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Myopia control awareness and practice of optometrists in KwaZulu-Natal, South Africa

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Background: Eyecare practitioners play a pivotal role in implementing myopia control (MC) strategies to reduce the burden of progressive myopia. This awareness and execution, however, vary significantly across different regions.

Aim: This study aims to establish the awareness and practices of MC among optometrists practicing in KwaZulu-Natal, South Africa, in 2023.

Settings: Public and private eyecare facilities in KwaZulu-Natal, South Africa.

Methods: A cross-sectional survey was conducted among optometrists in KwaZulu-Natal, South Africa. A validated questionnaire, formatted via Google Forms, was administered electronically through email and various social media platforms, targeting all optometrists in KwaZulu-Natal.

Results: Of the 53 participants, 58.5% % (n = 31) had 'Not good' awareness of MC methods, and 58.5% (n = 31) were active in its execution. The association between awareness and practice was statistically significant ($P < 0.05$). Patient education (86.8%; n = 46) was the greatest MC adopted, while 22.6% (n = 12) utilised spectacle under-correction. The major barriers to MC implementation were cost to parents (79.2%; n = 42) and practitioners (49.1%; n = 26), while cheaper products (75.5%; n = 40) were the main support needed.

Conclusion: Despite poor awareness of MC, many optometrists adopted MC measures in their practices. Due to the strong association between awareness and practice, increasing awareness will increase participation in MC. Collaborative efforts are essential to effectively manage and reduce myopia in the region.

Contribution: This study offers regional data on myopia awareness and management to guide public health efforts and improve patient outcomes.

Keywords: myopia control; awareness; optometrists; practice; barriers.

Introduction

Myopia associated with an increase in axial length affects millions of people worldwide.[1] The prevalence of high myopia, especially in children and adolescents, is escalating at an alarming rate.[2] This may lead to significant visual impairment, including irreversible visual loss, impacting the individual's quality of life and imposing undue burden on the individual, society and the economy.[1]

Single-vision spectacles, contact lenses and refractive surgery may correct myopia; however, they may be limited in slowing its progression or mitigating its consequences,[3] which has led to extensive research on effective strategies to control myopic progression. Diman et al. showed that bifocals, progressive addition lenses, peripheral defocus-incorporated spectacles lenses and contact lenses, orthokeratology, low-dose atropine and environmental modifications positively affect the slowing of axial elongation and myopic progression and also highlight the use of combination therapy.[4]

Optometrists play a crucial role in myopia control (MC) interventions, but there is a disparity in awareness and implementation across regions.[5,6] While practitioners indicate knowing about MC, with others having little or no knowledge,[7,8,9] single-vision spectacles appear to be the main measure for young myopes.[10] The identified barriers to adopting efficient MC measures globally include lack of regulatory approval,[6] need for more practitioner education and experience[11,12] and high costs.[7,13]

As no study has been conducted in South Africa, this study aims to investigate the awareness and practice of MC by optometrists in KwaZulu-Natal, South Africa, the barriers limiting its use, as well as the support needed for effective implementation. The findings will inform interventions and guidelines to improve MC practices in the region aiming to reduce the prevalence and impact of myopia in KwaZulu-Natal and similar regions.

Research methods and design

A web-based cross-sectional research design was employed to collect data from a diverse group of practicing optometrists across KwaZulu-Natal, through the administration of a questionnaire. This questionnaire was adopted from previous studies focusing on MC among eyecare practitioners.[7,14,15,16,17] As the tool had already demonstrated validity and reliability in earlier research, no additional pilot testing was conducted before its administration in this study. Optometrists working in the private, public and tertiary education sectors, who were registered with the Health Professions Council of South Africa (HPCSA) for the year 2023 and were actively practicing in KwaZulu-Natal (KZN), South Africa, were considered for this study. It did not include optometrists working outside of KZN, nor did it involve other eyecare professionals such as ophthalmic nurses or ophthalmologists.

The sample size for the study was calculated using the formula $\frac{\frac{Z^2PQ}{d^2}}{1+\frac{Z^2PQ}{Nd^2}}$ where Z (1.96) is the standard normal distribution, d represents 5% margin of error, P is 80% of optometrists prescribing MC, Q is (1–P) and N is the 460 registered optometrists in KZN. The required sample size for 80% power was 159, with an additional 10% added for non-responses, resulting in a final sample size of 175. A sample population was recruited through a snowball sampling technique.

Data collection tool and procedure

The validated questionnaire was used from a previous study,[7] which comprised 21 open and closed-ended questions on progressive myopia and MC, categorised into sociodemographic information, awareness, MC strategies used, barriers to its implementation, and support needed to increase its uptake. The closed-ended questions included an 'Other (please specify)' response option to allow participants to provide additional information not covered by the predefined choices. Awareness of MC was assessed using a closed-ended question: 'How would you classify your awareness of myopia control strategies?' with response options as 'Good' and 'Not good'. This binary classification was used for simplicity and to broadly assess general awareness in the study population. The questionnaire was created in English and distributed electronically via a Google Forms link through email and various social media platforms such as WhatsApp, Facebook, Instagram and LinkedIn. All participants were encouraged to share the link with their social contacts. Participation was voluntary, and informed consent was a prerequisite before completing the questionnaire. The anonymity of each participant was maintained, as no personal data about identity were requested or recorded in the survey.

Data management and analysis

The data were analysed using SPSS version 27 software (SPSS Inc., Chicago, Illinois, US). All data conformed to non-parametric distributions and inferential statistics, including Pearson Chi-square and Kruskal-Wallis tests, were applied, with a significance level of $P < 0.05$ determined. For the open-ended questions, content analysis was employed.

Ethical considerations

An application for full ethical approval was made to the Humanities and Social Sciences Research Ethics Committee and ethics consent was received on 15 June 2023. The ethics number is HSSREC/00005479/2023. The research adhered to the guidelines of the Declaration of Helsinki, and participants provided informed consent electronically after being informed about the study's objectives and potential outcomes.

Results

Sociodemographic profile

A total of 53 optometrists responded to the survey, with an average age of 37.0 ± 5.6 years, of which the majority were female (58.5%; n = 31), had 21–30 years of experience (30.2%; n = 16), were in private practice (71.7%; n = 38) and were employees (56.6%; n = 30) (Table 1). As the study only included registered optometrists, 77.4% (n = 41) held a bachelor's degree, 17% (n = 9) held a Master's degree and 5.7% (n = 3) had completed a PhD. Furthermore, 66% (n = 35) were certified with diagnostics, and only 17% (n = 9) held ocular therapeutics certification.

Source of education on myopia control

Optometrists acquired knowledge about MC through various methods, including online continuous education courses (63.6%; n = 34), optometry school (60%; n = 32), individual research (50.9%; n = 27) and information from optical suppliers and congress presentations (3.6%; n = 2) (Figure 1). Information acquired through personal reading was only 1.8% (n = 1).

Concern about the rise in paediatric myopia

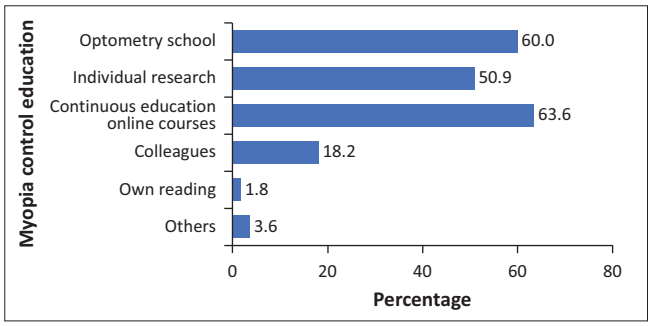
With the incidence of paediatric myopia escalating within clinical practice, 79.2% (n = 42) of practitioners expressed concern, with no significant difference across diverse sociodemographic profiles ($p > 0.05$) (Table 1).

Risk factors warranting myopia control

The primary risk factor warranting MC intervention, as reported by 39.6% (n = 21) of participants, was the rate of progression, followed by refractive error (32.1%, n = 17) (Table 2). The majority of the optometrists (50.9%; n = 27)

TABLE 1: The impact of sociodemographic factors on the rising incidence of childhood myopia and the level of awareness and implementation of myopia control by optometrists.

Variables	Concerned about the increasing frequency					Overall awareness					Practice				
	No		Yes		*P*	Not good		Good		*P*	Not active		Active		*P*
	n	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%	
Gender															
Female	5	16.1	26	83.9	0.324	16	51.6	15	48.4	0.228	13	41.9	18	58.1	0.812
Male	6	27.3	16	72.7	-	15	68.2	7	31.8	-	9	40.9	13	59.1	-
Working environment															
Private	9	23.7	29	76.3	0.279	22	57.9	16	42.1	0.447	15	39.5	23	60.5	0.857
Public	2	28.6	5	71.4	-	3	42.9	4	57.1	-	3	42.9	4	57.1	-
Other	0	0.0	8	100.0	-	6	75.0	2	25.0	-	4	50.0	4	50.0	-
Years qualified															
0–11 months	2	25.0	6	75.0	0.348	5	62.5	3	37.5	0.112	5	62.5	3	37.5	0.041
1–5	1	14.3	6	85.7	-	6	85.7	1	14.3	-	1	14.3	6	85.7	-
6–10	1	14.3	6	85.7	-	1	14.3	6	85.7	-	2	28.6	5	71.4	-
11–20	1	8.3	11	91.7	-	6	50.0	6	50.0	-	6	50.0	6	50.0	-
21–30	4	25.0	12	75.0	-	11	68.8	5	31.3	-	5	31.3	11	68.8	-
31–40	2	66.7	1	33.3	-	2	66.7	1	33.3	-	3	100.0	0	0.0	-
Certification															
Diagnostics	8	22.9	27	77.1	0.078	23	65.7	12	34.3	0.209	14	40.0	21	60.0	0.913
Ocular therapeutics	2	22.2	7	77.8	-	5	55.6	4	44.4	-	4	44.4	5	55.6	-
No diagnostics	1	11.1	8	88.9	-	3	33.3	6	66.7	-	4	44.4	5	55.6	-
Practice owner															
No	5	16.7	25	83.3	0.672	17	56.7	13	43.3	0.758	15	50.0	15	50.0	0.151
Yes	6	26.1	17	73.9	-	14	60.9	9	39.1	-	7	30.4	16	69.6	-
Overall awareness															
Awareness															
Good	-	-	-	-	-	-	-	-	-	-	16	72.7	15	48.4	0.042
Not good	-	-	-	-	-	-	-	-	-	-	6	27.3	16	51.6	-



Note: Where did you receive your education on myopia control?

FIGURE 1: Optometrists education on myopia control.

deemed 0.51 D to 0.75 D per year of myopic progression sufficient to initiate MC, followed by ≥ 0.76 D per year (37.8%; *n* = 20). However, 1.9% (*n* = 1) indicated that MC is not warranted irrespective of myopic progression. Family history was ranked second (24.5%; *n* = 13), while the axial length, lifestyle and patient's age were not considered priorities in myopia management.

Overall awareness of myopia control

While 58.5% (*n* = 31) exhibited 'Not good' awareness of MC (Table 1), optometrists in each of their respective categories displaying 'Good' awareness of MC were females (48.4%; *n* = 15), employed in public hospitals (57.1%; *n* = 4), had been qualified for 6–10 years (85.7%; *n* = 6), were without diagnostics (66.7%; *n* = 6) and were employees (not practice owners) (43%; *n* = 13) (Table 1). No statistical difference ($p > 0.05$) was found for awareness across all sociodemographic variables.

Myopia control practices of optometrists

Most optometrists were active in prescribing MC in their practices (58.5%; *n* = 31) (Table 1) as well as across the various sociodemographic variables (*P* > 0.05) except for years qualified (*P* = 0.041). Those with 0–11 months (62.5%, *n* = 5) and 31–40 years of experience (100%, *n* = 3) showed no MC activity.

The most common MC interventions used by optometrists include patient education (86.8%; *n* = 46) and recommendation of increased time outdoors (71.7%; *n* = 38). Myopia control spectacle lenses (64.2%, *n* = 34) and single-vision spectacles (49.1%, *n* = 26) are the main spectacle strategies adopted, while bifocals are the least used (17.0%, *n* = 9) (Figure 2). Approximately 26.4% (*n* = 14) of optometrists considered contact lenses as a choice for MC, with some considering specifically MC-designed soft contact lenses (28.3%; *n* = 15); orthokeratology was the least preferred contact lens option (11.3%; *n* = 6). A smaller percentage of optometrists prescribe atropine (18.9%; *n* = 10) while under-correction is still utilised by 22.6% (*n* = 12). Finally, optometrists who actively prescribe MC display good overall awareness (51.6%; *n* = 16), with statistical inference between awareness and MC activity being significant (*P* = 0.042) (Table 1).

TABLE 2: Risk factors that justify the need for myopia management.

Axial length		Family history		Lifestyle		Patient age		Rate of progression		Refractive error	
n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Ranked from most important to least											
1	1.9	6	11.3	5	9.4	3	5.7	21	39.6	17	32.1
6	11.3	13	24.5	5	9.4	9	17.0	10	18.9	10	18.9
9	17.0	8	15.1	3	5.7	9	17.0	12	22.6	12	22.6
10	18.9	11	20.8	10	18.9	7	13.2	10	18.9	5	9.4
14	26.4	14	26.4	13	24.5	5	9.4	4	7.5	3	5.7
9	17.0	7	13.2	18	34.0	14	26.4	2	3.8	3	5.7

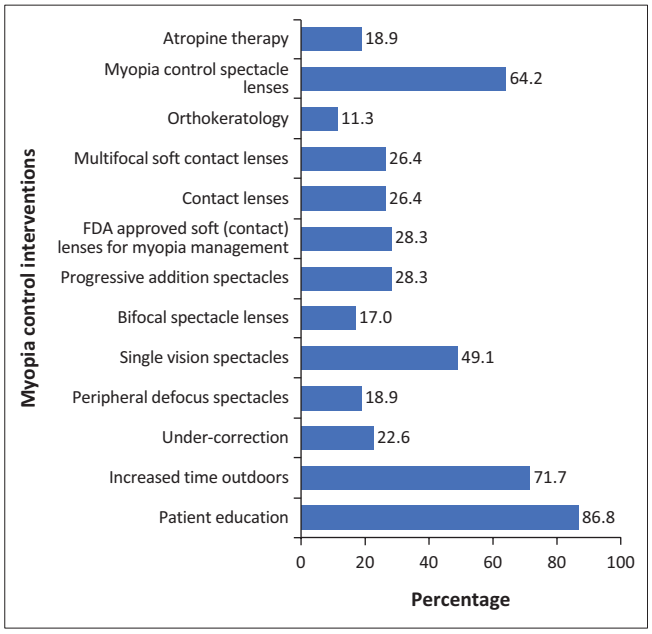


FIGURE 2: Various myopia control interventions implemented by optometrists.

Restrictions for adopting myopia control interventions

The greatest limitations faced by practitioners were parents' budget (79.2%; *n* = 42), high cost of MC interventions and limited access to instrumentation (49.1%; *n* = 26), respectively (Figure 3). Lack of support from optical companies (3.8%; *n* = 2), practitioners' lack of confidence in managing children (3.8%; *n* = 2) and concerns about the safety of MC products (3.8%; *n* = 2) were the least significant barriers to initiating MC interventions.

Support needed to prescribe myopia control interventions

In Figure 4, 75.5% (*n* = 40) of the participants expressed that cheaper products would incentivise optometrists to adopt MC, while 64.2% (*n* = 34) suggested that an enhancement in education and confidence would be beneficial. Moreover, 54.7% (*n* = 29) emphasised the significance of experience in this context.

Discussion

With myopia being a global concern, practitioner education plays a pivotal part in increasing awareness and practice of MC, thereby mitigating its risks.[10] Optometrists received their education on myopia and MC primarily through

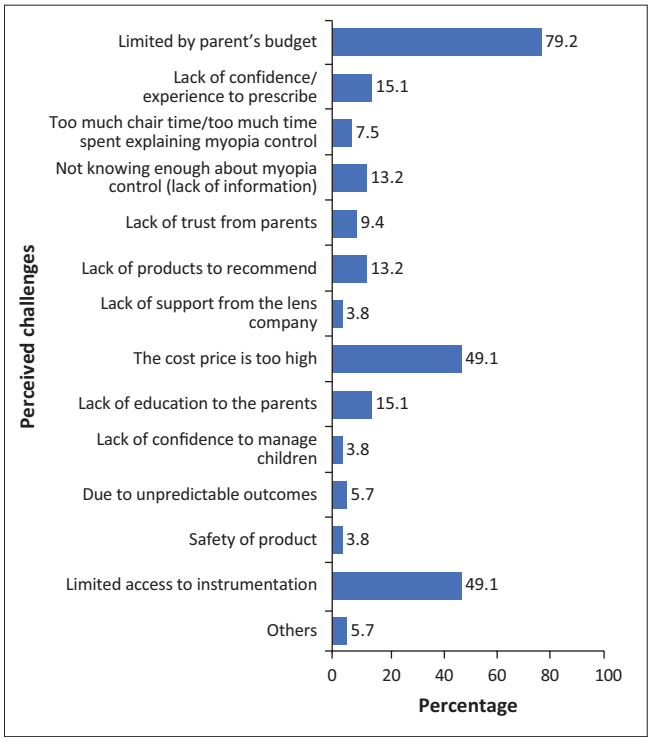


FIGURE 3: Challenges perceived in implementing myopia control interventions.

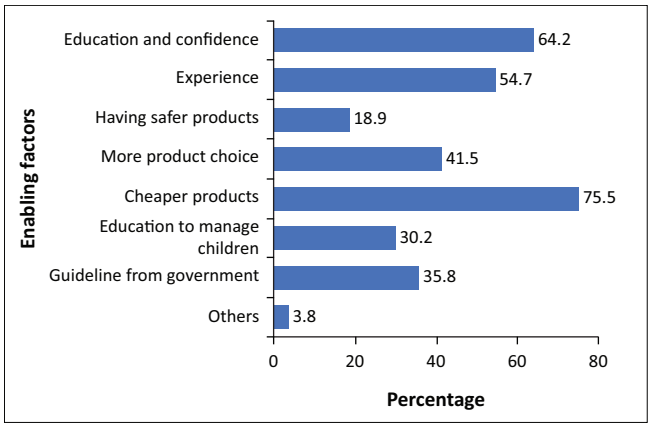


FIGURE 4: Conditions that would encourage optometrists to recommend myopia control treatments.

continuous education development (CPD) courses, a trend similar to eyecare practitioners across the African continent.[9] Yang et al. emphasised the importance of CPD engagement to boost practitioner confidence and MC uptake among practitioners.[17] Optometry school was flagged as the second highest source of knowledge suggesting that the undergraduate (UG) programme is an excellent avenue to

foster awareness and practical skills related to MC. Self-directed reading, however, was ranked the least preferred method for obtaining education on myopia and MC as similarly reported by practitioners in India.[18] This leads us to believe that practitioners are less inclined to learn in isolation compared to group settings. Yang et al. further explain that due to lack of time during clinical practice, practitioners may benefit from accruing CPD points to maintain their license, which applies to many countries, while enhancing their knowledge of MC.[17] The transition from a recent graduate with basic knowledge to an expert in myopia and MC, Faucher et al. explain the significance of CPD in facilitating this shift.[19] This enhances practitioner performance and patient health outcomes.

The rate of progression was ranked as the most important risk factor warranting MC followed closely by refractive error. Wolffsohn et al. reported that the risk of progression had not been extensively researched; however, refractive error was the key risk factor for progressive myopia.[20] Contrastingly, practitioners in America ranked genetics as the major risk factor for progressive myopia,[21] while Wolffsohn et al. ranked this the least.[20] Wolffsohn et al. and Grifford et al. considered age as the second most important risk factor for myopic progression, whereby the younger a child becomes myopic, the faster they will progress.[20,21] In this study, however, the majority of the participants ranked age as the least important risk factor to warrant MC intervention.

The majority of the optometrists considered MC when the progression rate of −0.50 D to −0.75 D per year was achieved, aligning with the report of American practitioners.[20] An earlier study considered 0.75 D per year of myopic progression as the minimum warranting MC[22]; however, some optometrists in this study only consider MC when progression is greater than 0.75 D per year. Similarly, Nti et al. found that practitioners across the African continent only consider MC with a progression rate of −1.00 D per year.[9] This is of concern as many myopic patients needing MC intervention remain untreated, adding to the global burden of irreversible vision loss. Of greater concern, and as reported by the previous author,[9] one practitioner believes that MC is not warranted, no matter the rate of progression.

With the increase in the prevalence of paediatric myopia over the past few decades, followed by the risk of irreversible vision loss,[20,23] the concern expressed by most optometrists in this study is legitimate. Such concern has also been articulated across various African nations as well as documented by the WHO based on reports from Asia, Europe, South America and North America.[9,20,23] Despite the concern expressed by optometrists, however, the overall awareness of optometrists on MC in KZN is poor ('Not good'). This could impact appropriate MC uptake for patients at risk and with progressive myopia. While no statistical difference was noted between sociodemographics and awareness, optometrists who qualified between 6 and 10 years of ago showed the greatest awareness of MC. This could be attributed to a greater rise in research on MC over the last decade, making resources available for practitioners and possibly being included in the UG curriculum.[23,24,25] Furthermore, optometrists in the public sector appear more aware of MC compared to the optometrists practicing in the private sector. A study by Ebrahim et al. revealed that optometrists in the public sector are more exposed to a larger volume of patients with a greater range of optometry cases and hence could contribute to a greater awareness.[26]

A greater proportion of practitioners who are concerned about progressive myopia are also active with MC interventions ($P = 0.042$), showing that a relationship exists between concern and practice. A similar correlation was found with practitioners in Australia and Spain.[6,7] Over the past 4 years, with the increase in concern about the rise in myopia, there have been reports of the greatest number of MC interventions taking place in Asia.[10] Furthermore, a significant number of practitioners who are actively involved in MC have a higher level of awareness. Martinez-Perez et al. state that a greater understanding and knowledge of MC interventions enhances clinical engagement in MC.[7] Interestingly, some practitioners who are not actively involved still demonstrate good awareness and probably require training and support to become active in MC. Considering the overall awareness of the practitioners to their activity in MC is statistically significant, and that some practitioners in KZN are not adopting MC in their practice, it can be inferred that increasing awareness among practitioners would likely lead to greater adoption of MC strategies in their clinical practice.[11]

In this study, most practitioners prioritise patient education and outdoor time to manage myopia. They commonly prescribe MC-designed and single-vision spectacles and less frequently recommend bifocals. Some optometrists use MC-designed contact lenses, but few consider atropine or orthokeratology in the management of progressive myopia. A previous study shows that low-dose atropine and orthokeratology are more effective than spectacles in slowing myopic progression,[27] hence identifying a gap in the awareness and activity of MC among optometrists in the region. Furthermore, and of concern, is that some practitioners still implement under-correction, despite evidence showing it can accelerate myopia progression.[28]

The majority of optometrists cited cost as the main hindrance to implementing MC, which was similarly reported by practitioners in Singapore.[11] They further suggested that the primary support needed was access to cost-effective products, followed by more product choices by suppliers. Furthermore, a lack of education, confidence and experience was also considered a limitation to

prescribing MC modalities and suggested that improved education and experience with MC will help sustain greater participation in practice.

This study includes optometrists who are key healthcare professionals involved in managing myopia, and their responses are critical to assessing both the existing knowledge gaps and the practical barriers they face. The results could guide improvements in how optometrists in the region approach MC, considering its growing public health concern. Furthermore, as the study focuses on actual practices and awareness in the field, not just theoretical or laboratory-based research, this makes the findings more directly applicable to improving the quality of optometric care in KwaZulu-Natal and similar regions. The study's required sample size was 159 participants; however, only 53 optometrists participated. This represents a significant limitation of the study, reducing the generalisability of the findings to the broader population of optometrists. Several factors could have contributed to the low participation, including a limited data collection period and challenges in reaching all optometrists across the KZN region, despite the survey being available on multiple platforms. Non-participation in the survey could be linked to issues such as poor connectivity and the survey's length,[29] as well as participants' inadequate knowledge of MC,[7] lack of interest in adopting MC interventions, and inactivity in practice,[11] all serving as determining factors. As a result, the response rate could not be definitively determined. Finally, the binary classification of awareness (i.e. 'Good' vs. 'Not good') may not fully reflect the depth or accuracy of participants' understanding of MC methods. This approach limits the ability to distinguish between different levels of awareness and knowledge. It is therefore recommended that future studies adopt a more detailed assessment of awareness, incorporating specific questions that evaluate both recognition and understanding of various MC methods, to generate more accurate and meaningful insights. Further recommendations include extending the data collection period, employing more extensive outreach methods (such as in-person interviews) and targeting a wider range of optometrists, which would likely increase the sample size. These measures would likely enhance more reliable, in-depth findings, extending its applicability across the optometric profession.

Conclusion

The implementation of MC is crucial for preserving eye health and minimising the long-term risks of severe myopia. This study sheds light on the awareness and practices of optometrists in KwaZulu-Natal, South Africa, identifying the gaps and providing recommendations for evidence-based MC strategies in practice. Despite the concern expressed by optometrists on the rising cases of myopia, their overall awareness of MC interventions was poor. While many optometrists consider MC strategies on their patients such as patient education and MC-designed spectacle lenses, single-vision spectacles and under-correction are still being prescribed. Cost, practitioner education, poor confidence and experience are the key factors limiting MC uptake. Optometrists advised that with improved education and more cost-effective products, their activity in MC will improve.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

U.N., M.D., S.K., B.M., S.M., N.N., A.N., M.N., T.P. and L.S. was responsible for the conception or design of the work, the drafting of the article and the data collection. U.N. contributed to the critical revision of the article, as well as the final approval. All authors contributed to the article, discussed the results and approved the final version for submission and publication.

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Data availability

The data that support the findings of this study are available from the corresponding author, U.N., upon reasonable request.

Disclaimer

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References

1. Holden BA, Sankaridurg P, Smith EJ, Aller TA, Jong M, He M. Myopia, an underrated global challenge to vision: Where the current data takes us on myopia control. Eye. 2014;28(2):142–146. https://doi.org/10.1038/eye.2013.256
2. Grzybowski, A, Kanclerz, P, Tsubota, K, Lança, CC, Saw, S. A review on the epidemiology of myopia in school children worldwide. BMC Ophthalmol. 2020;20(1):1–11. https://doi.org/10.1186/s12886-019-1220-0
3. Chen, C, Cheung, SW, Cho, P. Myopia control using toric orthokeratology (TO-SEE study). Invest Ophthalmol Vis Sci. 2013;54(10):6510–6517. https://doi.org/10.1167/iovs.13-12527
4. Dhiman R, Rakheja V, Gupta V, Saxena R. Current concepts in the management of childhood myopia. Indian J Ophthalmol. 2022;70(8):2800–2815. https://doi.org/10.4103/ijo.IJO_2098_21
5. Jones D. Measure axial length to guide myopia management [homepage on the Internet]. Review of Myopia Management. 2020 [cited 2024 June 13]. Available form: https://reviewofmm.com/shouldnt-we-treat-axial-length-as-essential-in-treating-myopia/
6. Douglass A, Keller PR, He M, Downie LE. Knowledge, perspectives, and clinical practices of Australian optometrists in relation to childhood myopia. Clin Exp Optom. 2020;103(2):155–166. https://doi.org/10.1111/cxo.12936

7. Martínez-Pérez C, Villa-Collar C, Santodomingo-Rubido J, Wolffsohn JS. Strategies and attitudes on the management of myopia in clinical practice in Spain. J Optom. 2023;16(1):64–73. https://doi.org/10.1016/j.optom.2022.03.002
8. Shahzad MA, Khan HA, Arshad MS, et al. Knowledge, perspectives, and practice patterns of eye care providers in Pakistan regarding myopia. Pak J Med Health Sci. 2022;16(3):746. https://doi.org/10.53350/pjmhs22163746
9. Nti AN, Owusu-Afriyie B, Levi Osuagwu U, et al. Trends in myopia management attitudes and strategies in clinical practice: Survey of eye care practitioners in Africa. Cont Lens Anterior Eye. 2023;46(1):101597. https://doi.org/10.1016/j.clae.2022.101597
10. Wolffsohn JS, Calossi A, Cho P, et al. Global trends in myopia management attitudes and strategies in clinical practice–2019 Update. Cont Lens Anterior Eye. 2020;43(1):9–17. https://doi.org/10.1016/j.clae.2019.11.002
11. Yang A, Pang BY, Vasudevan P, Drobe B. Eye care practitioners are key influencers for the use of myopia control intervention. Front Public Health. 2020;10:854654. https://doi.org/10.3389/fpubh.2022.854654
12. Alanazi MK, Almutleb ES, Badawood YS, Kudam, MA, Liu M. Perspectives and clinical practices of optometrists in Saudi Arabia concerning myopia in children. Int J Ophthalmol. 2023;16(2):267–273. https://doi.org/10.18240/ijo.2023.02.14
13. McCrann S, Flitcroft I, Butler J, Loughman, J. Myopia Outcome Study of Atropine in Children (MOSAIC): Design and methodology. HRB Open Res. 2019;2:5. https://doi.org/10.12688/hrbopenres.12914.1
14. AOA survey shows nearly 70% of optometrists offer myopia management [homepage on the Internet]. Review of Myopia Management. 2020 [cited 2023 Mar 09]. Available from: https://reviewofmm.com/aoa-survey-shows-nearly-70-of-optometrists-offer-myopiamanagement
15. British Contact Lenses Association. Myopia control survey [homepage on the Internet]. BCLA. 2015 [cited 2023 Mar 29]. Available from: https://www.surveymonkey.com/r/JHLWGKP
16. Most optometrists offer myopia management services [homepage on the Internet]. Review of Optometry. 2022 [cited 2023 Mar 29]. Available from: https://www.reviewofoptometry.com/news/article/most-optometrists-offer-myopia-management-services
17. Yang A, Pang BY, Vasudevan P, Drobe B. Eye care practitioners are key influencer for the use of myopia control intervention. Front Public Health. 2022;29:854654. https://doi.org/10.3389/fpubh.2022.854654
18. Chaurasiya RK, Sutar S, Gupta A, Pandey R, Agarwal P. Knowledge, attitude, and practice of childhood myopia among Indian optometrists: A questionnaire-based study. Indian J Ophthalmol. 2023;71(3):951. https://doi.org/10.4103/IJO.IJO_2660_22
19. Faucher C. Developing healthcare practitioners' professional expertise through effective continuing education: Commentary. Internet J Allied Health Sci Practice (serial online). 2016;14(4):7. [cited 2024 June 03]. Available from: https://nsuworks.nova.edu/ijahsp/vol14/iss4/7
20. Wolffsohn JS, Flitcroft DI, Gifford KL, et al. IMI–myopia control reports overview and introduction. Invest Ophthalmol Vis Sci. 2019;60:M1–M9. [cited 2024 June 03]. Available from: https://www.myopiaprofile.com/articles/assessing-risk-of-myopia-onset-and-progression
21. Grifford, K. Assessing risk of myopia onset and progression [homepage on the Internet]. Myopia Profile. 2019 [cited 2024 June]. Available from: https://www.myopiaprofile.com/articles/assessing-risk-of-myopia-onset-and-progression
22. Chua WH, Balakrishnan V, Chan YH,. Atropine for the treatment of childhood myopia. Ophthalmology. 2006;113(12):2285–2291. https://doi.org/10.1016/j.ophtha.2006.05.062
23. Vitale S, Ellwein L, Cotch MF, Ferris FL, Sperduto R. Prevalence of refractive error in the United States, 1999–2004. Arch Ophthalmol. 2008;126(8):1111–1119. https://doi.org/10.1001/archopht.126.8.1111
24. Williams KM, Bertelsen G, Cumberland P, et al. Increasing prevalence of myopia in Europe and the impact of education. Ophthalmology. 2015;122(7):1489–1497. https://doi.org/10.1016/j.ophtha.2015.03.018
25. Jung SK, Lee JH, Kakizaki H, Jee D. Prevalence of myopia and its association with body stature and educational level in 19-year-old male conscripts in Seoul, South Korea. Invest Ophthalmol Vis Sci. 2012;53(9):5579–5583. https://doi.org/10.1167/iovs.12-10106
26. Ebrahim N, Karim F, Gasa M, Poonvaganum K, Gangat F, Van Staden DB. Public sector optometrists' perspectives on a decentralised model of clinical training for optometry in KwaZulu-Natal, South Africa. Afr Vis Eye Health. 2019;78(1):7. https://doi.org/10.4102/aveh.v78i1.489
27. Santodomingo-Rubido J, Villa-Collar C, Gilmartin B, Gutiérrez-Ortega R. Factors preventing myopia progression with orthokeratology correction. Optom Vis Sci. 2013;90(11):1225–1236. https://doi.org/10.1097/OPX.0000000000000034
28. Chung K, Mohidin N, O'Leary DJ. Undercorrection of myopia enhances rather than inhibits myopia progression. Vision Res. 2002;2(22):2555–2559. https://doi.org/10.1016/S0042-6989(02)00258-4
29. Wu MJ, Zhao K, Fils-Aime F. Response rates of online surveys in published research: A meta-analysis. Comput Hum Behav Rep. 2022;7:100206. https://doi.org/10.1016/j.chbr.2022.100206