Eye Care Professionals' Knowledge, Attitude and Practice (KAP) on Myopia Management Approach: A Global Review

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Citation

Mishra SK, Kumar N, Mahotra NB. Eye Care Professionals' Knowledge, Attitude and Practice (KAP) on Myopia Management Approach: A Global Review. *Kathmandu Univ Med J.* 2025; **Online First.**

ABSTRACT

Myopia has arisen as a major global public health issue, particularly in pediatric populations. The rising prevalence has inspired the development of a variety of evidence-based therapies, including pharmaceutical, optical, and behavioral approaches. A Knowledge, Attitude, and Practice study is conducted to assess and understand ECPs awareness, perceptions, and behaviors regarding a Myopia management. This highlights regional guidelines, professional training, adoption rate variability, and the perceived effectiveness of interventions like low-dose atropine, orthokeratology, multifocal contact lenses, and lifestyle counseling by drawing on recent studies and surveys carried out in different regions.

This review compiles global data on the Knowledge, Attitude, and Practice of Eye Care Professionals (ECPs) for myopia management and pinpoints any gaps, and make recommendations for improving clinical myopia management.

Multiple international surveys and research show significant variety in awareness, adoption, and implementation of modern therapies such as low-dose atropine, orthokeratology, multifocal lenses, and lifestyle changes. Despite high levels of awareness, practical implementation is variable due to reasons such as limited clinical training, financial constraints, and a lack of defined protocols. The results show that there are substantial knowledge gaps, varying attitudes and inconsistent clinical practices underscoring the necessity of additional training and awareness campaigns for Eye Care Professionals (ECPs).

This review emphasizes the importance of targeted educational initiatives, systematic policy support, and clinical infrastructure upgrades to close the knowledge-practice gap in myopia care.

KEY WORDS

Myopia, Eye Care Professionals; Knowledge, Attitude and Practice (KAP); Myopia management

INTRODUCTION

Myopia is defined as the spherical equivalent refractive error of ≤ -0.50 D and high myopia is defined as the spherical equivalent refractive error of < or = -5.00 D and 10% of the global population becomes high myopic by 2050.[1] By 2050, about half of the world's population is expected to suffer from myopia.[2] The frequency of myopia varies by race and geographic location with reports of 80-90% among young people in East Asia and 10-20% in Southeast Asia with prevalence reaching nearly 94% to 97% in some communities in China and South Korea in young adults aged 18-19 years.[3,4] As the prevalence of myopia increases, the prevalence of pathology associated with myopia, such as cataract, glaucoma, retinal detachment and myopic macular degeneration, are expected to increase the incidence of visual impairment and irreversible blindness across all severities of myopia.[2,5-7]

Rational of the Review

Myopia can cause medical, social, and financial issues that lower a person's quality of life.[8,9] As a result, finding effective myopia management strategies is becoming increasingly vital.[10] The myopia management techniques include Optical (glasses and contact lenses) pharmaceutical (Atropine), and lifestyle modifications (increasing time spent outdoors), have been researched and shown to be successful in controlling myopia.[11,12] Although there are

a number of myopia management techniques available, such as behavioral, pharmacological, and optical therapies, Eye Care Professionals (ECPs) continue to utilize them inconsistently.[14]

It is essential to improve ECPs' knowledge and communication abilities in order to promote the wider use of myopia management techniques.[13]

Many ECPs still use on traditional refractive correction, including single-vision glasses despite of the new evidence based interventions.[14] Variations in KAP among ECPs significantly influence the adoption of myopia management strategies. Though many ECPs are aware and willing to provide myopia management services, there are gaps in understanding the specific strategies and their effectiveness. This review collect the different studies done in different continents including different countries to highlights the current management strategies, gaps and the importance of continued education and a proactive approach to incorporating evidence-based myopia management into practice. The important findings, regional variations, and factors influencing the clinical decision-making of ECPs are highlighted in this global review, which methodically evaluates the literature on knowledge, attitude and practice (KAP) in relation to myopia therapy.

METHODS

This narrative review design collected all the global information and findings on eye care professionals' knowledge, attitude, and practice (KAP) about myopia management.

A complete literature search was carried out using PubMed and Google Scholar published from January 2015 to July 2024 was included.

The following key words were used for both the search strings and they were "Eye care professionals" OR "optometrists" OR "ophthalmologists" AND "myopia management" AND "knowledge" OR "attitude" OR "practice" OR "KAP" and Boolean logic as "Myopia AND Eye Care Professionals"

Inclusion criteria include peer-reviewed original research articles published in English, studies involving eye care professionals (optometrists, ophthalmologists, or vision technicians), studies assessing at least one component of KAP related to myopia management.

Exclusion criteria include non-English language publications, studies focused only on patient, parental, or public perceptions and duplicate studies or with incomplete data.

All retrieved records were imported into a reference management system, and duplicates were deleted. The whole text of possibly eligible studies was then reviewed. A pre-designed standardized data extraction form was used to obtain crucial information from each included study.

1. First author and publication year
2. Country/region
3. Eye care professionals surveyed
4. Method
5. Study design
6. Key Findings
7. Barriers and Gaps

Data was formed by using structured table and a transparent narrative synthesis framework to enhance reliability. Studies were classified and compared based on different Continents and countries including Study design, their key findings and Barriers/Gaps shown in table 1. Recurring themes, gaps, and new trends were discovered and explored to help ECPs understand the global landscape of myopia management. The thematic synthesis includes:

Theme 1: Knowledge of Myopia Management which includes awareness of evidence-based strategies any Knowledge gaps and regional variations in guideline familiarity.

Theme 2: Attitude Toward Myopia Control which includes risk perception, safety, and the importance of early intervention, confidence in prescribing newer treatments as well as Cultural and parental acceptance influences ECPs attitudes.

Themes 3: Practice Patterns which includes current clinical behaviors (risk classification, follow-up, and treatment selection), Barriers include cost, availability of diagnostic tools, regulatory status, and a lack of reimbursement.

Theme 4: Systematic and Professional Factors which includes regulatory and market factors influence access to therapies and training, ongoing education, and role clarity across professions and institutional/healthcare system preparedness to apply protocols.

RESULTS

The results section is descriptive and mixes global, regional, and country-level findings.

Global and Regional Findings

Global surveys indicate significant regional differences in the concern and practices related to myopia management. A web-based, self-administered survey was distributed to eye care professionals worldwide via pertinent professional associations in 2016, 2019 and 2022.[14] The questions asked were awareness of increasing myopia prevalence, perceived efficacy and adoption of available strategies, and reasons for not adopting specific strategies. Asia exhibited the highest levels of concern (9.0 ± 1.5 of 10) than other continents (range 7.7-8.2; $p \leq 0.001$). Myopia prevalence is substantially higher in Asia than in Europe, and extended

near-work, which requires focusing on close objects, is a main environmental factor that promotes increasing axial length and contributes to Asia's higher rate of myopia.

The perspective to investigate the preferred practice patterns of pediatric ophthalmologists around the world in order to slow the progression of myopia in their patients. The most frequent criterion for starting treatment was a myopic growth of at least one diopter per year (74.8%).[26] Eye drops were prescribed by 70% and the most commonly used atropine was 0.01% by 63.4%.[26] Eighty-six percent of the respondents suggested limiting screen time (60.2%), spending more time outside, and using smartphones less (63.9%).[26]

Africa

There is a disconnect between clinical practice and knowledge, as ECPs prescribe single vision glasses though being aware of different myopia correction choices.[15]

The study done in Kenya with relation to prescribing atropine to treat the progression of myopia in children between the ages of 4 and 12.[29] Ophthalmologists, optometrists, and ophthalmic clinical officers working in Kenya's public and private health systems participated in a cross-sectional mixed-method study and their Key findings and gaps as shown in Table 1.[29]

Asia

The study done about the KAP of myopia management among the ECPs in different Asian countries as in India, Pakistan , Israel and Singapore. The study in Israel examined the management of myopia and the standards used by eye care professionals (ECPs).[17] This gap reflects a difference in approach that may lead to inconsistent patient care.

In India Single-vision distance full correction (70.3%) was the most often used management strategy, even though the majority of optometrists found that Orthokeratology and low-dose (0.01%) topical atropine were effective treatment methods as shown in Table 1.[18,19]

The review study done in India was found that 22% of practitioners employed myopia control approaches.[20] The main obstacles included parents' ignorance (73%), practitioners' inadequate training (26%), parents' lack of education (34%), and the absence of treatment methods in different locations (18%).[20] Practices for managing myopia were not widely adopted and unavailability of treatment modalities in different parts of India (18%), lack of education (34 %,) and training (26%,) among practitioners, and lack of awareness among parents (73%) were the main obstacles to managing myopia.[20]

The study done in Singaporean eye care practitioners to know the self-reported practices on myopia management and the interaction between eye care practitioners and parents. Parents were asked to self-report their knowledge of myopia control products and their interactions with eye care professionals, while eye care professionals were asked to answer a questionnaire on their clinical practice behavior and opinions regarding myopia management. Parents were strongly encouraged to use myopia control measures by eye care professionals.[21]

The survey among the Eye care professionals was done in Pakistan on their knowledge, opinions and clinical practice regarding myopia. Cycloplegic refraction was the most often used refraction technique and only one-fourth of the professionals measured axial length, and 21% never assessed the lag of accommodation in binocular testing of myopes as well myopia greater than six diopters was the criterion for peripheral fundus examination.[28] It appears that a significant percentage of eye care professionals were unaware of contemporary ideas and do not apply new recommendations to their myopia treatment procedures.

Europe

Professional organizations disseminated a multilingual, cross-sectional online survey to eye care professionals throughout Europe to know the prevalence of myopia, perceived effectiveness, adoption of various myopia management techniques, and reasons for non-adoption were all evaluated.[22] Evidence-based myopia control techniques were being adopted with the most successful method was thought to be combined orthokeratology and low-dose atropine (60.8 ± 29.6), followed by orthokeratology alone (60.1 ± 25.0) and authorized soft contact lenses for myopia correction (55.9 ± 23.4) and the main barriers to prescribing myopia control techniques were lack of information or understanding (9.3%), treatment availability (11.4%), and cost (29.6%).[22]

The study done in different European countries like in UK, Netherland and Spain. Participant knowledge of available myopia management options, perceptions of how myopia management is being delivered in the UK, and any obstacles preventing ECPs from prescribing these management options in practice were all discussed in online focus groups with UK ECPs and the conversations were transcribed and subjected to thematic analysis.[24] 41 ECPs from primary and secondary eye care participated in focus groups and they felt that the UK's myopia management services were inconsistent, and that the biggest obstacle was financial treatment being costly and ECPs found it difficult to explain this to parents as shown in Table 1.[24]

The study on perspectives from Dutch patients and professionals on high myopia care to know and compare perspectives of patients and professionals about the high myopia care. A 17-item questionnaire about personal experience with myopia care was used to gather patient perspectives and a 12-item questionnaire with multiple-choice questions on work-related demographics, myopia care in daily practice, and need for improvement was distributed to practicing Dutch ophthalmologists.[25] Sixty-nine percent of patients were very concerned about their

Table 1. Global scenario of Knowledge, Attitude and Practice (KAP) of myopia management by ECPs

Country / Region	Study Design	Key Findings	Barriers/Gaps
Globally[14]	An online survey with self-administered, internet-based questionnaire	Single vision interventions to young myopes though clear guidelines for myopia management and progression	Despite these guidelines being available, many practitioners continue to utilize outdated methods, indicating a gap in communication and education regarding these guidelines.
Asia[14]	An online survey with self-administered, internet-based questionnaire	Single Vision corrections though the majority found that the effective treatment was Orthokeratology (60.4±22.9), followed by pharmaceutical approaches (51.7±24.7) and approved myopia control soft contact lenses (43.4±23.9%)	A gap between knowledge and practical implementation
Africa[15]	An online survey with self-administered, internet-based questionnaire	64.3 % aware of several Myopia control options but Majority prescribed Single Vision	Discrepancy Between Awareness and Practice: ECPs are aware of multiple myopia control options but primarily prescribe single vision lenses, indicating a gap between knowledge and clinical practice.
Spain[16]	An online survey with self-administered, internet-based questionnaire	Single Vision glass or Contact Lens though the most successful therapies were thought to be combined therapy and Orthokeratology and those adopting myopia control increased job satisfaction and patient loyalty	Knowledge Gap including varying levels of education or exposure to the latest evidence-based practices. A gap might exist between those who have received formal training in newer myopia control techniques (such as atropine or Orthokeratology) and those who have not.
Israel[17]	An online survey with self-administered, internet-based questionnaire	Both the professions recommended outdoor activities whereas Ophthalmologists (95%) focused more on therapeutics (Atropine) Optometrists on Optical interventions (40%), Peripheral blur contact lenses (38%), Multifocal lenses (24%) and Orthokeratology (11%). Myopia management is more commonly practiced by optometrists compared to ophthalmologists	Gap reflects a difference in approach between the two professions that may lead to inconsistent patient care
India[18,19]	An online survey with self-administered, internet-based questionnaire	Single Vision distance despite knowing orthokeratology and atropine (0.01%) as the more effective interventions. Non- Cycloplegic was preferred and majority were aware of the connection between high myopia and its complications.	Low Adoption of Advanced Treatments: Despite knowing about effective therapies like orthokeratology and low-dose atropine, optometrists are not routinely using them in practice due to medico legal issues, lack of evidence-based clinical guidelines, and limited consultation time
Singapore[21]	An online survey with self-administered, internet-based questionnaire	Prescribed Atropine by ECPs, Parents limit their children's exposure to outdoor activities (52.5%) and near-work (54.5%) and 78.8% of parents chose to follow eye care professionals, who had the most influence on their decision of vision correction.	Education gap and lack of hands-on workshops on myopia management interventions.
Saudi Arabia[23]	An online survey with self-administered, internet-based questionnaire	Single Vision and Outdoor activities were prescribed for the Myopia Management.	Not adopting Evidence-based myopia management due to insufficient support, lack of experience and lack of availability
UK[24]	Online Focus group with UK ECPs	Single Vision glass prescribed by ECPs. Most of the ECPs have sufficient knowledge but lack the confidence in decision making and practical implementation.	UK's myopia management services are inconsistent, and that the biggest obstacle is financial treatment is costly
Australia[27]	An online survey with self-administered, internet-based questionnaire	Single vision distance ,Progressive Addition spectacle Lens and Outdoor activities though they were aware of Orthokeratology, low-dose (0.01%) topical atropine, and soft peripheral defocus contact lenses as three potentially more effective therapeutic interventions,	Evidence based management were not routinely adopted due to barriers such as lack of regulatory approval and potentially unclear clinical guidelines.
Pakistan[28]	An online survey with self-administered, internet-based questionnaire	Single vision spectacles, cycloplegic refraction and dilated retinal fundus though they had Knowledge and applications for Ortho-k lenses, low-dose atropine and progressive addition glasses and future alternative for conventional therapies	A number of barriers were suggestive of systemic issues in UK eye care, including commercial pressures, a lack of funding from the National Health Service, and a lack of public awareness of pediatric eye care
Kenya[29]	A cross-sectional mixed methods	Atropine prescribed between 4 to 12 years of children. All pediatric ophthalmologists had a more positive attitude toward prescribing atropine for children with progressive myopia than optometrists, ophthalmic clinical officers, and general ophthalmologists.	Practice Gap between the ECPs such as only pediatric ophthalmologists prescribed atropine for children with myopia progression but other cadres such as optometrists and general ophthalmologists, utilized atropine mainly for pediatric refraction.
Europe[30]	An online survey with self-administered, internet-based questionnaire	Outdoor time was found to have a significant protective effect (85%), while atropine eye drops were the most commonly used treatment (60%).	The study does not reflect practices of general ophthalmologists or other healthcare providers managing myopia as well as does not explore why certain interventions (e.g., DIMS glasses or myopia-reducing contact lenses) are underutilized

own gradual visual loss and Sixty-four percent of patients regarded the ophthalmologists' performance of care as good or satisfactory.[25] According to 69% of the ophthalmologists, outpatient clinics shouldn't routinely assess asymptomatic myopic patients.[25] These surveys showed that there is a need to improve the clinical treatment currently provided to individuals who are extremely myopic. In Spain young or progressing myopes were still prescribed single-vision distance glasses or contact lenses by about half of practitioners and their findings as well as barriers given in Table 1.

The European Paediatric Ophthalmology Society (EPOS) members were sent an online survey consisting of eleven main questions asking about the occupation, place of employment, Preventive measures, recommendations for managing myopia which included reading distance and near work, optical tools, such as the use of Defocus Incorporated Multiple Segments (DIMS) glasses, near additions, or contact lenses, atropine eye drop and their findings and gaps given in Table 1.[30]

Australia

Australian optometrists' knowledge of myopia, including its natural history and correlations with vision-threatening ocular diseases, self-reported clinical diagnosis and management strategies for childhood myopia, interactions with adult caregivers, and the use of information to guide their practice were collected.[27] Childhood myopia with a preference for non-cycloplegic refractive measurements and their management as well as Key findings and gaps/ barriers shown in Table 1.

Barriers and Gaps

Myopia management, according to practitioners, boosted patient loyalty, increased practice revenue, and improved job satisfaction. Numerous practitioners still employ antiquated methods even after these standards have been made available, which suggests a communication and knowledge gap about them. From the global study it was found that Skepticism about myopia management is still prevalent worldwide, with variations both within and between continents.

Despite increased knowledge of myopia control techniques, the results show that many ECPs continue to use traditional correction techniques instead of proactive management and the barriers identified as lack of knowledge and training, limited awareness of myopia management options, financial constraints, insufficient Support from workplace, lack of high-quality evidence on safety and efficacy, absence of clinical guidelines, lack of regulatory approval for interventions, concern over medico-legal aspects of interventions other than spectacles as shown in Table 1.

In order to close knowledge gaps and increase the adoption rates of effective interventions, training programs and seminars are required. It's also necessary to investigate how regulatory policies support myopia control measures.

DISCUSSION

The review show that eye care professionals' (ECPs) knowledge, attitudes, and clinical procedures surrounding myopia management vary greatly around the world. Despite growing awareness of the rising prevalence of myopia, particularly among pediatric populations, evidence-based management methods are neglected. Many practitioners continue to rely on single-vision correction, despite the success of newer therapies such as low-dose atropine, orthokeratology, and peripheral defocus contact lenses.

One of the primary topics arising from this review is the disparity between knowledge and practice. While many countries' ECPs are aware of myopia management measures, their implementation in clinical settings varies. A lack of formal training, low professional confidence, the absence of regulatory guidelines, and patient or parental distrust may all contribute to this disconnect. In India and Spain, for example, ECPs were aware of modern interventions but continued to prescribe traditional correction methods because to parental reluctance, high prices, and restricted treatment access.

Regional disparities are noticeable. Asian countries such as Singapore and India exhibited higher levels of awareness, which could be attributed to East and Southeast Asia's significant myopia prevalence. However, even in these areas, the adoption of modern approaches is hampered by costs, access, and training. In contrast, European ECPs identified financial constraints and institutional limitations, such as a lack of public healthcare support, as important impediments. There was underrepresentation of African and Middle Eastern countries, including Kenya and Saudi Arabia, identified insufficient professional training and a lack of treatment availability as major challenges.

Parental and societal awareness play a vital effect. According to research from Singapore and Europe, parents frequently lacked knowledge regarding myopia control alternatives and depended mainly on ECPs for help. This emphasizes the significance of patient education as a supplementary method to professional development. Furthermore, the findings from the Netherlands and the United Kingdom highlighted the significance of systemic and policy-level support, such as funding for pediatric eye care and the integration of myopia control into national health systems.

Despite progress in research and international consensus criteria, implementation remains fragmented. The reasons are numerous, ranging from a lack of clinical infrastructure to a reluctance to prescribe therapies with insufficient long-term safety data or insurance coverage. Concerns about the medico-legal ramifications of off-label medicines like atropine add to clinical hesitancy.

Another significant concern is the disparity in diagnostic and treatment criteria, such as the underutilization of cycloplegic refraction and axial length measurements, particularly in countries like Pakistan. These variations highlight the need for more specific clinical protocols and standardized instruments to track myopia progression.

CONCLUSION

In conclusion, even though the significance of managing myopia is becoming more widely recognized, a number of obstacles still stand in the way of ECPs actively participating in myopia control measures. Most of the ECPs prescribed Single vision distance though aware of different types of Evidence Based Myopia Management options. To increase the global adoption of efficient Evidence Based Myopia Management techniques, there should be Standardized Myopia Management Protocol and mandatory ECPs training Modules that must be addressed by focused education, training, and resource distribution as well as provision of Myopia Management in insurance System.

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