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Original Article

Knowledge, Practice and Attitude of Mothers for Ophthalmic Problems in Children in Rural Areas- A Cross-Sectional Study

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ABSTRACT

Early years are crucial for eye development. Parents are responsible for children's eye care decisions. **Objective:** To assess the level of awareness and understanding of the practices among mothers regarding eye disorders and visual impairments in their children in rural areas. **Methods:** A cross-sectional study assessed the knowledge, practice, and attitude of rural mothers regarding eye problems in children. **Results:** 385 mothers participated in study. 47.3% were aged 41-50. 29.9% had completed graduation, while 16.1% were illiterate. Knowledge was scored from 2.00 to 14.00, with >7 being very knowledgeable, > 4 but ≤ 7 being somewhat knowledgeable, and ≤ 4 being not knowledgeable. Practice was scored from 0 to 5, with ≥ 3 indicating good practice, >1 to ≤ 3 indicating somewhat practicing, and ≤ 1 indicating poor practicing. Mothers had good knowledge of ophthalmic problems (99.4%). Attitude was scored from 0 to 10, with scores ≥ 6 indicating good attitude. Lack of time and convenience was the main reason for not seeking eye care (70.1%). Parents' knowledge of ophthalmic problems significantly correlated with their attitude and practice ($r = 0.546$, $p < 0.01$ and $r = 0.602$, $p < 0.01$, respectively). Additionally, parents' attitude was significantly correlated with their practice ($r = 0.390$, $p < 0.01$). **Conclusions:** Mothers' knowledge, practice, and attitude play a key role in detecting and diagnosing the early signs of ophthalmic problems like refractive errors, strabismus, allergic conjunctivitis, and amblyopia.

INTRODUCTION

Early detection and management of visual impairment in children are crucial since it imposes a continuous burden on adults [1]. The vision of the child becomes better every year. The visual system keeps growing and maturing during the first six years of life. The developing eye is learning to perform numerous tasks better, including accommodation, depth perception, extraocular muscle movements, and convergence, which aids in unifying both eyes' attention on an item at once. As the child grows, parents should be on the lookout for these milestones. Hyperopia, myopia, anisometropia, astigmatism, and strabismus are common visual problems in children [2]. To check the reduced visual acuity and other risk factors that affect the growth of the child's eyes health can be

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monitored by doing screening tests in schools, childcare, and or in children's hospitals by optometrists, and ophthalmologists [3]. By doing screening we can apply World Health Organization guidelines to reduce the prevalence of amblyopia. Because it can be diagnosed and treated at an early stage of a child's age. It can be diagnosed by tests and examinations [4]. Blindness in children matters due to its prevalence as well as the period the surviving child has to deal with the visual impairment. A child's poor vision hurts his academic achievement, as well as his prospects for the future and social life [5]. Early diagnosis and treatment are essential for optimizing children's eye health and vision because eye and vision problems can worsen over time and avoid vision deterioration in the future [6]. Children who attend school are frequently diagnosed with asthenopia symptoms. The undiagnosed problems resulting from constant and continuous near work are getting worse as a result of the invention of computers and other tools for near work [7]. Worldwide, according to WHO, at least 2.2 billion people are suffering from visual impairment and blindness. Out of those approximately 1 billion people can be treated successfully. 20 to 30 million people have severe eye disorders which can be managed by rehabilitation [8]. Around 1.4 million young children worldwide are thought to be blind. Out of these 1.4 million, one million are living in Asia and India alone has 0.2 million of them [9]. The prevalence of blindness in Pakistan is estimated to be 0.9%, which comes to about 1.25 million persons. A significant number of these are people under 20 years of age. To make these children useful citizens in the future, special facilities are to be provided to these children for their education and training [10]. Parents decide whether to get their children's medical care as guardians [11]. The first cancer with a hereditary cause was retinoblastoma. It is triggered by the tumor-suppressor gene RB1 losing its function [12]. The World Health Organization (WHO) set 13 goals for child eye health in 2002, including a reduction in worldwide blindness prevalence from 7 to 4/10 000 children, the elimination of corneal scarring, and ensuring that children with cataracts have access to tertiary eye care services [13]. The most common cause of vision impairment in children and young adults is amblyopia. Designing and implementing amblyopia screening, treatment, and related public health interventions are crucial [14]. Today's world is entirely dependent on media and digital technology. Despite the potential benefits of media time, excessive or improper use of technology is negatively affecting children's general health. The average daily screen time in our nation was greater than 5 hours. The most typical symptoms that youngsters report are blurred vision and eye discomfort [15].

There is limited research available on the knowledge, practice, and attitude of parents regarding ophthalmic problems in children in Islamabad, Pakistan. This study focused on assessing parents' awareness and perception of children's eye diseases in rural areas.

METHODS

This was a quantitative cross-sectional study, assessing the awareness and perception of mothers' levels in children who had eyes disorders.This study was conducted in rural areas of Islamabad.The study took six months in total. Ethical clearance and approval of the research were obtained from the ethical committee of Health Services Academy Islamabad with reference to IRB number F. No. 000161/HSA/MSPH-2021 dated 31st January 2023. Data were collected from Feb 2023 to June 2023 from the household survey in rural areas of Islamabad using an empirical questionaire. Cluster sampling technique was done to collect data.The sample size for this study was determined by using a single population proportion formula [$n = [(Z\alpha/2)2. P (1- P)]/d2$] by assuming a 95% confidence level ($Z\alpha/2 = 1.96$), a margin of error of 5%, P=proportion 50 %, and the final sample size was 385. Data were collected through a questionnaire used in the present study was adapted from a previously published study [16]. The questionnaire was administered in English language and then translated into local languages (Urdu) without changing the content. The questionnaire had the following sections:

-Section A: Socio-demographic information of the participants(gender, age, language, occupation, education level, district, village).

-Section B: Mothers knowledge regarding ophthalmic problems.

-Section C: Mothers' practices towards childhood ophthalmic problems.

-Section D: Mothers' attitude towards childhood ophthalmic problems.

The questionnaire was checked for completeness and only the completed questionnaires were considered for the final analysis. The software of Microsoft Excel version (18.2205.1091.0) and IBM SPSS Statistics V21.0 x64 was used. Descriptive statistics were used to define and summarize the characteristics of the variables. Scoring for the knowledge, practice, and attitude sections was done. Arbitrary score points were given to each option. The mean and median of knowledge, practice, and attitude were calculated. After the calculation of the main and median of recruited mothers, the cumulative score less than the median score will adjust poor knowledge, attitude, and perception while a cumulative score equal to or greater than the median score would measure as good knowledge,

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attitude, and practice of parents. We used Pearson's Correlation test to find the association between Knowledge-attitude, knowledge practice, and practice attitude. A p-value of less than 0.05 was reported as statistically significant between dependent and independent variables. The correlation was used to analyze the association between the variables. It was ensured that the rights of study participants would be protected. The purpose of the study was informed and explained, and written/verbal was taken from all participants. Confidentiality anonymity and privacy were ensured and maintained.

RESULTS

This study was conducted with 385 parents (mainly mothers) who had met the inclusion criteria. The ages of the mothers ranged from 18 to 60 years. The questionnaire was answered by mothers only who were in total 385. Table no. 1 provides details about the demographic characteristics of the mothers of the children. Table 1 also shows the frequency along with the proportion of the mothers who participated in the study. Out of 385, most of the participants were between the ages of 41 to 50 (47.3%). One hundred and fifteen (29.9%) had a graduation level of education, and illiterates sixty-two (16.1%). 191 (49.6%) were unemployed (Housewives). Moreover, 20.5% were government employed. Table 1 provides the information that 249 out of 385 mothers in rural areas of Islamabad know allergic conjunctivitis (64.7%), followed by refractive errors 137 (35.6%), strabismus 91 (23.6%), and 78 (20.3%) know amblyopia. 383 (99.4%) out of 385 mothers knew the symptoms of rubbing the eyes, 355 (92.2%) knew the redness of the eyes, and 60 mothers knew crossed eyes or squint. One hundred and twenty-nine mothers knew that they should do check-ups of their child's eyes every 3 months. Three hundred and thirty-four (86.8%) mothers had a strong belief that the early detection and treatment of ophthalmic problems in children can prevent long-term visual impairment. In table 1, for every question, arbitrary score points have been given to each option. The options that are relatively more correct have been given higher points compared to others. In the question regarding the regularity of eye check-ups for example, the option stating "every three months" is relatively the best option for eye check-ups and was therefore given 3 score points, "every 6 months" was given 2 score points, "once a year" was given 1 point and "whenever needed" was given 0 score points. In the case of the question where every option is correct, for example, the question regarding the knowledge about common ophthalmic problems in children and their symptoms, each option was given 1 score point.

Table 1: Responses of Ophthalmic Problems Knowledge Items

Responses	Frequency (%)		Score Point (s)
Knowledge about Common Ophthalmic Problems in Children	**Yes**	**No**	
Knowledge about Refractive Errors	137 (35.6%)	248 (64.4%)	1
Knowledge about Amblyopia	78 (20.3%)	307 (79.7%)	1
Knowledge about Allergic Conjunctivitis	249 (64.7%)	136 (35.3%)	1
Knowledge about Strabismus (Misalignment of Eyes)	91 (23.6%)	294 (76.4%)	1
Knowledge about Symptoms of Ophthalmic Problems			
Knowledge about Rubbing of Eyes	383 (99.4%)	2 (0.5%)	1
Knowledge about Crossed Eyes (Squint)	60 (15.6%)	325 (84.4%)	1
Knowledge about Poor Visual Acuity	234 (60.8%)	151 (39.2%)	1
Knowledge about Watering of Eyes	308 (80.0%)	77 (20.0%)	1
Knowledge about Redness of Eyes	355 (92.2%)	30 (7.8%)	1
Regularity of eye Check-ups			
Every 3 months	129 (33.5%)		3
Every 6 months	127 (33.0%)		2
Once a year	62 (16.1%)		1
Whenever needed	67 (17.4%)		0

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Responses	Frequency (%)	Score Point (s)
The belief that the early detection and treatment of ophthalmic problems in children can prevent long-term visual impairment		
Yes, I strongly believe	334 (86.8%)	2
I am not sure	37 (9.6%)	1
No, I do not believe.	14 (3.6%)	0
Total	385 (100%)	

Table 2 provides the information that 166 (43.1%) had stated that they used to practice eye examination of their child occasionally when the child complained of eye problems. Overall 66.0% had followed the recommended treatment plan when their child complained of ophthalmic problems. Most of the mothers 248 (64.4%) of 385 had reported that they encourage their children to participate in outdoor activities. A total of 17 participants did not want to encourage their child for an eye examination. Score points were given to each option for questions regarding the respondents' practices concerning the ophthalmic problems similar to that of the knowledge questions (Table 2).

Table 2: Responses of Ophthalmic Problems Practice Items

Responses	Frequency (%)	Score Point (s)
Eye examination practices		
Yes, my child has had a regular eye examination	129 (33.5%)	2
No, my child has never had an eye examination	90 (23.4%)	0
Occasionally, when my child complained of eye problems	166 (43.1%)	1
Response to diagnose the ophthalmic problem		
Followed the recommended treatment plan	254 (66.0%)	2
Delayed treatment or did not follow the recommended treatment	44 (11.4%)	1
Did not have any treatment	87 (22.6%)	1
Encouragement for outdoor activities to promote eye health		
Yes, I encourage my child to engage in outdoor activities regularly	248 (64.4%)	2
Sometimes, when it is convenient	120 (31.2%)	1
No, I do not encourage outdoor activities for my child	17 (4.4%)	0
Total	385 (100.0%)	

Table No. 3 shows that a total of 90.6% believed that it is important to seek eye care services despite no obvious ophthalmic problems. On asked about attending educational programs or workshops regarding ophthalmic problems 174 (45.2%) reported that maybe, they will attend the educational programs or workshops but it depends on timing and availability. Overall 270 mothers stated that the barrier that prevents them from seeking eye care services is a lack of time or convenience. Financial constraint was also reported at 60.5%, which was the second most facing barrier. A total of 176 (45.7%) of the mothers had lack awareness. And 135 (35.1%) had limited access to eye care services in rural areas of Islamabad. Score points were also given to each option of the questions related to the attitude of the respondents toward the ophthalmic problems (Table 3).

Responses	Frequency (%)	Score Point (s)
Belief about seeking eye care services despite no obvious ophthalmic problems		
Yes, I believe it is important	349 (90.6%)	2
I am not sure	35 (9.1%)	1
No, I do not believe it is important	1 (0.25%)	0

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Responses	Frequency (%)		Score Point (s)
Attitude regarding attending educational programs or workshops			
Yes, I would be interested	349 (90.6%)		2
Maybe, depends on the timing and availability	35 (9.1%)		1
No, I am not interested	1 (0.25%)		0
Total	385 (100%)		
Barriers that prevent parents from seeking eye care services	**Yes**	**No**	
Lack of awareness	176 (45.7%)	209 (54.3%)	0
Limited access to eye care services in rural areas	135 (35.1%)	250 (64.9%)	0
Financial constraints	233 (60.5%)	152 (39.5%)	0
Lack of time or convenience	270 (70.1%)	115 (29.9%)	0
No barriers	14 (3.6%)	371 (96.4%)	1
Relying on sources of information			
Healthcare professionals	314 (81.6%)	71 (18.4%)	2
Internet	168 (43.6%)	217 (56.4%)	1
Family and friends	274 (71.2%)	111 (28.8%)	1
Community Health Workers	0.0%	0.0%	1
Total	385	100%	

The arbitrary scoring for each category, namely, knowledge, practice, and attitude, was used to effectively quantify the responses of the respondents in a statistical manner.Table 4 illustrates the correlation coefficient and p-value for three variables Knowledge, Practice, and Attitude. The following criteria were used to interpret correlations: 0-0.25 indicates a weak correlation, 0.25-0.5 indicates a fair correlation, 0.5-0.75 indicates a strong correlation, and greater than 0.75 indicates an excellent correlation. The correlation revealed a significant positive strong correlation between Knowledge and Practice ($r = 0.602$, $p = 0.00$). The correlation revealed a strong positive correlation between Knowledge and Attitude variables ($r = 0.546$, $p = 0.00$). While the correlation between Practice and Attitude variables showed that there is a fair positive correlation among them ($r = 0.390$, $p = 0.00$).

Table4: Correlation between Knowledge, Attitude, and Practice

Variable	Correlation Coefficient	p-Value
Knowledge-Practice	0.602	0.00
Knowledge-Attitude	0.546	0.00
Practice-Attitude	0.390	0.00

DISCUSSION

This study aimed to assess mothers' knowledge, practice, and attitude regarding ophthalmic problems in children. This study focused on the knowledge, practice, and attitude of mothers regarding ophthalmic problems in children in rural areas of Islamabad, Pakistan. The government and development partners tend to primarily focus on older age groups, resulting in the neglect of this particular demographic in terms of research and interventions. National blindness survey between 2019 to 2021 assessed people aged 50 and above and did not include children. This study is unique as it provided information about mothers' approach to ophthalmic problems in children in rural areas of Islamabad. In the current study, it was found that those who were illiterate had no good knowledge of ophthalmic problems. According to this study, it was observed that most of the mothers were aware of allergic conjunctivitis (64.7%), refractive errors (35.6%), strabismus (23.6%), and amblyopia (20.3%). Opposite trends were seen in the findings of a study conducted in India, where 69.2% of parents were not aware of the symptoms of allergic conjunctivitis in children (17). Symptoms such as rubbing the eyes (99.4%), redness of eyes (92.2%), watering of eyes (80.0%), and poor visual acuity (60.8%) were found to be known by most of the mothers, whereas symptoms of squint or misalignment of eyes were known by the least percentage (15.6%). In a study conducted in Saudi Arabia, parents were interviewed regarding strabismus in children, and it was found that excellent knowledge regarding strabismus was possessed by 50.6% of the parents, and a good attitude toward strabismus was exhibited by about 70.4% (18). It was revealed by this study that a significant proportion of mothers (33.5%) believed that their children's eyes should be checked every 3 months. Regular eye check-ups at this frequency can help prevent ophthalmic problems in children. On the other hand, 33.0% of parents believed that

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a check-up every 6 months was sufficient, while 16.1% believed once a year was adequate. The lowest percentage (17.4%) believed in having check-ups whenever needed. Furthermore, a high percentage (86.8%) of mothers strongly believed that early detection and treatment of ophthalmic problems in children can prevent visual impairment in children. These findings contribute to the overall understanding of the study. In a study conducted in 5% of South India to assess parental knowledge and awareness about pediatric visual problems, it was found that only 9% of parents had excellent knowledge regarding ophthalmic problems. The positive attitude of parents towards ophthalmic problems was observed in 17% of cases, while 46.5% demonstrated excellent practice and 26.5% showed good practice [19]. A study reported in Saudi Arabia 91.9% of parents had low-level of knowledge regarding ophthalmic problems [20]. In the current study, it was observed that most of the mothers 43.1% used to practice their child's eye examination occasionally, when their child complained of any eye problem, 33.5% used to do regular eye examinations, and 23.4% of mothers predicted that their child never had any ophthalmic problem so they don't use to practice examination of their child. Not examining their child's eye examination even if he/she never complained of eye problems results in amblyopia. A study was conducted in Saudi Arabia which revealed that 20% of the parents had adequate knowledge about amblyopia [21]. A study was conducted in Israel found the reasons for seeking their child's eye examination were their concerns about poor vision 94%, strabismus 88%, poor concentration 57%, and poor school achievement 54% [22]. According to current study findings, 64.4% of mothers suggested that they encourage their children to engage in outdoor activities. A study conducted in Ireland reported that myopic children aged 8 to 10 years who were living in urban areas spent less time outside, more time participating in indoor activities, and more time on screen as compared to children living in rural areas who are not myopic [23]. According to this study's findings, 90.6% of mothers believe in seeking eye care services despite no obvious ophthalmic problems. A study was conducted about the knowledge and perception of parents regarding eye diseases in Balochistan, Pakistan which indicated that literate parents diagnosed eye disorders more as compared to illiterate parents. Most educated parents get knowledge about eye diseases from the radio and the community [24]. This study shows that there is a strong positive correlation between Knowledge and practice, Knowledge and Attitude variables. Practice and Attitude variables have a fair positive correlation among them.

CONCLUSIONS

The results of this cross-sectional study conducted with mothers of young children in rural areas in Islamabad show that mothers' knowledge, practice, and attitude play a key role in detecting and diagnosing the early signs of ophthalmic problems like refractive errors, strabismus, allergic conjunctivitis, and amblyopia. By diagnosing on time, impairment of vision in children can be prevented.

Authors Contribution

Conceptualization: MIK, MS
Methodology: MIK, RNI
Formal analysis: NK, MYT, FR
Writing-review and editing: MIK, MYT, FR, MS

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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