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Eyecare practitioner perspectives and attitudes towards myopia and myopia management in the UK

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ABSTRACT

Objective Many children with progressive myopia are still prescribed single-vision correction. An investigation into UK eyecare practitioners' (ECPs) perceptions of myopia management was carried out to ascertain factors which may be limiting its implementation and uptake within clinical practice.

Methods and analysis Online focus groups were held with UK ECPs. Participants were encouraged to discuss their knowledge of the available myopia management options, their perception of how myopia management is being delivered in the UK and any barriers limiting ECPs' prescribing of these management options in practice. The discussions were transcribed and analysed thematically.

Results Focus groups were held with 41 ECPs from primary and secondary eyecare. ECPs felt that provision of myopia management in the UK is variable. Most ECPs believe they have sufficient knowledge, but felt a lack of confidence in decision-making and practical experience. Less experienced ECPs sought more definitive guidance to support their decision-making. ECPs desired clarity on their duty of care obligations and were concerned over possible future litigation if they had not offered, or referred for, myopia management when indicated. The greatest barrier appears to be financial—treatment is expensive and ECPs are uncomfortable communicating this to parents. Many barriers were indicative of systemic problems within UK eyecare, such as commercial pressures, inadequate National Health Service funding and poor public awareness of paediatric eyecare.

Conclusion Myopia management is not implemented consistently across the UK. To improve accessibility, changes are required at multiple levels, from individual ECPs through to wider stakeholders in UK eyecare provision.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Several licensed myopia management interventions are available in the UK, but the prescribed rate is lower than expected. Peer-reviewed research has attempted to understand why uptake is limited; however, data specific to the UK are limited.

WHAT THIS STUDY ADDS

⇒ This study explores the attitudes and behaviours of UK primary and secondary eyecare practitioners towards myopia and myopia management. The study identifies several barriers to myopia management, appearing at various levels of eyecare delivery.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ This study reveals several current barriers limiting the implementation and uptake of myopia management in the UK. Organisations in eyecare service delivery can use this information to reduce these limitations and improve accessibility to the UK public. Those in optical industry and ophthalmic education can use this information to improve material aimed at practitioners' communication and clinical decision-making in relation to myopia management.

INTRODUCTION

Myopia is a refractive state occurring when light is focused anterior to the retina, resulting in distance vision blur. The International Myopia Institute (IMI) has defined myopia as a spherical equivalent refraction of ≤–0.50 D and high myopia as ≤–6.00 D.[1] Myopia prevalence is increasing across the world,[2] including the UK, in both children[3 4] and adults.[5] For children under the age of 17 years in the UK, the proportion of myopic prescriptions increased from 24% in 2009 to 32% in 2016–2017, with faster myopic progression at younger ages.[4] Many myopia management interventions are now available, aimed at reducing the extent and speed of myopia progression.[6] These include optical interventions, such as specialist contact lenses and spectacles, as well as non-optical treatments, such as atropine and repeated low-level red light therapy. Many of these options are available through prescribing eyecare practitioners (ECPs), either as a licensed treatment or 'off-label'.

Myopia management prescribing appears to be on an upward trend globally. Efron *et al*[7] analysed contact lens fitting data and reported a global increase in the proportion of fits dedicated to myopia management in

children, accounting for less than 1% in 2011 to almost 7% in 2018. Similarly, Wolffsohn *et al*[8] found a global decrease in the number of ECPs prescribing single-vision correction (either spectacles or contact lenses) as their first choice for progressive myopes, from 68% of ECPs in 2015, down to 43% in the latest 2023 iteration. While these data appear positive, investigating factors that continue to limit prescribing rates is valuable, and several studies across the world have attempted to explore ECPs' attitudes towards myopia management for this purpose.[8–13] Differences in eyecare delivery models, training, guidance from regulatory bodies, and product availability will vary between different countries, and as such prescribing preferences will also vary.[7 14] Therefore, findings from broad international comparisons might be of limited value when considering UK-specific clinical practice.

Peer-reviewed data on UK attitudes to myopia management are currently limited to subsamples of wider surveys.[8 9] A commercially funded, non-peer-reviewed survey was conducted during 2018–2019 with UK and Irish ECPs attending a manufacturer's webinar.[15] Data revealed that almost 79% of respondents did not currently prescribe any myopia management, despite 57% acknowledging an increase in myopia prevalence in children. A UK survey by Morgan and Efron[16] found that only 5% of soft contact lens fits for children and teenagers were prescribed for the purpose of myopia management in early 2020. As myopia management is a rapidly advancing field, with new research evidence and licensed products available since these studies took place, an updated investigation of the current attitudes of UK ECPs is warranted.

While surveys are a quick and cost-effective source of data, they can have limitations. Questions are preformulated and are often restricted to set responses, which do not allow the respondent to provide context.[17] As an alternative approach, focus groups permit participants to openly discuss their ideas, feelings and experiences in more depth.[17 18] To the researchers' knowledge, only one peer-reviewed study in 2019 has conducted focus groups on ECPs' attitudes to myopia management, which included only optometrists and optometry students in Ireland.[19]

Therefore, the aim of this study was to explore the current attitudes, perspectives and experiences pertaining to myopia management across the UK, incorporating a range of ECPs from primary and secondary care.

METHODS

A series of focus groups were carried out between July and November 2022 with both primary and secondary care ECPs. Local Optical Committees in the Northwest of England were asked to distribute notices to regional ECPs and neighbouring authorities. The same information was passed to the Local Optical Committee Support Unit (LOCSU), which publicised the focus groups nationally. Information was also posted on social media platforms and shared by word of mouth among professional clinician networks, including within the Hospital Eye Service.

Participants

Written informed consent was obtained from all participants. Participants were recruited in the following groups:

- Optometrists, pre-registration optometrists, dispensing opticians and contact lens opticians (typically in a primary care setting).
- Ophthalmologists and orthoptists (typically in a secondary care setting).

These groups were designed to allow for more relevant discussion within their typical work setting, due to differences in delivery between primary and secondary care.[20] However, to keep discussion within relevant qualified peer groups, the two optometrists working within the Hospital Eye Service were assigned to the primary care sessions.

Data collection

Focus groups were held online, with a maximum of eight participants to facilitate in-depth discussions.[18 20] All discussions were recorded with informed consent. Sample size (relating to the number of focus groups, rather than individual participants) was guided through data collection by continued appraisal, using 'information power'.[21] This incorporates multiple dimensions, such as the participants' knowledge and experience and the quality of dialogue achieved. Data collection ceased once a sufficient number of focus groups had been conducted for the researchers to unanimously agree that a 'saturation' of perspectives had been achieved.[18 20]

Each focus group ran for approximately 90 minutes. Facilitators were all UK-qualified optometrists and ensured that all participants had equal opportunity to share their views and contribute to the discussion. Facilitators followed a semi-structured topic guide (online supplemental material A), informed by current literature to help stimulate conversation when and if needed. Questions were designed to be non-leading.

Data analysis

Anonymised recordings were transcribed using a clean, verbatim approach[20] and explored through thematic analysis.[22] Two researchers (SC, NG-M) independently generated code labels for sections of the data to summarise and highlight their importance. An example is provided in online supplemental material B. Coded data were then organised into themes considering both the frequency and saliency of the codes.[23] This was then harmonised into an agreed singular thematic network between the two researchers.

A checklist for the consolidated criteria for reporting qualitative (COREQ) studies is provided in online supplemental material C. The public were not involved in the design, conduct, reporting, or dissemination plans of this research.

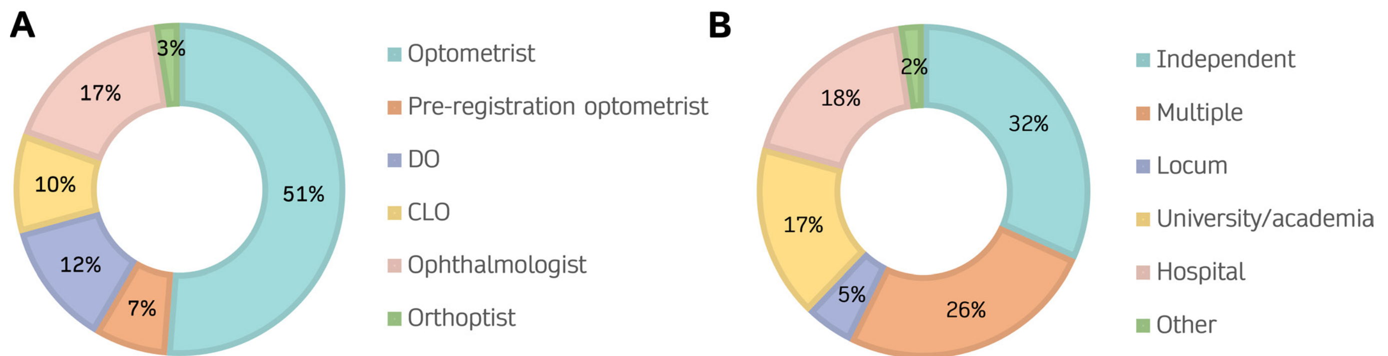

Figure 1 Doughnut charts showing (A) the roles of participating ECPs and (B) their primary practice setting. CLO, contact lens optician; DO, dispensing optician; ECPs, eyecare practitioners.

RESULTS

Views from all ECPs were given equal weight. As much of the discussion from both primary and secondary care practitioners had significant overlap, they were analysed together.[20] Any significant differences between ECP views are highlighted below.

Seven focus groups were conducted; 33 ECPs attended six 'primary care' focus groups and 8 ECPs attended the seventh 'secondary care' focus group. Figure 1 shows the breakdown of participant professions and mode of practice. The median number of years qualified was 15, ranging from 0 (pre-registration optometrists) to 46 years. Twenty-one ECPs reported prior experience with myopia management, while 20 had no experience. Figure 2 shows a map of where participants practise. This was most heavily concentrated in Northwest England, with representation from other areas of England, Scotland and Wales.

Four main themes, each with two subthemes, were identified, as shown in figure 3. The perceived barriers to myopia management are shown in figure 4 and are discussed below in the relevant themes.

Theme 1: ECP education and attitudes

Subtheme: ECP awareness and sources of knowledge

ECPs had good awareness of the data showing increased myopia prevalence. They also reported a rise in children with myopia attending their clinics, although some theorised this observation may be due to an increased frequency of eye examinations. ECPs reported a general decrease in the age of myopia onset, as well as faster progression rates. They also percieved an increased prevalence of myopia among young adults, with progression continuing into the third or fourth decade. Generally, ECPs viewed myopia in the UK as a trivial concern compared to East Asia, but believed it was likely to become a considerable future problem. Most ECPs regarded low myopia with little concern, however, there were concerns about high myopia-associated pathology in adulthood and impact on the National Health Service (NHS) in the future, as well as its impact on the individual.

> *"Myopia is not seen as a gross, huge disease, or a problem, or something that we have to be concerned about now." (Group 6, pre-registration optometrist)*

ECPs typically felt that there was a sufficient amount of educational material available for clinicians regarding myopia management, but were sceptical over some of its quality and possible bias. ECPs expressed concern over exaggerated claims of efficacy in materials produced by manufacturers and the possibility of this misinformation being conveyed to parents. ECPs regarded peer-reviewed research and researcher-led resources as more trustworthy, however, doubt was still cast over their true independence from commercial influence. Some concerns were raised about researchers being out of touch with day-to-day practice. ECPs suggested more emphasis was needed on the practical elements of myopia management as part of degree and training programmes.

ECPs reported difficulties keeping up to date with new advancements in the field. They suggested that regularly updated (e.g., annually) and accessible scientific educational material would be useful. There was a preference for this to be produced by unbiased sources, such as relevant professional bodies.

> *"[Manufacturer representatives] are very, very pushy on this and make claims that aren't really supported, and that's a little bit dangerous." (Group 4, optometrist)*

Subtheme: ECP engagement

ECPs felt that the current provision of myopia management was a 'postcode lottery', believing that England had fallen behind the devolved nations, with the UK as a whole lagging behind other countries who are more proactive in paediatric eyecare. Ophthalmologists felt that they were lacking clarity over their role within myopia management, believing it outside their scope of practice.

ECPs reported a few reasons for reduced engagement. One was a lack of confidence in using their clinical knowledge to manage a progressing myope, especially where there is a lack of consensus over certain decisions, for example, the time to cease treatment. Some reported

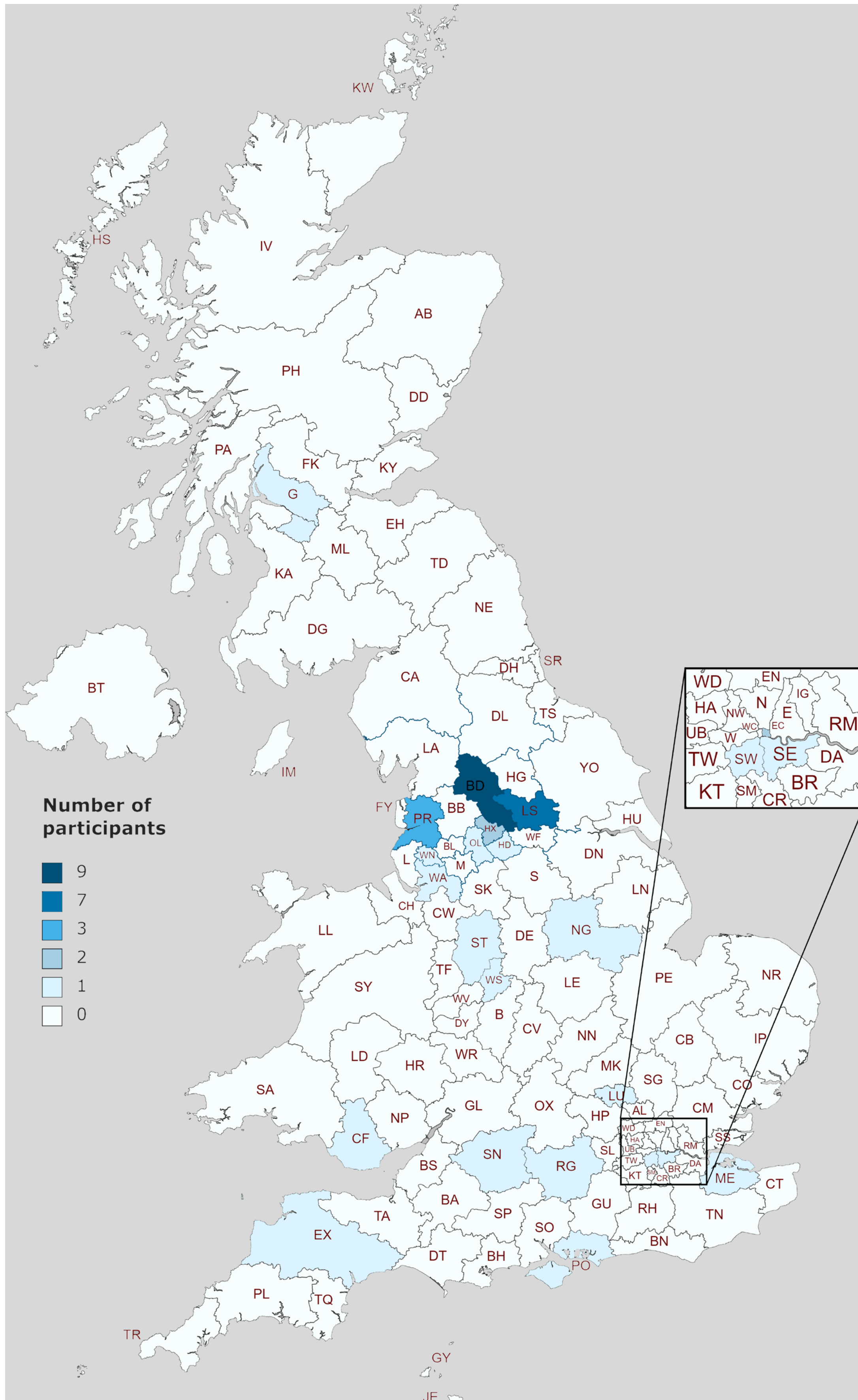

Figure 2 Map showing the distribution of participants per postcode area of the UK created at mapchart.net. One participant was UK-registered but temporarily practising in The Netherlands at the time.

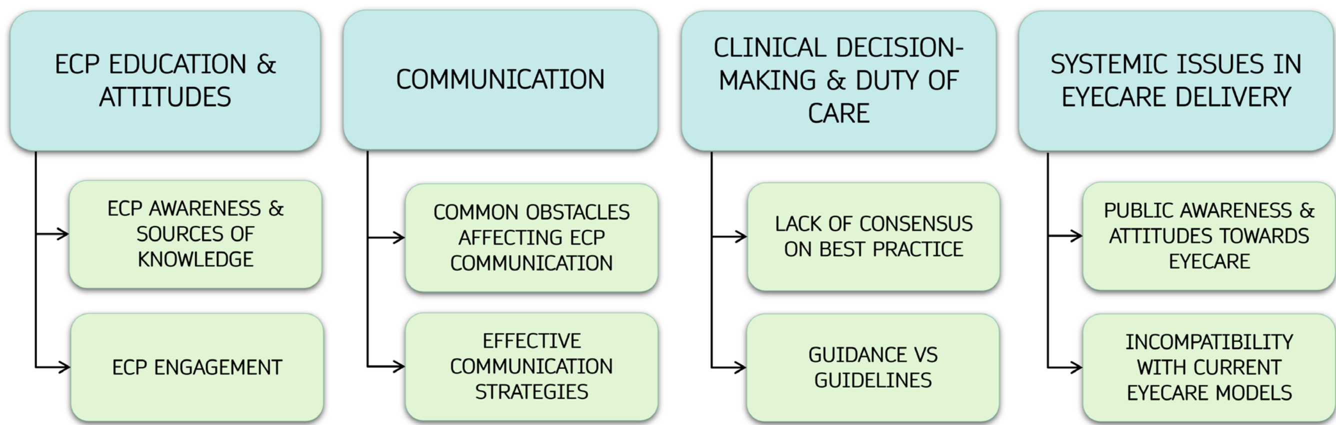

Figure 3 Diagram displaying the main themes and subthemes determined from the thematic analysis of the transcripts. ECP, eyecare practitioner.

a lack of confidence in answering parents' questions, for example, about treatment efficacy, or recommendations on the amount of time spent outdoors and/or doing close work. Some ECPs also believed desensitisation to myopia was a problem. As low myopia is seen commonly, they believed ECPs often view it simply as a refraction, rather than an eye condition with potential associated risks. A few ECPs expressed scepticism over the efficacy of available treatment options, with ECPs reporting a lack of strong evidence from UK studies. ECPs highlighted concern about making recommendations to parents without solid evidence, with a few drawing comparisons with contentious areas of optometry, such as Irlen lenses and 'blue light' lens coatings.

> *"You can get marmite with optometrists - that some believe in it, some don't believe in it." (Group 5, contact lens optician)*

Theme 2: communication

Subtheme: common obstacles affecting ECP communication

A few ECPs reported not discussing the risk of myopia-associated pathology with parents—some were concerned about worrying parents who could not afford myopia management, while others did not want to appear to use this concern to 'push' treatment. ECPs also expressed frustration at the lack of time available for a fully informed discussion with parents, sometimes having to omit details, especially in busy clinics with short appointment times.

> *"You guys work in practice, you don't always have the time, right? It's not even 20 minutes." (Group 5, optometrist)*

Affordability was the greatest communication issue, especially with parents from lower socioeconomic backgrounds and/or with multiple children. ECPs expressed discomfort recommending high-cost options and were concerned about being perceived as profiteering. A small proportion of ECPs reported that they occasionally chose not to discuss myopia management if the parent appeared disengaged or were perceived as unable to afford treatment. Concern was raised about the lack of NHS funding towards myopia management in the General Ophthalmic Services (GOS) system. This is further explored in theme 4. Only a small number of ECPs advised that their patients were not concerned about cost, and typically these were ECPs who worked in independent practice.

> *"I've had mums, they are in tears because they've got three children and they cannot afford any of this." (Group 7, ophthalmologist)*

Subtheme: effective communication strategies

ECPs suggested that, while it is important to provide enough detail for informed decision-making at the earliest opportunity, inundating parents with information and promoting immediate treatment can be counterproductive. Multiple ECPs reported that 'planting the seed' at the initial consultation, then following up with another appointment or at the next eye examination gives the parent time to digest information and reduces scepticism.

> *"They don't always take it in at the first appointment, but when you see them after six months, they might have gone onto Google, or done some of their own research, and then they're more intrigued about it the next time around." (Group 2, optometrist)*

ECPs reported more successful implementation of myopia management when all patient-facing staff work as a team to provide the service. Dispensing opticians and contact lens opticians reported frustration when optometrists had not informed patients about myopia management during the eye examination.

> *"I'm a contact lens optician, so my big problem is that I can't go in and talk about a huge amount of this if the optom hasn't already started talking about it." (Group 3, contact lens optician)*

Optometrists highlighted the importance of being able to hand the discussion over to a well-trained staff member after their consultation. This allows parents to seek clarification to queries, as well as reducing time pressures

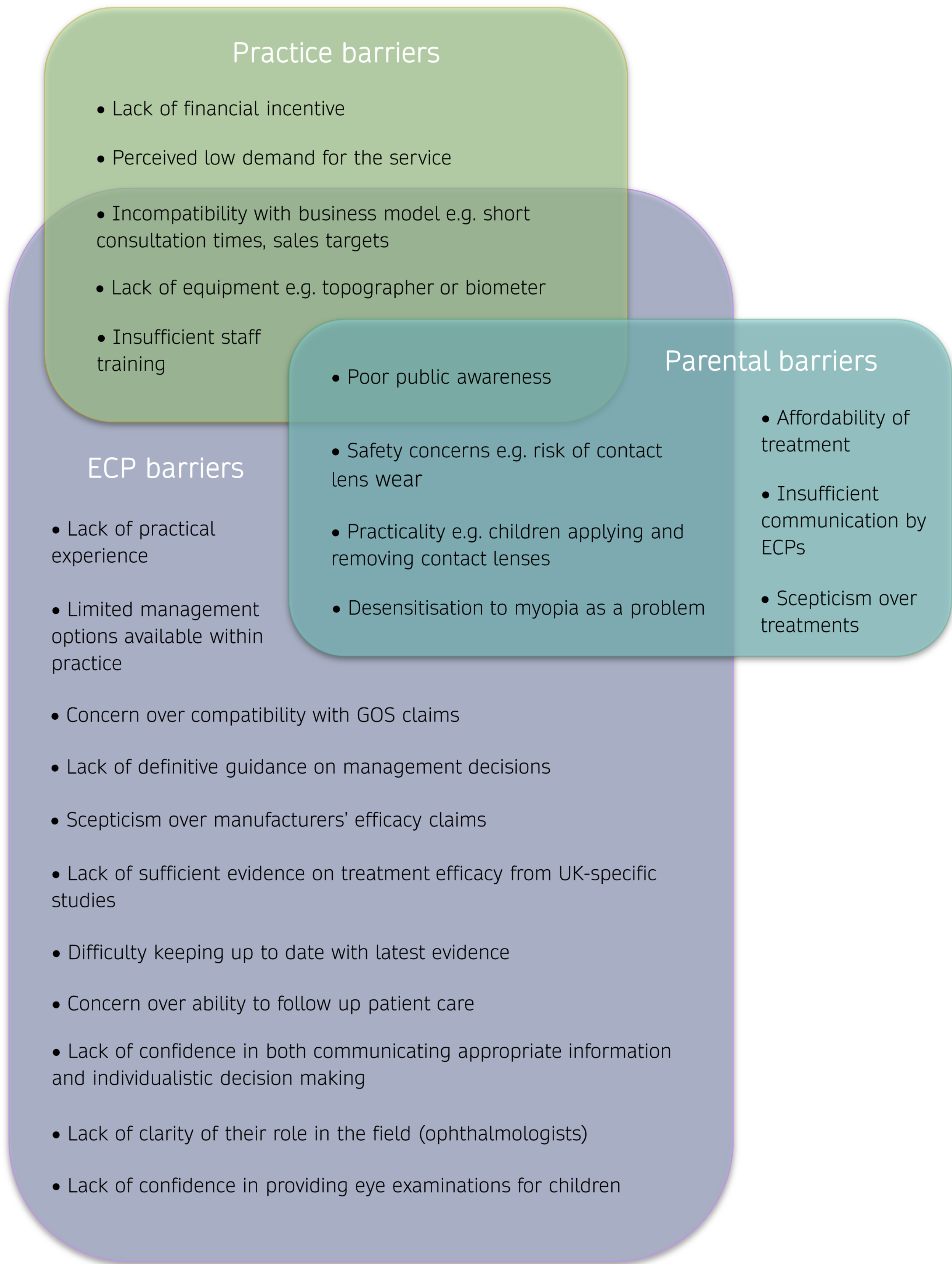

Figure 4 Venn diagram showing overlap of the barriers to myopia management perceived by ECPs, separated into barriers stemming from issues in practice, ECPs themselves, and parents. ECPs, eyecare practitioners; GOS, General Ophthalmic Services.

in the consulting room. ECPs expressed concern over practices with large teams, or high staff turnover, where training is harder to regulate.

> *"If the people on the shop floor are involved in it as well, it's a much easier conversation that can be carried on through." (Group 1, optometrist)*

Theme 3: clinical decision-making and duty of care

Subtheme: lack of consensus on best practice

ECPs were uncertain about identifying suitable myopia management candidates, with different ECPs suggesting different criteria. There was debate over fitting at the earliest opportunity (i.e., at first myopia diagnosis) for maximal effect, versus waiting for evidence of progression. This was from both an ethical and financial standpoint. Other ECPs recommended a patient-dependent approach, tailoring to their specific risk, but that ultimately the decision of when to initiate treatment should be left with the patient and parent. ECPs displayed similar uncertainty on when to cease treatment.

> *"Once they're minus, you just crack on… the earlier you start, the more time you have to manage it." (Group 6, contact lens optician)*

There was greater uncertainty about management of progressing adult myopes and children with pre-myopia. ECPs expressed concern about prescribing for children with pre-myopia, both over initiating a potentially unwarranted treatment, and about having possibly superfluous discussions with parents and shortening recalls unnecessarily. A few ECPs reported instances where progressing adults were seeking treatment, but they were unsure whether to prescribe 'off-label' in the absence of evidence of treatment efficacy.

> *"I feel that an adult would benefit from some kind of myopia control." (Group 4, dispensing optician)*

Subtheme: guidance versus guidelines

ECPs had mixed awareness of available guidance, such as those from the IMI, and professional bodies such as the College of Optometrists or the Association of British Dispensing Opticians (ABDO). Several ECPs indicated they were not aware of any formal guidance. ECPs who were aware of guidance generally regarded it as outdated, given the rapidly expanding evidence base, and questioned their utility for clinical decision-making. Ophthalmologists commented on the need for up-to-date guidance from the Royal College of Ophthalmologists. Some perceived a lack of commitment from the professional bodies to advocate myopia management within the profession. Others acknowledged the available guidance as an appropriate, unbiased view from the current evidence base.

There were varied expectations of guidance. Some called for specific prescribing guidelines, while others believed such strictness was not appropriate or helpful, and should be patient dependent. This view was often taken by those with more myopia management experience. Some suggested basic guidance that could be supplemented with an individualised approach. They stressed the importance of guidance being harmonised between the relevant professional bodies, ensuring consistent messaging to all ECPs, and believed this would provide more confidence in their patient management.

> *"As a pre-reg, I live for guidelines… it just reassures me that I'm doing the right thing. And that also I know things are getting more litigious, and that's always on my mind as well." (Group 2, pre-registration optometrist)*

ECPs expressed worry over future negligence claims if patients were not informed about, or offered, myopia management when indicated. Some ECPs were unsure whether they were expected to refer a patient if their practice did not offer myopia management or offer the best option for that particular patient. Some reported feeling a conflict of interest between duty of care versus the risk of losing business for the practice. A few ECPs also reported not knowing where to refer myopia management patients within their local area. They emphasised that clear guidance on expectations regarding duty of care would make them feel more protected.

> *"It is our duty to refer to colleagues, not competitors, but colleagues … if it is offered in your local area." (Group 1, optometrist)*

Theme 4: systemic issues in eyecare delivery

Subtheme: public awareness and attitudes towards eyecare

While parental receptivity varies, ECPs generally felt that parents are desensitised to myopia, possibly because it is increasingly commonplace. ECPs felt parents were generally unaware of potential associated pathological implications and were more concerned with their child's dependency on spectacles or the appearance of thicker lenses. When discussing myopia management with parents, ECPs reported frequent scepticism regarding the need for treatment or whether it would be effective, particularly when costs were discussed.

ECPs felt that the eyecare profession is undervalued in the UK compared with other healthcare services, such as dentistry, or compared with how the profession is perceived in other countries, for example, the Netherlands. ECPs felt that the public view optometric practices primarily as retail orientated, thus reducing optometry's credibility as a healthcare profession. There was a belief that the UK public are accustomed to having free NHS examinations for children and help towards their spectacles, and as such they are reluctant to spend money.

> *"I think we apologise as an industry for the costs that we charge.… dentists have no problem charging their charges for what they do." (Group 5, contact lens optician)*

ECPs highlighted the need to educate the public about the value of eye health and eye examinations early in

life, as well as specifically educating about myopia. ECPs suggested a national public health initiative on myopia management, believing the onus is on the professional bodies and government to instigate this. They suggested education might be more successful through schools and nurseries and emphasised the need to reach children from all backgrounds.

> *"Perhaps the role of the GOC [General Optical Council] and the College [of Optometrists] is to educate the government, to educate the NHS."* (Group 5, optometrist)

Subtheme: incompatibility with current eyecare models

ECPs expressed concern about the compatibility of myopia management with business models which rely on high patient volume per day and are dominated by sales targets, rather than emphasising clinical quality. ECPs felt some practice owners did not believe myopia management to be lucrative enough to incorporate it successfully into this type of business model. Several ECPs felt limited by a lack of relevant equipment in practice, such as topographers or biometers, which can be a costly investment. ECPs also reported difficulties following up patients, especially as a locum, or in stores with high numbers of patients and staff. Some ECPs alluded to a general lack of emphasis on paediatric eyecare in primary practice, possibly as paediatric appointments are viewed as less lucrative. A few ECPs suggested that myopia management may be best suited as a specialist service, possibly with an accreditation scheme, as per glaucoma management.

> *"I personally would like to see that kind of, almost subspecialisation, particularly when it comes to something like myopia management, which I think has a kind of complexity to it that you need to have some specialist knowledge and training to do."* (Group 2, optometrist)

ECPs frequently discussed the incompatibility of myopia management with the GOS system, with many expressing concern over making accidental false claims. For example, they felt unsure about claiming for low, asymptomatic myopes who may not traditionally be prescribed a single-vision correction, but who may benefit from myopia management. The question over the potential for NHS funding specifically for myopia management was also raised. ECPs desired a higher-value NHS optical voucher to be introduced for myopia management, to provide increased help towards treatment cost. Some suggested they would like fully funded management options through the NHS, because of the current financially biased accessibility to care. While ophthalmologists agreed that NHS provision of myopia management would be ideal, they were firm in their wish for myopia management to remain within primary eyecare, while continuing to accept referrals for possible syndromic or pathological myopia.

> *"I'm not going to receive any referrals from community opticians whose parents want a consultant conversation about their child's myopia [management] treatment, because I don't provide that. I'm not trained to do that."* (Group 7, ophthalmologist)

DISCUSSION

Although recent survey data from Wolffsohn *et al*[8] suggest ECPs across the world are engaging more with myopia management, discussion with both primary and secondary care ECPs demonstrates that myopia management is not yet fully integrated into UK eyecare, and there is inconsistent accessibility for patients across different areas of the UK.

There are some possible reasons for this discrepancy. In Wolffsohn *et al*,[8] the analysis of UK-specific practitioners' data was limited in favour of a broader comparison between continents, possibly diluting the specific responses of the 67 UK respondents. The qualitative nature of this current study allowed a more contextual investigation of attitudes and barriers relevant to the UK specifically. The differences in selection bias between the two studies are not known, and like the current study, the global survey gained information on subjective attitudes to myopia management prescribing rather than objective data from prescribing rates in practice.

Some of the barriers to myopia management reported in this study share similarities with those previously reported in studies across the world. Specifically, affordability of treatment, scepticism over treatment efficacy, constraints on consultation time, lack of specialist equipment, and insufficient clinical guidelines.[8–13]

A previous focus group study conducted by McCrann *et al*[19] was performed in Ireland in 2019 on the same topic. There is a large overlap in perceived barriers between their results and the results of this current study, likely due to a similar scope of practice between the two nations. This suggests that some of the barriers present in the prior study are also reported within the UK currently. Barriers such as poor financial incentives for practices to adopt myopia management, and ECPs struggling to balance clinical care and meet daily sales targets, are noted in both studies. Shickle *et al*[24] suggested the pressure for retail revenue in the UK arises from a systemic problem within primary eyecare. They reported that under the current NHS contract, the fee for an eye examination in England, Wales and Northern Ireland does not cover the cost of conducting the examination. Subsequently, practice owners must subsidise this deficit through maximising appointment numbers and subsequent sales. Therefore, re-evaluation of the GOS contract is recommended, reassessing the remuneration for standard eye examinations and other additional services now offered by primary care practices, including myopia management.

Affordability of treatment was identified as a leading barrier toward the wider adoption of myopia management. ECPs felt that affordability is a heightened concern for UK parents because they are accustomed

to compensated eyecare under the NHS. Interestingly, data from an international survey of 1009 parents in 2019 reported that UK parents attributed more importance to the treatment affordability than parents from other countries.[25] Cost of treatment appears to concurrently discourage ECPs from offering treatment, especially to those perceived as unable to afford it. ECPs enquired as to whether NHS funding would soon be available to alleviate the current socioeconomic bias. In Scotland, an analysis of GOS payment claims for children's single-vision spectacles found greater GOS claims in deprived areas,[26] suggesting that NHS provision enables wider accessibility for those unable to afford these services outside of the NHS remit. However, such provision would likely require appraisal from the National Institute for Health and Care Excellence (NICE). As many aspects of myopia management are not currently definitive, including their mechanism(s) of action,[27] substantial work is likely required to produce the necessary evidence for NICE approval.[28]

Parental scepticism appeared as a significant barrier to uptake, and ECPs reported having to work hard to encourage treatment uptake. In the recent members' survey by the Association of Optometrists (AOP), 64% described the profession as 'undervalued', believing there to be poor public understanding of the importance of eye examinations and eyecare.[29] Focus groups with UK adults found that optometrists are often viewed as retail workers, rather than healthcare professionals.[30 31] As such, their advice is viewed as less trustworthy than other healthcare professionals, such as general practitioners (GPs) or dentists. More effort is needed to promote the value of ECPs and the importance of paediatric eyecare in the UK. ECPs in this study suggested that a public health initiative to promote awareness of myopia management would help achieve this aim.

The need for up-to-date, specific myopia management guidance for ECPs was frequently discussed and is echoed from the previous focus group work by McCrann *et al*[19] in Ireland. For secondary care ECPs, there has been guidance published by the World Society of Paediatric Ophthalmology and Strabismus, and the European Society of Ophthalmology.[32 33] However, the scope of practice is different between countries, and atropine is not currently licensed for myopia management in the UK, therefore ophthalmologists would benefit from UK-specific guidance. Regarding primary care ECPs, both the College of Optometrists and ABDO published updated guidelines during the period of data collection for this study.[34 35] The new College of Optometrists' update came more than 3 years after the first set of guidance and took a firmer stance than the original guidance. However, it appears that many ECPs, particularly those with less experience, are still seeking a more prescriptive approach to myopia management. An example includes ECPs seeking clarification over when to initiate and cease treatment, as well as determining whether they are expected to refer patients to another practice if suitable myopia management options are unavailable, and whether failure to do so would amount to negligence. Providing definitive guidelines is difficult in an emerging field of research with several areas of uncertainty,[26] and a more prescribed approach does not necessarily fit with the patient-centred approach recommended by the IMI.[36]

From these data, ECPs seem to exhibit low tolerance towards the uncertainty that comes with individualistic decision-making in myopia management. This partly appears to stem from anxiety over potential malpractice claims and litigation. Anxiety over misdiagnosis has been reported among other healthcare professions, for example GPs, and may lead to the practice of 'defensive medicine', whereby management of a patient is based on fear of litigation, rather than on best practice or patient well-being.[37] An increase in defensive practice has also been noted among optometrists through increased false positive referral rates,[38] including for neuro-ophthalmology, following the high-profile case of undiagnosed papilloedema in an 8-year-old patient in 2016.[39] Davey *et al*[40] found that false positive referrals generated by optometrists decrease with experience at a rate of 6.2% per year, indicating that newly qualified ECPs take a more conservative approach to management decisions, which is consistent with the findings reported here. While it is understandable that ECPs may wish to practise cautiously, defensive medicine can increase pressure on services that are already struggling, resulting in lower-quality care and an economic impact.[39] This was supported by the opinions of ophthalmologists who indicated they wanted myopia management to remain within primary eyecare.

While ECPs in McCrann *et al*[19] suggested their lack of myopia management knowledge was a major barrier, this appears not to be the case in this current study, possibly due to an abundance of learning material that has become available over the past few years. Instead, UK ECPs more often stated confidence and experience as barriers to prescribing. Therefore, more emphasis should be placed upon practical experience of myopia management during foundational ECP training, and an emphasis on how to deliver individualised clinical care more confidently. In lieu of a stricter blanket approach to management, ECPs would also benefit from a regularly updated, UK-relevant review of recent scientific evidence to support their clinical management decisions, not reliant on commercial sponsorship. Clarity over whether ECPs are expected to manage pre-myopes and progressing adult myopes would be helpful, as the current evidence is less developed.[41 42]

This study did have limitations. As per figure 2, there was over-representation of independent and academic ECPs, and an under-representation of ECPs from national chains, compared with proportions found in the latest GOC registrant survey.[43] Additionally, there was over-representation from the Northwest of England and under-representation from the devolved nations, particularly Northern Ireland. There is also likely volunteer bias, whereby those attending may have a greater interest

in myopia management, and the data may therefore not fully represent the wider ECP population. However, the relatively equal split between practitioners with and without experience in myopia management may help to mitigate the impact of such bias. It is important to note that these data are subjective reports from ECPs, rather than objective data on ECPs' prescribing behaviour, and hence may also be liable to response bias.[17]

Future work may benefit from investigating differences between ECPs and their preferred choice of intervention. A peer-reviewed, UK-specific survey on myopia management with a larger sample size may improve generalisability and provide quantifiable statistics on preferred choice of management interventions and prescribing rates. Also, exploring any discrepancies between ECPs' and parents' perceptions could help to further understand the barriers to successful myopia management adoption across the UK.

In conclusion, myopia management seems to be implemented inconsistently across the UK, with various barriers preventing an optimal service. ECPs would appreciate more frequent, unbiased updates to clinical guidance, with clear information about clinical and legal expectations. There appears to be overarching issues with the financial compatibility of eyecare services and myopia management within the current UK primary eyecare model. Increased accessibility to myopia services in primary care, without compromising quality, can only be achieved if key stakeholders, such as educational and professional bodies, industry, and ECPs themselves acknowledge current barriers and work to enact change at all levels of eyecare delivery.

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