegic spherical equivalent autorefraction and axial length, resulting in a conclusion associated with the original hypothesis. Qualitative methods cannot support the hypothesis statistically (Moorley and Cathala 2019) but they can provide context as to why certain interventions were not successful (Polit and Beck 2014). Each study conducted a qualitative questionnaire to decipher wear time, with Bao *et al* (2022) and Lam *et al* (2020) also including questions surrounding patient visual comfort. This mixed method approach produces quantitative results directly challenging the hypothesis, while qualitative data is used to benefit future participants in this area of research (Rutberg and Bouikidis 2018).

Comparatively all the studies demonstrated a similar positive dose-dependent response. Bao *et al* (2022) demonstrated lenses with highly aspherical lenslets (HAL) reduced the mean myopic shift by approximately 45 per cent. Cheng *et al* (2014) demonstrated a 49 per cent mean myopic shift with prismatic bifocals and Lam *et al* (2020) showed DIMS lenses reduce the mean myopic shift by approximately 48 per cent.

DISCUSSIONS

Research should be scrutinised before concluding whether stated treatment methods should be implemented among community eyecare. All authors within the articles have qualifications in optometry or ophthalmology and demonstrate a wide range of both technical and everyday language, indicating credibility (Thon and Jucks 2017). It should be noted that authors' online credentials may be misleading or unprovable. However, the publications were in credible peer-reviewed journals such as *The British Journal of Ophthalmology* and *JAMA Ophthalmology*. The peer-reviewing process assesses and validates new or existing research (Lasker 2018) but does not solely guarantee the validity of a study.

Twenty-seven subjects were captured directly from their eye examination (Cheng *et al* 2014) which could be considered coercive recruitment (McGregor 2008), (Treweek *et al* 2013), whereas recruitment for both myopic defocus lens studies was based on screenings of patients who met the inclusion/exclusion criteria in prior hospital appointments (Bao *et al* 2022), (Lam *et al* 2020). Rigorous appraisal is undertaken for all research conducted in university and hospital settings, scrutinising a range of areas from scientific credibility to ethical acceptability (Vijayan *et al* 2019). In summary, Cheng *et al* (2014) is potentially subject to coercive techniques, whereas Bao *et al* (2022) and Lam *et al* (2020) are unlikely to have recruited coercively due to intense scrutiny prior to research (Vijayan *et al* 2019).

Cheng *et al* (2014) stated their sponsor had no effect on the study design, acquisition or interpretation of data and only supplied the lenses for use within the study. Bao *et al's* (2022) funder, Hoya supplied and assisted designing the lenses, like Cheng *et al's* (2014) sponsor, whereas Lam *et al* (2020) had contributing authors who were associates of their partial sponsor, Essilor International, and contributed to study design, analysis of data and critical evaluation. Essilor International also sells lenses with HAL. This could introduce bias and invalidity to portray a positive treatment response (Jefferson 2020). It would be considered more credible if the sponsor remains completely independent from the study design, statistical analysis, interpretation of results and writing of the manuscript (Wareham *et al* 2017).

All the studies followed the tenets of the declaration of Helsinki (World Medical Association 2018) and were reviewed and approved by various ethical committees. All the studies stated a clinical trial registration number, which supports transparency and reduces selective reporting of results whilst simultaneously improving evidence-based practice (BMC 2022).

The clinician and participant require blinding to prevent behavioural bias towards different interventions, supplemented by data analysts to form an unbiased conclusion (Karanicolas *et al* 2010). Cheng *et al* (2010) and Bao *et al* (2022) stated the lack of subject and investigator blinding would increase the risk of bias. Lam *et al* (2020) had an unmasked investigator remove the subjects' spectacles prior to recordings taken by a masked investigator, sufficiently masking the clinician, as the spectacle lens cosmesis would provide an unwanted insight into which study group the subject belonged to.

Techniques to achieve objective refraction were also used to eradicate associated bias in all studies. All the studies expressed their limitations in blinding between treatment groups due to the cosmetic appearance of each spectacle lens. Future studies should implement control treatments which look cosmetically identical to implement a true placebo effect (Colagiuri *et al* 2015) and reduce expectation and preferential bias (Watanabe *et al* 2022).

Each study was a randomised control trial which uncovered the efficacy of new medical treatment methods (Millodot 2018). At random, subjects are allocated to either a control group which receives a placebo or to a trial group which receives an intervention (Zabor *et al* 2020). Randomisation is only true when an independent person not associated with the investigation conducts the randomisation procedure to completely nullify the risk of tampering (Bondemark and Ruf 2015). This was only completed by Bao *et al* (2022), as the other two studies did not have an independent party conduct randomisation, even though their techniques used limited selection bias due to even selection probability (National Cancer Institute 2020). Future studies should implement a similar randomisation procedure to eliminate probability of selection bias (Bondemark and Ruf 2015).

Each study outlined inclusion/exclusion criterion including age, ethnicity, existing ametropic range, current best corrected visual acuity and exclusion of previous myopia management treatment or ocular abnormalities. Study sample sizes were similar producing analogous mean results. All the studies included Chinese paediatric participants due to the prevalence of myopia associated with this ethnicity (Holden *et al* 2016), (Wu *et al* 2016). In opposition, the lack of racial variety demonstrated in randomised control trials could be considered morally wrong, producing homogenous research results that cannot be generalised for alternative groups of people (Clarke *et al* 2019) increasing disparities and limiting research equality (Gray II *et al* 2021). Subsequently, varying ethnic groups should be studied with similar myopia management treatment methods to prove generalisability whilst adhering to the other inclusion/exclusion criterion.

CONCLUSION

The study results suggest reproducibility and reliability in the treatment methods under trial conditions, yet this may not translate into routine practice easily as higher aftercare frequency would increase the risk of non-compliance and thus potentially reduce treatment effects. Patients and parents who provide consent prior to a trial are aware of the ambiguous nature of the treatment efficacy, however, in routine practice, unrealistic expectations may develop and complaints may arise if the treatment does not work as anticipated.

Legislatively eyecare practitioners must also adhere to Montgomery Law, which outlines that all clinical and treatment details must be disclosed to the patient upon request. This implies a patient should be appropriately informed on all aspects of their treatment/condition, without the practitioner withholding information (Chan *et al* 2017), insinuating that, even though myopia management options are currently limited, the rapid increase in myopia prevalence suggests discussions surrounding myopia management should be disclosed to the patient in routine practice to avoid potential future litigation.

Knowledge of myopia is readily available, yet complete understanding of the mechanisms causing myopic shifts are still being researched along with methods to stunt myopic progression (Jong *et al* 2019). The studies provide comparative results between all treatment types demonstrating similar treatment efficacies within their respective studies, although more research is required into treatment generalisability and treatment success outside of trial conditions, whilst considering the aforementioned limitations.

For article references, visit
https://abdocollege.org.uk/references/

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