

ORIGINAL ARTICLE

PARENTS' AWARENESS AND PERCEPTION OF CHILDREN'S REFRACTIVE ERROR. A QUALITATIVE STUDY

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ABSTRACT

Uncorrected refractive error is the leading cause of moderate and severe visual impairment across the globe. An important driver for early detection and management of refractive errors among children is appropriate parental awareness. This study aims to understand the awareness and perception among parents of children with refractive errors utilizing the conceptual framework of Health Belief Model. This qualitative study focused to conduct semi-structured interviews of parents who sought eye care for their children. Thirty-five parents who visited an eye care center for refractive error correction of their children between 5 to 15 years of age were purposively selected. The four constructs of the Health Belief Model (perceived susceptibility, perceived severity, perceived benefits and perceived barriers) were applied to prepare the interview guide. The voice records of participants were transcribed verbatim, coded and qualitatively analyzed to generate relevant themes. All participants were well aware of refractive errors and the implications of them on the visual and social development of children if they leave the errors untreated. However, there were varying perception about refractive error leading to serious consequences. The enhanced quality of life with proper refractive correction prompted parents to seek timely eyecare for their children.

Keywords: children's vision, eye care, parental perception, refractive error

INTRODUCTION

The World Health Organization (WHO) reports that 285 million people in the world are visually impaired and 19 million of them are children. Nearly 80% of this impairment is avoidable¹. The WHO further underlines that uncorrected refractive errors are the leading cause of visual impairment in both children and adults².

Visual impairment is a public health challenge because it can significantly impact the quality of life of children and adults alike^{3,4}. Although there are fewer children affected by visual impairment, the impairment has a significant impact on their physical, emotional, social and educational development⁵. This impact is substantial since a child with disabilities has to live longer than an adult who has similar problems⁶.

Inability of the optical system of the eye to accurately focus the light rays on to the retina results refractive errors. This error is corrected with a pair of glasses, contact lenses or by refractive surgery. However, the WHO reports that 12.8 million children across the world between the ages of 5 to 15 years are visually impaired due to uncorrected refractive errors⁷. Visual development is not complete at birth. It is a continuous process until children turn 6 to 7 years. Failure to diagnose refractive errors and other vision-threatening disorders at an early age can hamper visual development, which may lead to Amblyopia. This is a condition which has more

devastating impact on the educational and social development of children due to its irreversible nature⁸. Therefore, a proper diagnosis and an appropriate intervention at an early age is the key to ensure a normal visual development.

Literature shows that 14.3% of the blind children across the world are from the Eastern-Mediterranean region⁹. According to a recent systematic review from the region, the prevalence of myopia, hyperopia and astigmatism in people who are younger than or equal to 15 years was 4%, 8% and 15% respectively¹⁰. Even though these numbers are lower than those reported from the developed countries and from other East Asian countries, the prevalence rate is expected to increase. In a study carried out in Oman to report the changing trends in myopia among school children, the authors reported an increased prevalence of myopia for fourth and seventh-grade students over a period of 11 years¹¹.

Eye-care seeking behavior is defined as 'any action performed in recognition of symptoms or in prevention of eye problems by the individuals and by those around them¹². For children, parents are the primary caregivers and they make eye care seeking decisions for them. Therefore, knowledge and perception of parents about refractive error and other ocular disorders play a decisive role in getting timely care for their wards. A study from Chennai, India reported that parent's perception and awareness played a central role in deciding

whether or not to seek proper eye care for their children¹³. This study focused to learn the awareness and perception of parents who have children with refractive errors in the Al Buraimi governorate of the Sultanate of Oman.

METHODS

A qualitative study using semi-structured interviews was conducted to study the awareness and perception about refractive errors among parents in Al Buraimi Governorate, Sultanate of Oman. This study was approved by the Research and Ethics Committee of College of Health Sciences, University of Buraimi and also by the Centre of Studies & Research, Directorate General of Planning & Research, Ministry of Health, Sultanate of Oman. Thirty-five parents who attended the Ophthalmology Outpatient Department of Al Buraimi Polyclinic to seek refractive care for their 5 to 15 year old children participated in this study. Refractive error was defined as equivalent spherical error of greater than or equal to - 0.50D for myopia and greater than or equal to +1.00D in either eye of the child. A purposive sampling technique was used to identify suitable candidates and they were subsequently inducted into the study after obtaining an informed consent.

The interview guide was prepared based on the conceptual framework of Health Belief Model (HBM). This model is considered one of the most widely-used conceptual frameworks in health behavior research and explains both change and maintenance of health-related behaviors of an individual¹⁴. It suggests that individuals make a decision if the perceived benefits of a behavior outweigh its practical or psychological costs or obstacles. Four constructs of the HBM were used to prepare the questions patients were asked: perceived susceptibility, perceived severity, perceived benefits and perceived barriers. The HBM posits that people will take necessary effort to prevent an illness if they perceive themselves susceptible to a disease (perceived susceptibility), if they believe it would lead to serious consequences of contracting a disease or by leaving a condition untreated (perceived severity), if they believe certain available course of actions would reduce the threat or would lead to other positive outcomes (perceived benefits) and, if they believe that the potential negative implications do not outweigh the benefits of a proposed health action (perceived barriers). Therefore, perceived susceptibility together with the severity motivates them to act and perceived benefit (sans barriers) leads to a positive course of action¹⁴.

The interview guide for parents were adopted from the study by Senthilkumar, et al¹³ and adapted to cultural context after obtaining consensus from a panel comprised of public health & eye care experts. The interview guide is available at <http://links.lww.com/OPX/A147>. The potential candidates were identified from the group of children who attended the Ophthalmology Outpatient Department of Al Buraimi Polyclinic for refractive correction. If the refractive error of the children met the inclusion criteria, their parent/s were approached in person to obtain the informed consent by the investigator (NG). If both parents accompanied the child, one of them was interviewed. The same researcher (NG) conducted all the interviews. The participants were given an option to converse in their preferred language (Arabic or English). All the voice responses of the participants during the interview were obtained using a voice recorder.

Interviews were concluded once the obtained data indicated saturation in all the four domains. Saturation was described as the situation where the responses from participants were similar or repetitive and did not add any new information to those four domains. These conversations were transcribed verbatim to Arabic and then translated into English. Accuracy of both the transcript and the translation was verified by an independent researcher who is proficient in Arabic and English. The authors read the passages to familiarize themselves with the data and to identify codes and categories. The transcripts were read line by line, their content was examined, analyzed, categorized and labelled with a 'code'. Subsequently, the set of codes that shared common characteristics was grouped around the four domains of HBM to prepare categories. Threads of meaning across categories were generated based on these emerging themes. Initial coding was done by NG and those were verified subsequently by BN. All three members of the research team (NG, BN & GM) discussed, analyzed and interpreted the conclusion drawn from the data.

RESULTS

Forty-two parents were invited to participate. Of these, 35 parents consented to take part and were interviewed face-to-face. Participants had a mean age of 39 years, ranging from 26 years to 50 years (SD = 6). A detailed account of the demographic data of participants is available in Table 1.

Table 1: Demographic details of parents and children

Demographic variables (Parents)	Particulars	N	Mean / Percentage
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Age	Mean (\pm SD)	35	26-50 yrs
Gender	Male	7	20%
	Female	28	80%
Highest level of education	Professionals	17	48.57%
	Secondary	15	42.85%
	Below 10 th Grade	3	8.57%
Employment status	Yes	21	60%
	No	12	34.28%
	Retired	2	5.71%

Demographic variables (Children)	Particulars	N	Mean / Percentage
Age	Range	35	5-15 yrs
Gender	Male	12	34.28%
	Female	23	65.71%
Refractive error (Myopia - SE)	Mean (\pm SD) / OD		-2.91 \pm 2.03D
	Mean (\pm SD) / OS		-2.82 \pm 1.96D
Refractive error (Hyperopia - SE)	Mean (\pm SD) / OD		1.42 \pm 1.31D
	Mean (\pm SD) / OS		1.51 \pm 1.31D

(SD - Standard Deviation, OD - Oculus Dexter/Right Eye, OS - Oculus Sinister/Left Eye, SE - Spherical Equivalent)

Parent's awareness and Knowledge

Parents were well aware that refractive error causes the blurring of vision. They were also aware that refractive errors make it difficult for them to see far away objects, causes problems in reading books and makes children move closer to the television while watching cartoons or videos. Few parents reported that children squeeze their eyes while they try to focus and they even complained of headache. Majority of them believed that hereditary factors are one of the major reasons for children to develop refractive errors. They were also of the opinion that spending considerable amount of time with electronic devices such as mobile phone, tablet, play station and television can aggravate children's vision problems.

'if she does unusual things like keeping her books close to her eye, going closer to the television, and finding it difficult to see far away things, she has problem with her eyes ...' Parent 9: Mother

'my daughter when she tries to focus, she blinks more and try to make her eye smaller. When I ask her about what she was doing with her eyes, she would say I see clearer when I do like this... (parent demonstrate it by squeezing her eyes) ...' Parent 6: Mother

'Look...my father had glasses. I have, and my two children also wear glasses. I heard my colleagues also say similar things when I discuss about my children's eye problem. I think heredity is a big problem. And, nowadays most of the time, during summer for sure, they stay at home. They spend so much time with mobile phones, play station, tabs. Surely, it can damage their eyes...' Parent 12: Mother

Perceived susceptibility

Parents were of the opinion that vision-specific complaints from their children was one of the major reasons which prompted them to seek eye care. Further, an intimation from the school officials alerting parents to seek eye-care impelled them to consult an eye specialist. Some parents mentioned about their observation of child behavior. If child behaved different from their siblings or peers during similar vision-related tasks or activities, they would probably seek an opinion from eye care specialist. Everyone think that watching television and spending a lot of time with video-display gadgets would worsen the eye problems.

'if my daughter says she is not able to see well in her class, I understand that she has a vision problem and I will take her to hospital...' Parent 14: Mother

'Look...once I received a letter from his class teacher asking to take him for eye test. His teacher said that he is making mistakes while copying from the board. So, I took him for eye test...' Parent 27: Mother

'when they come close to the TV while they watch and if they repeat that, we should take them to eye specialist...' Parent 33: Father

'Playing games on mobile phones or watching videos for a long time is not good for their eyes. At night, the light from the screen or from the TV can cause more damage to their eyes...' Parent 16: Mother

Perceived Severity

Parents had a mixed response about the severity of refractive errors. If the condition existed in the

family, those parents were not overly worried. They knew that the condition could be corrected easily and will not significantly undermine the visual capability of their children. On the other hand, parents who experience refractive error to their children for the first time were seen more concerned. Everyone anticipated the condition to become worse if proper care was not provided at the right time. They were more apprehensive about seeking proper eye care for refractive error because of the involvement of eyes and vision.

'I feel it is normal. I am familiar to this condition as my elder son is wearing glasses. It is about making sure they wear correct power...' Parent 2: Mother

'It is a serious problem. Because, our eyes are irreplaceable...' Parent 6: Mother

Parents were notably well aware that children need to wear glasses to improve the vision. They were also mindful that poor vision in children would impact their development and progress in their educational pursuit. However, some parents felt children would lose their confidence if they wore glasses. They were also worried about the psychological impact of peer-bullying at school. A few parents thought spectacles would not look cosmetically appealing, especially for their female child. The spectacles would change the facial characteristics and therefore would affect them psychologically. On the contrary, some other parents felt spectacle lenses and frames would add cosmetic values. Most of the parents did not believe that spectacle use would cause any physical impact on children.

'If I do not take her to the doctor, her condition may get worse. It can affect her studies and her life later...' Parent 11: Father

'This generation is a new generation. They wear glasses or lenses for fashion. So, it doesn't cause any disadvantage on her...' Parent 3: Father

'My son is not very happy to wear glasses. He is being bullied by his classmates because of his glasses. But, glasses make his vision better...' Parent 24: Mother

'Glasses might affect the cosmetic appearance of my daughter. It changes her facial features and makes her distinct from the group. This can affect her confidence too...' Parent 8: Mother

Perceived benefits

Everyone perceived that the enhanced performance of children at school and in their routine activities were the biggest benefit of refractive correction. Being able to see clearly

was perceived as one of the most important enabler for learning and development in life. Everyone opined that good vision is necessary to perform well in studies. Opportunities to attend to routine eye examination was regarded as the best method to ensure proper vision and visual development for children. A couple of them however, felt the opposite. They believed that treatment was not effective and did not brought any difference in the condition.

'Glasses helped her a lot. She can now see very well and what her teacher write on the board. Her teacher also told she is doing much better in her class...' Parent 2: Mother

'after wearing glasses, my daughter can see much better. Wearing glasses and visiting the doctor regularly would keep her condition same or better; not worse...' Parent 29: Mother

Perceived barriers

Logistics was the major concern among parents to their children for eye examination. Educated and working parents could not get off from their work to keep-up with the consultation appointments. Sometimes, lack of domestic support where they could not leave the siblings at home hindered them to take their child for consultation.

'could not come on the day of my appointment. Sometimes, it is difficult to attend the scheduled appointments if I have another appointment for another child of mine. I do not want to bring more than one to the hospital at the same time...' Parent 2: Mother

'I work outside the Al Buraimi region. Hospital working hours are same as that of my office hours. Hospitals doesn't offer regular consultation on weekends and other national holidays. So, we tend to miss our appointments. Once a scheduled appointment is lapsed, it is very difficult to get another one...' Parent 13: Mother

Some parents did not report any specific reason that prevented them to bring their child for consultation. They never missed any scheduled appointments till date. Parents felt that the hospital appointment system could have improved to help them better. They suggested to implement a more flexible appointment system in the hospitals or polyclinics, especially to address the concerns of working parents.

DISCUSSION

The WHO prioritized the elimination of avoidable blindness when they launched the global initiative

- VISION 2020 - in 1997. Diagnosis and management of refractive errors was given the highest priority in this initiative since they constituted nearly half of the estimated cause of avoidable blindness¹⁵. The WHO further stated that, lack of awareness about refractive errors among the individuals and their family was one of the major barriers to seek appropriate eye care². In the Sultanate of Oman, primary and secondary education is provided free of cost and the school strictly monitors student attendance¹⁶. The country has a well-structured school eye-screening program that is established in line with the WHO recommendations for early detection, diagnosis and management of refractive errors¹⁷. Once the refractive error is detected, the child is referred to the nearest primary or secondary eye-care facility for further management. In this study, all parents were seen well aware of refractive errors and the importance of seeking appropriate eye care for their children at an early age. The systematic school eye-health screening program of the Sultanate might have played a significant role in educating parents and teachers about refractive errors. On the other hand, reports from India and Nigeria revealed a lesser level of awareness of refractive error among parents^{18,19}. Unlike the Sultanate, these countries do not have a specific infrastructure and system to screen children for refractive errors and other ocular morbidities at a young age.

The complaints from children that was suggestive of possible vision related problems alerted parents to seek necessary eye care. They were also attentive about certain behaviors of children that would suggest a likely case of refractive error. For instance, complaints such as inability to see clearly in the class, watching television from a closer distance, seeing double and feeling headache are indicative of symptoms specific refractive errors. These observations made by parents confirm that they were well aware of the condition of their children. Continuous exposure to video display units such as mobile phones and tablets was identified as one of the major reasons for getting the vision problems worsened. Besides, they also shared their helplessness to decrease the dependence of children on gadgets. Children are forced to remain indoors for more than seven months in a year due to the hot subtropical climate in the country. On top of that, recent advancements in technology and increased accessibility to gadgets are only adding more to the concerns. Literature says, increased screen-time of children is a public health challenge across the world²⁰. Lauricella and colleagues²¹ reports a strong association between parent screen time with children screen time. An effort to enhance parental awareness about a modification of their own screen-behavior would probably be beneficial.

None of the parents considered refractive error as a condition that could cause a severe handicap to

their children. At the same time, they shared their wariness in handling refractive errors. Those parents who wear glasses or have seen the outcome of refractive error correction among their family members, were confident that this condition could be easily tackled. On the other hand, those parents who came across refractive error for the first time were little worried. Despite that, all of them were convinced of the importance of providing timely and proper eye-care to their children. They also had a clear understanding of the impact of leaving the refractive error untreated and the possible implications of this on the academic and social development of their children²². One of the reasons for this enhanced awareness could be the accessibility of healthcare in the country. All health-care services in the Sultanate are offered free of cost for its citizens and at a subsidized rate for expatriates²³. As a result, parents do not hesitate to take their children for necessary health care even if they have financial constraints. In contrast, financial concerns were one of the barriers for seeking appropriate eye care by parents in developing countries where healthcare was not offered free of cost²⁴.

Most of the parents shared their apprehension about the prognosis of refractive error. They were worried that the error could increase constantly and impact the academics and even the life experience of their children. Few of them thought it would initiate the development of more serious ocular abnormalities and some others did not know if their children could get rid of their glasses in future. Another inference of this study was about the social stigma associated with wearing spectacles, especially for their girl child. Even though their children wore glasses, they were worried about its acceptance in the family as well as at school. Similar tendencies have been reported from other parts of the world^{13,18,25-28}. Hence, there is a need of communication intervention to be planned by the concerned authorities to educate parents.

The Ministry of Health (MoH) of the Sultanate - established in 1971 - systematically built the required infrastructure over the years in the country to ensure accessibility of healthcare to all²⁹. As a result of that, over 95% of the Sultanate's population have now easy access to a Primary Health Centre³⁰. Therefore, accessibility to eye care was never an issue with the parents. Logistics related matters were their main concern, especially for working parents. The specialist outpatient services at the MoH facilities are available only during weekdays and their schedules overlap with the working hours of the country in general. Therefore, working parents found it very challenging to bring their children for eye examination. On top of that, the online appointment system made it difficult to reschedule missed appointments. Everyone preferred to have a more flexible consultant

appointment system. They also pronounced the necessity to make the specialists available for a convenient schedule outside the regular working hours as well as during the weekends.

The objective of this study was to understand the perception of parents bringing their children with refractive errors for eye care and management. This limited the authors to discuss and generalize the results against the observations made by other researchers who studied groups of parents who sought and did not seek eye care.

CONCLUSION

Parents were aware that children are susceptible to refractive error especially due to lifestyle and environmental factors and they were vary about the potential chances of refractive error causing a debilitating condition. They perceived that the quality of life of their children would be better with proper refractive correction. This prompted them to seek timely eye care for their children.

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