Knowledge, Attitude, And Practice Regarding Pediatric Eye Health Among Parents, Guardians, And Eye Health Professionals: A Narrative Review

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Abstract
Pediatric eye health is a critical yet under-recognized aspect of public health, particularly in developing regions. This study summarizes recent findings about the knowledge, attitudes, and practices related to pediatric eye health among parents, guardians, and eye health professionals. Studies consistently show that Parents frequently lack important information regarding prevalent pediatric eye disease, influenced significantly by their educational and occupational backgrounds. Misconceptions about the causes and implications of childhood eye disorders are prevalent, underscoring the need for targeted educational programs. Despite these knowledge gaps, parents generally exhibit positive attitudes toward improving their understanding and practices regarding pediatric eye care. However, practical barriers, like restricted access to services and financial constraints, hinder proactive health-seeking behaviors.
Eye health professionals play a pivotal role in early detection and management, yet there is a notable variation in their knowledge and practices, highlighting the need for continuous professional development. Factors related to geographical and population, such as financial standing and urban-rural differences, significantly impact knowledge attitude and practice, with cultural influences further shaping perceptions and actions towards pediatric eye health.
This review emphasizes the importance of comprehensive educational campaigns, increased accessibility to eye care services, and policy advocacy to address the current challenges in pediatric eye health. By enhancing knowledge attitude and practice among all stakeholders, we can significantly improve pediatric eye health outcomes and contribute to the overall well-being and development of children globally.

Key Words: KAP: Knowledge, Attitude and Practice. RE: Refractive Error. Eye health awareness.

Introduction

Pediatric eye health is a critical area of public health, yet it remains under-recognized, particularly in developing regions. Understanding these knowledge attitude and practice factors is vital for creating efficient programs and regulations meant to enhance pediatric eye care.
Numerous studies have highlighted the inadequate knowledge and misconceptions among parents and guardians regarding common pediatric eye conditions. Parents frequently don't have the necessary understanding of pediatric eye diseases, which is further influenced by their educational and occupational backgrounds,[1,2] Similarly, the prevalence of misinformation among parents about the causes of childhood eye disorders, underscoring the requirement for targeted educational programs.[3]
The attitude of parents and guardians towards pediatric eye health are generally positive, indicating a willingness to improve their understanding and practices. However, practical barriers such as accessibility and cost of eye care services often hinder proactive health-seeking behavior.[4] Eye health professionals play a pivotal role in the early identification and management of pediatric eye conditions while pediatricians and other health professionals generally exhibit good practices and positive attitudes towards pediatric eye care,[5] where the outcomes of previous studies are variable regarding knowledge, practice, and attitude among parents.[6-11]
In summary, enhancing the knowledge attitude practice of parents, guardians, and eye health professionals is crucial for improving pediatric eye health outcomes. Comprehensive educational programs, increased accessibility to eye care services, as well as ongoing training for healthcare professionals are recommended to address the current gaps and challenges in pediatric eye health care.
The results of this review are compiled from various studies to provide a thorough review of the current state of knowledge attitude and practice in different regions and among different demographics.

Methodology

To comprehensively assess the Knowledge, Attitudes, and Practices Regarding Pediatric Eye Health among Parents, Guardians, and Eye Health Professionals,' a narrative review approach was undertaken. a systematic approach grounded in an extensive review of existing literature was undertaken. Initially, a pool of 80 peer-reviewed articles, reports, and other scholarly works was identified based on their relevance to pediatric eye health through a detailed search and screening process using key scientific databases and established inclusion criteria. From this pool, a refined selection of 50 articles was made, following a rigorous evaluation process focused on quality, thematic relevance, and data comprehensiveness. Criteria for selection included publication recency, evidence strength, methodological rigor, and direct applicability to pediatric eye health challenges and interventions. The literature review served as a foundation for understanding prevailing patterns, gaps, and evidence-based practices in the field.

Selection of Literature

The literature selection process adhered to a structured protocol to ensure inclusivity, relevance, and academic rigor:

1. Data Sources: Peer-reviewed journals, professional guidelines, government health reports, and key publications from recognized institutions were systematically searched. Key databases included PubMed, Google Scholar, ScienceDirect, and specialized ophthalmology and optometry repositories.

2. Search Strategy: A combination of relevant keywords such as pediatric eye health, parental attitudes, eye care practices, and health professional knowledge was used to identify pertinent works.

3. Inclusion and Exclusion Criteria: Articles were included if they met the following criteria: Focused on pediatric eye care, health attitudes, and related practices. Published within the past 20 years to ensure contemporary relevance. Peer-reviewed and written in English. Research studies, review articles, or guidelines that directly pertained to parents, guardians, and eye health professionals. Articles were excluded if they primarily addressed adult-only populations, did not emphasize eye health, or lacked sufficient methodological quality.

Data Extraction and Analysis

For each selected work, key data points were extracted, categorized, and analyzed:

1. Knowledge: Studies evaluating awareness levels and understanding of pediatric eye health issues among parents, guardians, and healthcare providers.

2. Attitudes: Research that explored perceptions, beliefs, and attitudes toward pediatric eye health and care practices.

3. Practices: Documentation of practical behaviors and interventions by parents, guardians, and professionals in managing children's eye health.

Expert Consultation and Validation

To contextualize and further validate the findings derived from the literature review, an expert panel was convened after the completion of the initial literature synthesis. This panel comprised pediatric ophthalmologists, optometrists, and public health specialists with extensive experience in pediatric eye care. Their role included:

- Reviewing and providing feedback on synthesized findings from the literature review.
- Contributing clinical insights and professional perspectives that supplemented the research.
- Engaging in structured discussions to corroborate or refine interpretations of the data.

Consensus Development

The expert panel discussions were segmented into key thematic areas:

1. Parental and Guardian Knowledge and Attitudes: Evaluation of existing awareness campaigns, educational outreach, and cultural influences.

2. Barriers to Effective Pediatric Eye Care: Identifying obstacles faced by parents, guardians, and healthcare providers.

3. Best Practices and Professional Strategies: Consensus on evidence-based approaches to pediatric eye care, outreach, and education.

Discussions were moderated to ensure inclusive participation, and all views were documented. Where divergent perspectives emerged, additional literature was examined to seek clarity. Unresolved disagreements were documented, with majority opinions forming the basis of the synthesized conclusions.

Finalization and Peer Review

The synthesized review and expert insights were collated into a comprehensive review article. The final document underwent peer review by a subset of experts to ensure clarity, accuracy, and relevance before dissemination.

Result

The studies conducted across various regions reflect a concerning pattern of limited awareness among parents regarding pediatric eye health. In South India and Chennai, poor parental knowledge was often linked to their education level, occupation, and cultural beliefs, affecting health-seeking behavior for eye conditions. Similar trends were evident in Baluchistan and Tamil Nadu, where myths and misconceptions, such as those surrounding strabismus, often led to delayed diagnosis and inappropriate treatment practices. In Saudi Arabia and Syria, there was inadequate awareness of childhood eye conditions like amblyopia and congenital glaucoma, with education and targeted campaigns being recommended to bridge these gaps. Conversely, Ghana highlighted a positive outlook among pediatricians, though their treatment of ocular diseases required improvement. The influence of socioeconomic status and urban-rural disparities was evident, with better awareness and practices seen in urban areas due to greater access to healthcare services. Details finding are shown in table no. 1

Table 1 Awareness about eye health:

Sr. No.	Study Location	Authors	Year	Findings
1.	South India.	Pawar N, Ravindran M, Fathima A, Ramakrishnan K, Chakrabarthy S, Aparna K, Uduman MS.	2023	They Found that parents generally had poor knowledge about pediatric eye diseases, significantly influenced by their education and occupation. Despite this, parents exhibited a constructive mindset toward enhancing their understanding and treatment practices.
2.	Chennai, India	Senthilkumar D, Balasubramaniam SM, Kumaran SE, Ramani KK.	2013	Lack of knowledge about pediatric eye diseases and their symptoms among parents in Chennai. This knowledge gap is a barrier to health-seeking behavior, underscoring the need for public awareness initiatives focusing on the risk factors.
3.	Saudi Arabia	Al Mazrou, Abdulrhman; Alsobaie, Nasser A.; Abdulrahman, Amro Khalid Bin; AlObaidan, Omar	2017	Lack of awareness among parents about common childhood eye conditions and appropriate eye care practices. Thus, awareness campaigns should be targeting both parents with a focus on mothers.
4.	Tamil Nadu state, southern India.	Nirmalan, Praveen K Sheeladevi, Sethu Tamilselvi, Velayutham BA; Victor, Arockia C L MA, Mphil; Vijayalakshmi, Perumalsamy Rahmathullah, Lakshmi.	2004	Data on specific diseases exposed a number of significant myths that this demographic held. The most crucial facts were that strabismus cannot be treated and does not cause vision loss. Moreover, strabismus was seen as lucky charm. The talks also highlighted how different doctors' recommendations for treatment are from one another.- (Respondents noted that the doctor consulted determined the course of treatment for cataracts or strabismus)
5.	Baluchistan	Nasir A, Riaz R	2018	The literacy level of parents is more important for the perception of disease, but most parents are not well aware of eye disease due to lack of education and resources. Mostly parents used self-medication for the treatment of eye disease in this area.

6.	Ghana	Bonsaana GB, Yakubu RC, Wanyama PS, Nuertey BD	2023	Pediatricians were well-informed about childhood eye problems and had a positive outlook on them. Their therapy of childhood ocular diseases was subpar, nevertheless.
7.	Makkah, Saudi Arabia	Almogbel AH, Al Shanbari N, Alibrahim IS, Alsaadi SS, Algarni HS, Alshanbari AS, Goweda R	2022	It is recommended that awareness and education programs be implemented to increase parents' knowledge of juvenile eye illnesses and change their perspectives on the same. Currently, parents are not well-informed about common pediatric eye condition and child care practices.
8.	Madinah Saudi Arabia	Surrati AM, Almuwarraee SM, Mohammad RA, Almatrafi SA, Murshid SA, Khayat LI, Al-Habboubi HF.	2021	Regarding pediatric eye diseases, parents' levels of knowledge, practice, and attitude were inadequate. Utilizing the media preferences of parents to promote health may enhance the eye care of children in the research area.
9.	Damascus, Syria.	Al-Mamar K, Othman N, Salman A	2022	Amblyopia, which about 70% of the participants had low awareness of, it was discovered that the participants' knowledge of amblyopia was relatively weak. However, they were well-aware of refractive errors and congenital glaucoma.
10.	Egypt	El-Mayah E, Zein MM, Hassan BE, Abdelghany EO.	2023	Parents were thought to know a lot about squint, refractive problems, and nasolacrimal duct obstruction, but not so much about amblyopia, cataracts, retinopathy of prematurity (ROP), or glaucoma. It was revealed that parents' knowledge of prevalent pediatric eye disease and the value of early eye screening was inadequate.
11.	Saudi Arabia	Almazroa A, Almatar H, Alduhayan R, Albalawi M, Alghamdi M, Alhoshan S, Alamri S, Alkanhal N, Alsiwat YJ, Alrabiah S, Aldrgham M.	2020-2022	There are strong correlations between the effects of eye illnesses on quality of life and their delayed identification. As a result, it's critical to discover eye disorders early and raise patient knowledge of them and available treatments.
12.	Saudi Arabia	Alshammari LK, Alaradi LA, Alanazi AM, Almishali FF, Alabdullatif NH, Ali A	2023	Parents have low levels of knowledge about pediatric eye conditions, primarily glaucoma and cataracts. Conversely, parents showed a great degree of interest in their children's visual assessment.

Discussion

Knowledge of Pediatric Eye Diseases

General Knowledge

Parents' knowledge about pediatric eye care is inadequate, indicating they require for focused awareness initiatives.[12,13] While parents were aware of common childhood eye problems, many were misinformed about their causes, indicating a need for educational programs to address these misconceptions3. Knowledge about eye condition such as amblyopia, strabismus, and refractive errors varies widely. Parents in the Indian subcontinent had misconceptions about strabismus, leading to delayed diagnosis and treatment.[14] Similarly low awareness rates of amblyopia and its implications, despite high levels of education among the participants. These results imply that particular educational campaigns focusing on prevalent eye conditions are crucial.[12,13,15,16]

Disease-Specific Knowledge:

Several studies highlight a significant lack of knowledge among parents and guardians regarding pediatric eye diseases. Knowledge about pediatric eye diseases is generally poor among parents, significantly influenced by their educational and occupational backgrounds.[1,2,5]

Professional Knowledge

A wide variety of information regarding pediatric eye illnesses, which reflects a notable variation in the methods used to identify and treat these conditions[16]. Similar to this, there is potential for improvement in consistent practices given the wide range of perspectives and expertise of pediatric eye disorders.[18] The knowledge attitude practice of public sector eye health workers, revealing a strong awareness but variable implementation of eye health practices, focus on the stakeholders involved in preschool vision screening, identifying gaps in availability, awareness, and perceptions, which impact the effectiveness of early vision screening programs.[19] Due in large part to restricted access to eye health treatments, there are notable differences in parental awareness and proactive management of juvenile eye health disorders in distant places. These findings underscore the necessity for improved education resources and resource allocation to enhance both professional knowledge and the practical implementation of pediatric eye health practices globally.[20]

Some pediatricians had varying levels of understanding about childhood eye disorders, with many lacking comprehensive knowledge about certain conditions and need for better comprehension of retinopathy of prematurity, in order for continuing medical education initiatives to be beneficial.[21,21]

Attitudes toward Pediatric Eye Health

Positive Attitudes: Despite the general lack of knowledge, Research into pediatric eye health reveals a generally positive attitude between various groups, including parents, guardians, and eye health professionals towards pediatric eye diseases and managing eye issues.[1,5,22] School students generally had a good attitude towards wearing spectacles, although misconceptions still persisted.[4] This positive trend extends to healthcare providers; for example, pediatric and ophthalmology clinic attendees at Hospital show a solid grasp of strabismus, reflecting an informed and supportive attitude.[23]

Furthermore, Saudi parent hold favorable perspectives on childhood refractive errors and the importance of spectacle wear, indicating a constructive attitude towards preventive eye care.[24] This positive outlook is also evident among teachers and school nurses, who display a supportive attitude towards the management of refractive errors and amblyopia in children.[25,26] This collective positive attitude among parents, healthcare professionals, and educators underscores a growing recognition of the importance of pediatric eye health, fostering an environment where proactive and informed approaches to eye care are increasingly prevalent.

Barriers and Misconceptions

The review of barriers and misconceptions related to pediatric eye health reveals several challenges faced by parents, guardians, and eye health professionals Parents often believed incorrect causes of eye diseases, such as excessive carbohydrate intake or reading at night.[27] Primary reason for eye exams among children was the presence of symptoms, indicating a response that is more reactive than proactive to eye health.[28] There are some studies shows awareness about routine eye screening, significant misconceptions persists about the importance of childhood blindness, its preventability and frequency of such screenings, which affects early detection and treatment.[29,30] additionally, parents' health behaviors and knowledge about protecting their children's eye health are often inadequate, contributing to a broader issue of preventive care.[31]

Identification of significant gaps in parents' awareness and perceptions of children's eye diseases, highlighting a widespread lack of understanding that impedes timely intervention and causes of childhood visual impairment.[32] This is compounded by logistical and financial constraints, which further inhibit effective management of visual impairments.[28] Similarly, misconceptions about refractive errors and barriers to spectacle use are prevalent among patients, indicating a need for better education and resources to overcome these obstacles.[33] This array of barriers and misconceptions underscores a critical need for improved resource allocation to bridge gaps in understanding and access to pediatric eye care.

Practices Regarding Pediatric Eye Health

Preventive Practices: Preventive practices, such as regular eye exams and early screening, are essential for maintaining pediatric eye health. However, many studies report low levels of such practices among parents. The study found that mothers in rural regions often lacked the knowledge to identify early symptoms of eye conditions, leading to delayed treatment.[34] Whereas significant proportion of parents failed to complete their children's vision screenings, primarily due to a lack of awareness and understanding of its importance.[35] Nigerian parents frequently lack knowledge about the importance of routine eye examinations, which contributes to late diagnoses and suboptimal management of eye conditions in children3. Similarly, in Saudi

Arabia parents are often unaware of the benefits of early detection and regular eye check-ups, which affects their practices regarding spectacle wear and eye health maintenance.[24] In public sector eye health workers in, despite their knowledge, face systemic challenges that limit their ability to promote and practice preventive eye care effectively[18]. This issue is echoed, that limited resources and infrastructure in Saudi Arabia hinder the implementation of comprehensive eye health programs, impacting preventive care.[21]
In light of these findings, it is clear that improving preventive practices requires a multifaceted approach, including enhancing parental education about the importance of early eye exams, addressing systemic barriers, and strengthening the training and resources available to eye health professionals. Effective strategies should focus on increasing awareness and accessibility of eye care services, as well as fostering positive attitudes towards preventive measures to ensure better eye health outcomes for children.

Treatment Practices: Studies implies that while some parents demonstrate a comprehension of the significance of timely intervention, many still exhibit gaps in knowledge about specific eye diseases and their treatments. For instance, a general awareness of eye diseases, many parents are unfamiliar with the appropriate treatments and fail to seek timely medical help for their children3. Similarly, in Saudi Arabia, although there is a growing awareness of eye care, practical knowledge about effective treatment options remains limited among parents and accessibility and affordability of eye health services were major barriers to effective treatment of refractive error among children.[36,37,18] This issue is echoed in the findings that delays in treatment due to late detection of ocular diseases significantly impact the quality of life for patients, underlining the require for improved pre detection and intervention strategies.[38]
Moreover, cultural perceptions and systemic barriers play a vital role in shaping treatment practices. For instance, in remote areas of Baluchistan, cultural attitudes and lack of awareness about treatment options hinder effective management of eye diseases and parents often resorted to self-medication due to a lack of resources and instruction.[20] This is supported further that cultural beliefs can influence both the acceptance of treatment and the adherence to prescribed interventions.[31]
Overall, improving treatment practices for pediatric eye health requires a multifaceted approach. Enhancing parental knowledge about eye disease management, addressing systemic barriers that affect health professionals, and overcoming cultural impediments are essential steps towards achieving better outcomes for children. This comprehensive strategy will help ensure that timely and effective treatments are accessible and implemented, ultimately leading to improved eye health for children across different regions.

Professional Practices: Eye health professionals generally adhere to recommended practices, but there is room for improvement. Pediatricians in Kenya had appropriate referral practices for children with eye conditions, but their knowledge on specific disorders needed enhancement.[16] Workshops and educational programs for pediatricians could improve their understanding and management of pediatric eye diseases.[18,21]
In South Africa, public sector eye health workers exhibit varying degrees of knowledge about eye health, which affects their ability to deliver consistent and effective care. In Saudi Arabia, pediatricians generally possess a good understanding of common eye disorders but may lack comprehensive knowledge regarding the latest treatment guidelines and best practices.[38] This highlights a need for continuous professional development to bridge knowledge gaps and improve patient outcomes.
However, in Ghana, where there are few preschool vision screening programs available. The study notes that while there is some awareness among stakeholders about the importance of early vision screening, practical implementation is hindered by resource constraints and inadequate infrastructure.[19] Overall, these studies collectively suggest that improving professional practices in pediatric eye health requires a concerted effort to enhance training, provide adequate resources, and ensure the continuous professional development of eye health professionals.

Regional and Demographic Variations
Socioeconomic Factors: Studies indicate that socioeconomic factors significantly influence KAP regarding pediatric eye health. In Ethiopia parity and attendance at prenatal clinics were major predictors of knowledge gaps among postnatal mothers.[39] In Saudi Arabia, higher educational attainment was associated with better knowledge and attitudes towards children's eye care.[28]
In South India, socioeconomic status was closely linked to parental awareness about visual problems in children, with lower awareness levels found among families from less affluent backgrounds.[1] Similarly, socioeconomic barriers often prevent parents from accessing timely eye care, affecting their ability to manage children's eye health effectively.[3] In Swaziland also found that limited financial resources restricted parents' ability to seek regular eye screenings and treatments for their children.[40] In Kenya, limited resources and economic constraints hindered pediatricians from pursuing continuous professional development and implementing best practices. This gap in training and resource availability often results in varying standards of care, particularly in low-income settings[16] Socioeconomic disparities affect both the accessibility of eye

care services and the level of awareness among professionals. In regions with higher socioeconomic status, there is generally better access to advanced eye care facilities and more up-to-date knowledge, compared to regions with lower socioeconomic status where such resources are scarce.[21]

Urban vs. Rural Differences: There are notable differences in knowledge, attitude and practice between urban and rural populations. Here are the comparison and Challenges in Pediatric Eye Health between Urban and Rural Areas in Table number 2.

Table 2 Differences (Urban vs. Rural)

Area	Awareness and Knowledge	Attitudes	Practices	Challenges/Barriers
Urban	Higher levels of awareness and knowledge due to better access to information, healthcare services, and educational programs2,4,5.	Positive attitudes towards eye health, more likely to seek professional help and adhere to treatments due to frequent exposure to healthcare professionals and health education campaigns[16,].	More proactive in seeking eye care for their children with regular check-ups and early intervention facilitated by the availability of specialized eye care facilities[38,15].	Challenges include misinformation through social media and high healthcare costs[10].
Rural	Significantly lower awareness and knowledge, often lacking basic understanding of eye diseases[20,25,40].	Negative attitudes towards eye health due to cultural beliefs and stigma, leading to delayed treatment and neglect of symptoms[14].	Mostly reactive practices, seeking help only when symptoms become severe, exacerbated by lack of nearby healthcare facilities[30.34].	Major barriers include limited access to services, lack of transportation, and financial constraints[19,37].

Cultural Influences: Cultural beliefs and practices also play a major role in shaping knowledge attitude and practice. Misconceptions about the causes of eye diseases were prevalent among parents, influenced by cultural beliefs3.[27] The need for culturally sensitive awareness campaigns to address these misconceptions and improve knowledge attitude practice.[24] This is consistent with findings highlight how cultural attitudes can affect perceptions of and actions towards childhood eye health, including the reluctance to engage in preventive practices.[10,14,20,41]

Gap The gaps observed in studies highlight the need for targeted educational interventions and better accessibility to eye care services across diverse populations.
This include: Across different regions, there is a variability in parental understanding of pediatric eye conditions, with gaps particularly noted in awareness about conditions such as amblyopia, refractive errors, and strabismus. Socioeconomic factors and cultural beliefs heavily influence parents' KAP. Rural areas and communities with lower socioeconomic status tend to have lower awareness levels and reduced access to preventive care and treatment. Variability in knowledge and practices among healthcare professionals, including pediatricians, indicates the need for consistent training and professional development to bridge gaps in the management of pediatric eye health. There is a need for focused public health campaigns and school-based interventions to promote early screening, preventive practices, and accurate knowledge dissemination about pediatric eye diseases. Logistical and financial barriers in many regions restrict access to eye care, which is critical for timely treatment and follow-up of pediatric eye conditions.

Recommendations for Improving KAP

Educational Campaigns: Educational campaigns are essential for improving knowledge, changing attitudes and practice towards pediatric eye health. Targeted awareness campaigns, particularly those utilizing social media and other preferred communication channels, can significantly enhance knowledge and practices among parents and guardians.[1,13,42] Increasing parents' awareness of children's eye diseases, strabismus and amblyopia through targeted educational campaigns.[2,3,26] Training of primary school teachers on refractive errors can improve early detection[25]. Community-based programs to enhance knowledge among parents in Saudi Arabia.[5,22] and Consistent training for eye health professionals, to enhance modern techniques.[18] Comprehensive, culturally sensitive campaigns can bridge gaps in knowledge and practices across various regions.

School-Based Interventions and Training Programs: Training programs for eye health professionals and Teachers can address knowledge gaps and improve practices. The significance of providing instructors with training so educator may identify early indicators of eye issues and send pupils for the proper care. Integrating vision screening into school health programs can also ensure early detection and treatment of eye conditions4,[25,41]. Workshops and continuing medical education programs to enhance the understanding and management of pediatric eye diseases among pediatricians and other healthcare providers[5,16,18,38]. To enhance Knowledge, Attitude, and Practices regarding pediatric eye health by targeted awareness campaigns for parents2,[43].
To enhance Knowledge, Attitude, and Practices regarding pediatric eye health, some key recommendations have emerged:

- **Community Outreach**: Strengthen community outreach and parental engagement initiatives to address gaps in knowledge[24,27,44].
- **Professional Training**: Enhance training for eye health professionals on best practices for managing and educating about pediatric eye conditions[18,24].

Policy and Advocacy: The need for national programs and policies that support routine vision screening and provide affordable eye care services[24,5]. Advocacy efforts should focus on removing barriers to access, such as cost and availability of services, particularly in underserved regions.
Enhanced Education: Incorporate comprehensive eye health education into school and community programs to improve parental awareness and attitudes[1,2].
Policy Development: Implement policies promoting routine vision screening and early detection practices[24,42].
Advocacy and Outreach: Increase outreach efforts and public campaigns to address knowledge gaps and reduce barriers to accessing eye care[24,45 ,46,47].
Training for Professionals: Provide ongoing training for eye health professionals to enhance their ability to educate parents effectively[18,48].

Conclusion

In conclusion, this study reiterates existing knowledge regarding significant gaps in parents' and guardians' understanding of pediatric eye health, particularly in relation to common conditions like amblyopia, strabismus, and refractive errors. It highlights that despite positive attitudes toward eye care, barriers such as financial constraints and misconceptions hinder proactive health-seeking behaviors. What is new in this manuscript is the emphasis on regional and socioeconomic disparities, showing that rural and lower-income populations face greater challenges in both awareness and access to eye care. The study also reveals gaps in the knowledge and practices of eye health professionals, particularly pediatricians, and calls for more consistent and updated training. The recommendations provided, such as targeted educational campaigns, school-based interventions, and ongoing professional development, offer actionable solutions to bridge these gaps and improve pediatric eye health outcomes.

Reference

1. Pawar N, Ravindran M, Fathima A, Ramakrishnan K, Chakrabarthy S, Aparna K, et al. Assessment of parental awareness about pediatric visual problems by Knowledge-Attitude-Practice survey in South India. Indian J Ophthalmol 2023;71:2175-80.
2. Senthilkumar D, Balasubramaniam SM, Kumaran SE, Ramani KK. Parents' awareness and perception of children's eye diseases in Chennai, India. OVS 2013;90:1462-6.
3. Ebeigbe JA, Emedike CM. Parents' awareness and perception of children's eye diseases in Nigeria. J Optom 2017;10:104-10.
4. Nyamai LA, Kanyata D, Njambi L, Njuguna M. Knowledge, attitude and practice on refractive error among students attending public high schools in Nairobi County. JOECSA, Central and Southern Africa 2016;20.
5. Al Mazrou A, Alsobaie NA, Abdulrahman AK, AlObaidan O. Do Saudi parents have sufficient awareness of pediatric eye diseases in Riyadh?. SJOPT 2020;34:171-6.

6. Alatawi A, Alali N, Alamrani A, Hashem F, Alhemaidi S, Alreshidi S, et al. Amblyopia and routine eye exam in children: Parent's perspective. Children (Basel) 2021;8:935.
7. Hashemi H, Fotouhi A, Yekta A, Pakzad R, Ostadimoghaddam H, Khabazkhoob M. Global and regional estimates of prevalence of refractive errors: Systematic review and meta-analysis. J Curr Ophthalmol 2017;30:3–22.
8. Nirmalan PK, Sheeladevi S, Tamilselvi V, Victor ACL, Vijayalakshmi P, Rahmathullah L. Perceptions of eye diseases and eye care needs of children among parents in rural South India: The Kariapatti Pediatric Eye Evaluation Project (KEEP). Indian J Ophthalmol 2004;52:163–7.
9. Alamri A, Alhudaithi FS, Asiri BM, Saadmohammed Al-shahrani A, Al Ghamdi RA, Abughazalah FN, et al. Knowledge and Awareness of the Public toward Pediatric Eye Health and Diseases in Aseer region, Saudi Arabia: A Cross-Sectional Population Study. MEJFM 2023;7.
10. Alshaheen A, Yaqub AO, Adi M. Amblyopia: Parents' awareness and perceptions in Alhassa Region of Saudi Arabia. Indo Am J Pharm Sci 2018;5:16847–57.
11. Wan Omar WE, Abdul Razak NA. Awareness of pediatric eye examination among parents in Selangor. Healthscope: The Official Research Book of Faculty of Health Sciences. UiTM;2020:2.
12. Surrati AM, Almuwarraee SM, Mohammad RA, Almatrafi SA, Murshid SA, Khayat LI, et al. Parents' awareness and perception of children's eye diseases in Madinah, Saudi Arabia: a cross-sectional study. Cureus 2022;14.
13. Aldhabaan W, Alkhammash ZM, Al Zomia AS, Alshahrani Y, Asiri R, Alqhtani MM, et al. Knowledge and practices of child eye healthcare among parents in Aseer Region, Saudi Arabia. Cureus 2022;14.
14. Singh A, Rana V, Patyal S, Kumar S, Mishra SK, Sharma VK. To assess knowledge and attitude of parents toward children suffering from strabismus in Indian subcontinent. Indian J Ophthalmol 2017;65:603-6.
15. AlJarallah OJ, AlFehaid MS, Alnadawi AA, Ghulaysi S, Almouzan AK, Aljurayyan TK, et al. Almalki H. Knowledge and Awareness Regarding Amblyopia Among Parents in Riyadh, Saudi Arabia: A Cross-Sectional Study. Cureus 2024;16.
16. Alshaheen AA, Owaifeer A, mohammed A. Amblyopia: parents' awareness and perceptions in alhassa region of saudi arabia. Iajps 2018;5:16847-57.
17. Wanyama SP. Knowledge, attitude and practice of eye diseases in children among pediatricians in Kenya (Doctoral dissertation, University of Nairobi). 2013.
18. Xulu-Kasaba Z, Mashige K, Naidoo K. Knowledge, attitudes and practices of eye health among public sector eye health workers in South Africa. IJERPH 2021;18:12513.
19. Akuffo KO, Abdul-Kabir M, Agyei-Manu E, Tsiquaye JH, Darko CK, Addo EK. Assessment of availability, awareness and perception of stakeholders regarding preschool vision screening in Kumasi, Ghana: An exploratory study. Plos one 2020;15:e0230117.
20. Nasir A, Riaz R. Awareness and perception level in parents of children having eye disease in remote area (Koh-i-Sulaiman) of Baluchistan. PJO 2018;8:24-7.
21. Bonsaana GB, Yakubu RC, Wanyama PS, Nuertey BD. Knowledge, Attitudes And Practices Of Paediatricians On The Management Of Childhood Eye Diseases In Ghana: KAPs of Paediatricians Managing Childhood Eye Diseases. PMJG 2023;12:92-100.
22. Alzuhairy S, Alsugair M, Alqubays M, Alzuhayri MA, Alsugair AM, Alsugair MM, et al. Knowledge, Attitude, and Practice of Pediatricians for Eye Care of Children: A Personal Survey in Saudi Arabia. Cureus 2024;16:e69630.
23. Almogbel AH, Al Shanbari N, Alibrahim IS, Alsaadi SS, Algarni HS, Alshanbari AS, et al. Parents' awareness and attitude toward pediatrics eye diseases in Makkah, Saudi Arabia: a cross-sectional study. Cureus 2023;15.
24. Bukhari D, Alhibshi N, Alzahrani N, Aljohani M, Madani F. Awareness, perceptions and knowledge of strabismus among pediatrics and ophthalmology clinics attendees in king abdulaziz university hospital, Jeddah 2018.
25. Alrasheed SH, Alghamdi WM. Parents' awareness of and perspectives on childhood refractive error and spectacle wear in Saudi Arabia. SQUMJ 2022;22:532.
26. Alemayehu AM, Belete GT, Adimassu NF. Knowledge, attitude and associated factors among primary school teachers regarding refractive error in school children in Gondar city, Northwest Ethiopia. PloS one 2018;13:e0191199.
27. Shrestha M. Knowledge and Awareness regarding Strabismus and Amblyopia among School Nurses and Primary School Teachers of Government Schools at Bharatpur. JCMS-Nepal 2023;19:419-25.
28. Al-Mamar K, Othman N, Salman A. Assessment of parent's awareness about sight-threating eye diseases in children in Damascus Hospital. 2022

29. Alkalash SH, Alsayed HY, k Alamshani T, Almarhabi BA, Alsayed KN, Alsayed GM, et al. Knowledge, attitude, and practice of parents regarding children's eye care in Al-Qunfudah Governorate, Saudi Arabia. Cureus 2023;15.
30. El-Mayah E, Zein MM, Hassan BE, Abdelghany EO. Assessment of level of awareness about children eye diseases and routine eye screening among a sample of Egyptian general population. BJVI 2023:02646196231217408.
31. Assefa NL, Tolessa KG, Ferede AT. Knowledge of Childhood Blindness and Associated Factors Among Parents or Guardians in Maksegnit Town, Northwest Ethiopia. Clin Optom (Auckl) 2020:175-82.
32. Dimitrova K, Grupcheva C. Health behavior and parents'awareness how to protect the children's eye health. Kij 2020;38:859-64.
33. Alrasheed SH, Mohamed ZD, Alluwimi MS. Childhood visual impairment causes and barriers to accessing eye care: A suggested approach for Africa. Afr. J. Prim Health Care Fam. Med 2024;16:7.
34. Onyeahiri C, Omere AF, Kyamru JI. Knowledge of refractive errors and barriers to spectacle lens utilisation among patients attending selected eye clinics in tertiary hospitals in Bauchi State, Nigeria. BS 2024;4:604-13.
35. Khattak MI, Khan N, Tahir MY, Rashid F, Iqbal RN, Sarfraz M. Knowledge, Practice and Attitude of Mothers for Ophthalmic Problems in Children in Rural Areas-A Cross-Sectional Study: Ophthalmic Problems in Children in Rural Areas. PJHS 2023;31:115-21.
36. Sharbini S, Damit NA, Maddess T, Abdullah SN. Parental Awareness of the Preschool Orthoptics Visual Screening in Brunei-Muara District and Factors Contributing to Defaulters. BIOJ 2024;20:154.
37. Baashar AS, Yaseen AA, Halawani MA, Alharbi WI, Alhazmi GA, Alam SS, et al. Parents' knowledge and practices about child eye health care in Saudi Arabia. IJMDC 2020;4:454-60.
38. Alrasheed SH. A systemic review of barriers to accessing paediatric eye care services in African countries. Afr. Health Sci 2021;21:1887-97.
39. Almazroa A, Almatar H, Alduhayan R, Albalawi M, Alghamdi M, Alhoshan S, et al. The Patients' Perspective for the Impact of Late Detection of Ocular Diseases on Quality of Life: A Cross-Sectional Study. Clin Optom (Auckl) 2023;31:191-204.
40. Berhan D, Gulema H. Level of knowledge and associated factors of postnatal mothers' towards essential newborn care practices at governmental health centers in Addis Ababa, Ethiopia. APH 2018;2018:8921818.
41. Sukati VN, Moodley VR, Mashige KP. Knowledge and practices of parents about child eye health care in the public sector in Swaziland. Afr. J. Prim Health Care Fam. Med 2018;10:1-3.
42. Ackah RA. Teachers' and parents' perceptions and knowledge on vision screening for children in basic school in Winneba (Doctoral dissertation, University of Education, Winneba). 2020.
43. Alshammari LK, Alaradi LA, Alanazi AM, Almishali FF, Alabdullatif NH, Ali A. Levels of Awareness Regarding Pediatric Eye Diseases Among Saudi Parents From the Hail and Al-Qassim Regions, Saudi Arabia. Cureus 2024;16.
44. Sherief ST, Tesfaye S, Eshetu Z, Ali A, Dimaras H. Exploring the knowledge, attitudes, and practice towards child eye health: A qualitative analysis of parent experience focus groups. Plos one 2023;18:e0293595.
45. Alobaisi S, Alromaih AI, Aljulayfi AS, Alanazi SM, Aldossari S. Knowledge, attitude, and practice among parents of strabismic children in Saudi Arabia: a cross-sectional study. Cureus 2022;14.
46. Khan SA, Nabeel K, Muhammad I, Batool S, Javed S. Awareness of Parents Regarding Eye Diseases and Eye Care Needs among Children of Tehsil Babuzai, District Swat. PJO 2023;39.
47. Ghani ND, Abd Rahman MH, Mohamad Fadzil N, Mohammed Z, Mohd Rasdi HF, Shafie NS. Development and validation of parental knowledge, attitude and practice in eye problem among children questionnaire (PEPC-KAPQ). Plos one 2023;18:e0291062.
48. Frey E, Bonfiglioli C, Brunner M, Frawley J. Parents' use of social media as a health information source for their children: a scoping review. Acad. Pediatr 2022;22:526-39.
49. Masarwa D, Niazov Y, Ben Natan M, Mostovoy D. The role of parental health beliefs in seeking an eye examination for their child. BMC ophthalmol 2023;23:269.
50. Wan Omar WE, Abdul Razak NA. Awareness of pediatric eye examination among parents in Selangor. Health Scope 2019;2.