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IMPACT OF PARENTAL PERCEPTION ON PEDIATRIC VISION CARE IN RURAL AND URBAN AREAS OF DISTRICT RAHIM YAR KHAN.

Original Article

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ABSTRACT

Background: Pediatric vision care is crucial for early detection and management of ocular conditions that can impact a child's development, academic performance, and quality of life. Parental perception plays a pivotal role in determining whether children receive timely eye examinations and appropriate interventions. Disparities in healthcare awareness and access between rural and urban populations contribute to differences in pediatric vision care utilization. Understanding these variations is essential for developing targeted interventions to improve eye health outcomes in children.

Objective: To evaluate the impact of parental perception on pediatric vision care in rural and urban areas of District Rahim Yar Khan.

Methods: A comparative cross-sectional study was conducted at LRBT Eye Hospital and Yousaf Eye Hospital from November 2023 to July 2024. A total of 400 participants aged 0–15 years were included using a non-probability sampling technique. The sample was equally divided into rural (n=200) and urban (n=200) groups. After obtaining informed consent, parents were interviewed regarding their awareness and attitudes toward pediatric eye care, and children underwent comprehensive ophthalmic examinations. Slit lamp examination assessed the lids, conjunctiva, cornea, lens, fundus, retina, and macula. Data were analyzed using SPSS version 26, and statistical comparisons were made between rural and urban groups.

Results: Slit lamp examination revealed lid inflammation in 3.8%, redness in 1.3%, and lesions in 0.5%, while 94.5% had normal lids. Conjunctivitis was observed in 7.3%, foreign body presence in 1%, and 91.8% had normal conjunctiva. Corneal findings included opacity (0.3%), inflammation (0.8%), and neovascularization (0.3%), with 98.8% having a healthy cornea. All participants had clear lens media. Fundus examination showed hemorrhages in 0.3% and blood vessel abnormalities in 0.3%, with 99.8% having normal fundus findings. Rural parents exhibited significantly lower awareness of pediatric vision care, with 92.0% seeking an eye doctor only when complaints arose, compared to 44.5% in urban parents. Eye examination history showed that 99.5% of rural children had never been examined, compared to 33.5% in urban areas. Healthcare accessibility also differed, with only 23.5% of rural participants having access to eye care services compared to 100% in urban areas.

Conclusion: Parental perception significantly influences pediatric vision care, with rural parents demonstrating lower awareness and healthcare-seeking behaviors compared to urban parents. Socioeconomic and educational disparities contribute to these differences, highlighting the need for targeted awareness programs and improved healthcare accessibility in rural areas to ensure early detection and management of childhood eye conditions.

Keywords: Amblyopia, Conjunctivitis, Corneal Diseases, Health Literacy, Ophthalmic Examination, Rural Health, Visual Acuity

INTRODUCTION

Pediatric vision care is a crucial aspect of children's overall health and development, as visual impairments can significantly impact cognitive growth, academic performance, and quality of life. Early identification and treatment of conditions such as amblyopia, strabismus, and refractive errors are essential to prevent long-term visual disabilities. Vision plays an integral role in developing fine motor skills, depth perception, and learning abilities, making timely eye examinations a fundamental component of pediatric healthcare (1,2). However, despite the well-documented benefits of early vision screening, numerous barriers prevent timely diagnosis and intervention, with parental perception emerging as a key determinant in whether a child receives appropriate eye care (3,4). Parental awareness and attitudes toward pediatric vision care significantly influence their willingness to seek timely interventions for their children. Parents, as primary caregivers, play a vital role in recognizing early signs of visual abnormalities and ensuring that their children receive the necessary ophthalmologic evaluations. Unfortunately, a lack of knowledge about common pediatric eye disorders and their long-term consequences remains a major impediment to early detection and treatment. Studies conducted in different regions worldwide have reported inadequate parental awareness regarding the causes, symptoms, and management of childhood eye diseases. For instance, research in Nigeria highlighted misconceptions about the etiology of eye disorders, while parents in India demonstrated insufficient understanding of common pediatric eye conditions. Similarly, in Saudi Arabia, parental knowledge about amblyopia, refractive errors, and pediatric eye care was found to be notably limited (5).

Health literacy plays a crucial role in shaping parental attitudes toward pediatric vision care. Poor health literacy has been identified as a major factor in delayed or neglected eye care, as parents with limited knowledge may fail to recognize the significance of early intervention or may hold incorrect beliefs regarding the necessity of eye examinations (3). Seeking professional eye care services is often influenced by parental awareness of potential visual impairments and their understanding of screening results. If parents are not adequately informed about the importance of routine eye check-ups, they may inadvertently contribute to delayed diagnoses, exacerbating the risk of long-term visual complications in their children (6-8). Socioeconomic and geographic disparities further compound the issue of inadequate pediatric eye care. Families with higher education levels and financial stability are more likely to prioritize preventive eye care, while those with lower socioeconomic status may perceive eye examinations as non-essential due to financial constraints. Additionally, disparities in access to healthcare services between rural and urban populations contribute to differences in pediatric vision care utilization. Parents in rural areas often face greater barriers, including limited access to specialized pediatric ophthalmologists, inadequate transportation, and financial difficulties, all of which contribute to unmet healthcare needs (9-11). Studies indicate that rural parents of children with special healthcare needs, including visual impairments, frequently report difficulties in obtaining appropriate medical attention due to these logistical challenges (12). The recruitment and retention of specialized healthcare providers in rural areas further exacerbate these issues, resulting in a lack of adequate eye care services for children in underserved communities (13).

Psychosocial factors also play a role in shaping parental perceptions of pediatric vision care. Stress, anxiety, and limited support systems can hinder parents from prioritizing their child's eye health. Parents experiencing high levels of stress may struggle to engage with preventive healthcare measures, potentially delaying critical vision screenings and interventions (9). Moreover, misconceptions about pediatric eye health, such as the belief that young children cannot have serious vision problems, contribute to a lack of urgency in seeking professional evaluations (8). Addressing these psychological and informational barriers through targeted educational programs can improve parental engagement and facilitate early detection of vision problems. Despite growing recognition of the importance of early vision care, significant gaps persist in parental knowledge and practices. Many parents remain unaware of the recommended guidelines for pediatric eye examinations, which suggest that a child should undergo their first eye assessment before their first birthday (10). Additionally, public health initiatives specifically aimed at increasing awareness of pediatric vision care remain inadequate, further contributing to delays in early detection and treatment. Given the lifelong impact of untreated childhood vision disorders, it is imperative to address these gaps through effective educational campaigns and healthcare policies.

This study aims to assess the impact of parental perception on pediatric vision care in rural and urban areas of District Rahim Yar Khan. By identifying key knowledge gaps, barriers to access, and factors influencing parental attitudes, the research seeks to inform evidence-based strategies for improving early pediatric eye care. The findings will contribute to the development of targeted interventions, ensuring that children, regardless of their geographic or socioeconomic background, receive timely and appropriate vision care, ultimately reducing the burden of preventable visual impairments.

METHODS

A comparative cross-sectional study was conducted to evaluate the impact of parental perception on pediatric vision care in rural and urban areas of District Rahim Yar Khan. The study was carried out at LRBT Eye Hospital and Yousaf Eye Hospital, following ethical approval from the Ethical Committee of The Superior University. Written informed consent was obtained from all participating parents before data collection, ensuring adherence to ethical research principles. The study population included children aged 0 to 15 years and their parents from both rural and urban areas of District Rahim Yar Khan. Parents who were medical professionals were excluded to eliminate potential bias in awareness and perception. Participants were selected using a convenient sampling technique, with a total

sample size of 400, equally divided into rural and urban groups. The sample size was determined using the formula: n=N1+N(e)2n = \frac{N}{1 + N(e)^2}n=1+N(e)2N

A structured proforma was developed to collect data, including demographic details, parental perceptions regarding pediatric eye care, and clinical assessments of the children's eye health. After obtaining informed consent, parents were interviewed regarding their awareness, attitudes, and practices related to pediatric vision care. Subsequently, children underwent ophthalmic evaluation using standardized tools, including the Snellen chart for visual acuity assessment, an autorefractometer for refractive error measurement, and a slit lamp for anterior segment examination. Data were entered and analyzed using SPSS version 26. Descriptive statistics, including means and standard deviations for continuous variables and frequencies with percentages for categorical data, were used to summarize the findings. The Student's t-test was applied to compare the impact of parental perception on pediatric eye care between urban and rural groups. Results were presented in tabular form for quantitative variables and graphically for qualitative variables to enhance clarity and interpretation.

RESULTS

The study included 400 participants aged 0 to 15 years, categorized into three age groups: 01 month–01 year (9.3%), 02–07 years (41.8%), and 08–15 years (49.0%). The mean age was 8 years, reflecting a moderate age distribution. Gender distribution showed a slight female predominance, with 229 female participants (57.3%) and 171 male participants (42.8%). Participants were equally divided into urban (n=200) and rural (n=200) groups. Slit lamp examination revealed abnormalities in several eye structures. Among 400 participants, 15 (3.8%) exhibited lid inflammation, 5 (1.3%) had redness, 2 (0.5%) had lesions, while 378 (94.5%) had normal lids. Conjunctival findings included conjunctivitis in 29 cases (7.3%) and the presence of a foreign body in 4 cases (1.0%), while 367 (91.8%) had a normal conjunctiva. Corneal examination revealed opacity in 1 participant (0.3%), inflammation in 3 (0.8%), and neovascularization in 1 (0.3%), while 395 (98.8%) had a normal cornea. Lens examination showed no abnormalities, with all 400 participants presenting clear media. Fundus examination indicated hemorrhages in 1 participant (0.3%) and blood vessel abnormalities in another (0.3%), while 388 (99.8%) had a normal fundus. Retinal findings included degeneration in 1 participant (0.3%), while 1 participant (0.3%) exhibited macular dystrophy.

Parental knowledge regarding the recommended age for a child's first visual examination varied between urban and rural groups. In urban areas, 30 (15.0%) parents believed screening should be done at 6–12 months, 26 (13.0%) at age 3, 55 (27.5%) at age 6, and 89 (44.5%) only when a complaint arose. In contrast, among rural participants, 6 (3.0%) supported screening at 6–12 months, 4 (2.0%) at age 3, 6 (3.0%) at age 6, while 184 (92.0%) reported seeking an eye doctor only when a complaint arose. Regarding the duration since the last eye examination, in urban participants, 54 (27.0%) had undergone an eye check-up within the past year, 40 (20.0%) within three months, 39 (19.5%) within the past month, and 67 (33.5%) had never been examined. Among rural participants, only 1 (0.5%) had been examined within three months, while 199 (99.5%) had never been assessed by an eye doctor.

Availability of eye care services also differed significantly between urban and rural areas. All 200 urban participants (100.0%) reported access to eye care facilities, whereas only 47 (23.5%) of rural participants had access, leaving 153 (76.5%) without any available eye care services. Statistical analysis using a one-sample t-test demonstrated significant differences between urban and rural groups across multiple parameters. The mean difference in child examination by an eye doctor was 1.7775 ($p<0.001$), in the recommended age for visual screening 3.455 ($p<0.001$), and in the duration of last eye examination 3.3425 ($p<0.001$). The presence of eye care facilities also showed a significant mean difference of 1.5900 ($p<0.001$). Slit lamp examination findings for lids, conjunctiva, cornea, fundus, retina, and macula all showed significant differences ($p<0.001$). Mean differences for visual acuity (VA), refraction, and best-corrected visual acuity (BCVA) were statistically significant ($p<0.001$), confirming disparities between urban and rural populations in access to and utilization of pediatric eye care.

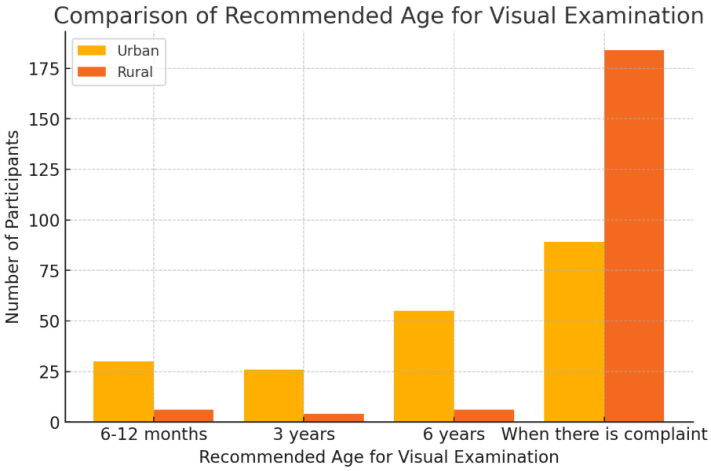
Table: Parental Perception and Pediatric Vision Care Data in Rural and Urban Areas

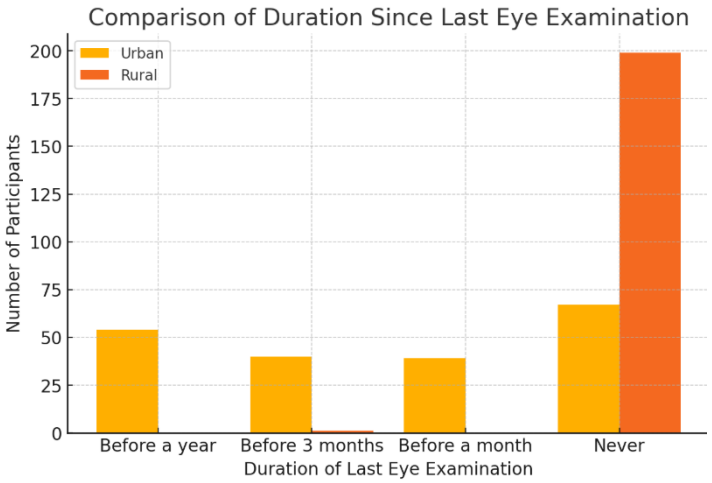
Location→	Urban	Rural	Total
undergo visual examination Cross tabulation			
6-12 Months	30	6	36
Age 3	26	4	30
Age 6	55	6	61
When Complaint Arises	89	184	273
last Eye examination by eye Doctor			

Before a Year	54	0	54
Before 3 Months	40	1	41
Before a Month	39	0	39
Never Examined	67	199	266
Facilities available			
Yes	200	47	144
No	0	153	256
Total	200	200	400

Table: One-Sample Test

	Test Value = 0.05					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Child examination by eye Doctor	93.976	399	.000	1.77750	1.7403	1.8147
Recommended age for a child to undergo visual examination	38.194	399	.000	3.45500	3.2772	3.6328
Duration of last Eye examination	28.856	399	.000	3.34250	3.1148	3.5702
Facilities are available in urban area	66.167	399	.000	1.59000	1.5428	1.6372
Slit lamp Examination of Lids	57.708	399	.000	1.02750	.9925	1.0625
Slit lamp Examination of Conjunctiva	64.590	399	.000	1.04250	1.0108	1.0742
Slit lamp Examination of Cornea	83.520	399	.000	.97500	.9521	.9979
Slit lamp Examination of Funds	121.523	399	.000	.96000	.9445	.9755
Slit lamp Examination of Retina	191.000	399	.000	.95500	.9452	.9648
Slit lamp Examination off Macula	381.000	399	.000	.95250	.9476	.9574
VA of OD	27.161	397	.000	1.33191	1.2355	1.4283
Refraction of OD	57.903	399	.000	1.01000	.9757	1.0443
VA of OS	26.735	399	.000	1.33250	1.2345	1.4305
Refraction of OS	62.391	399	.000	1.00000	.9685	1.0315
BCVA OD	91.747	399	.000	.97000	.9492	.9908
BCVA OS	83.520	399	.000	.97500	.9521	.9979
Diagnosis	34.327	399	.000	1.28250	1.2091	1.3559





DISCUSSION

The study examined the impact of parental perception on pediatric vision care in both rural and urban areas of District Rahim Yar Khan, revealing significant disparities in awareness, access to services, and healthcare-seeking behaviors. The findings indicated that urban parents demonstrated a higher level of concern and awareness regarding their children's eye health compared to rural parents. This difference was largely attributed to variations in literacy rates, cultural beliefs, and healthcare accessibility. Rural parents exhibited lower knowledge of pediatric eye diseases, with limited understanding beyond refractive errors such as myopia and hyperopia. These findings align with previous research, which has reported that parents with higher education levels and socioeconomic status exhibit greater awareness and proactive healthcare behaviors regarding childhood eye diseases (14). Comparisons with prior studies conducted in different regions have highlighted similar gaps in parental awareness. Research assessing parental knowledge in various populations found that while awareness regarding common pediatric eye conditions such as squint, refractive errors, and nasolacrimal duct obstruction was relatively high, knowledge about amblyopia remained unsatisfactory (15). These findings are consistent with the current study, where rural parents were generally unaware of amblyopia and other pediatric eye conditions beyond basic refractive errors. Additionally, a previous study reported that parents who had a child with an existing eye condition exhibited slightly better awareness, suggesting that direct experience with vision issues enhances knowledge and healthcare-seeking behavior. However, the prevailing perception in both urban and rural areas that a child's vision should only be checked when a complaint arises underscores the broader issue of inadequate parental awareness regarding the importance of early eye screening.

The role of socioeconomic factors in shaping healthcare access was evident in the study, with rural parents facing greater challenges due to financial constraints, limited healthcare facilities, and lack of transportation. Similar findings have been documented in previous research, where caregivers in lower-income regions reported significant barriers to accessing pediatric eye care, including affordability concerns and geographical inaccessibility of ophthalmic services (16). The present study supports these observations, demonstrating that rural children were significantly less likely to undergo routine eye examinations and were more likely to have never been assessed by an eye doctor. This disparity underscores the need for targeted interventions to improve healthcare accessibility, particularly in underserved areas. The study also highlighted the influence of cultural beliefs on parental attitudes toward pediatric vision care. Rural parents, influenced by traditional beliefs and home remedies, often relied on alternative approaches rather than seeking professional medical care. This pattern has been noted in other regions, where lower health literacy levels were associated with delayed healthcare-seeking behavior and a greater reliance on non-medical interventions (17). The findings suggest that increasing community-based educational initiatives and outreach programs could play a crucial role in addressing misinformation and promoting timely pediatric eye screenings.

Despite its strengths in assessing parental perceptions and providing a comparative analysis between rural and urban populations, the study has certain limitations. The use of a convenient sampling technique may limit the generalizability of the findings, as participants were not randomly selected. Additionally, the study relied on self-reported data from parents, which may introduce response bias. Future research should incorporate longitudinal designs and larger sample sizes to further investigate the long-term impact of parental perception on pediatric vision care. Including qualitative methodologies, such as in-depth interviews, could also provide a deeper understanding of the underlying barriers and facilitators influencing parental attitudes (18-20). The findings of this study emphasize the critical need for increased awareness campaigns and policy-driven interventions to improve pediatric eye care access in rural areas. Strengthening primary healthcare systems, enhancing school-based vision screening programs, and integrating pediatric ophthalmic services into rural healthcare centers could significantly reduce disparities in vision care. Expanding telemedicine services for remote consultations may also help bridge the gap in access to specialized care. By addressing these structural and educational barriers, the

long-term burden of preventable childhood visual impairments can be reduced, ultimately improving overall pediatric eye health outcomes.

CONCLUSION

The study highlighted the significant impact of parental perception on pediatric vision care, revealing substantial disparities between rural and urban populations. Urban parents exhibited greater awareness and proactive healthcare-seeking behavior, while rural parents faced barriers related to limited knowledge, socioeconomic constraints, and inadequate healthcare accessibility. The findings underscore the urgent need for targeted educational programs and healthcare interventions to improve early vision screening and timely treatment for children, particularly in underserved areas. Addressing these gaps through community outreach, policy reforms, and integration of pediatric eye care services within primary healthcare settings can enhance early detection and management of childhood vision disorders, ultimately reducing preventable visual impairments and improving long-term eye health outcomes.

AUTHOR CONTRIBUTION

Author	Contribution
Aleeza Naeem	Conceptualization, Methodology, Formal Analysis, Writing - Original Draft, Validation, Supervision
Sarmad Siddique	Methodology, Investigation, Data Curation, Writing - Review & Editing
UbaidUllah Jan	Investigation, Data Curation, Formal Analysis, Software
Sobia Yousif	Software, Validation, Writing - Original Draft
Ghashia Gul	Formal Analysis, Writing - Review & Editing
Rabia Akram	Writing - Review & Editing, Assistance with Data Curation
Iqra Manzoor	Writing - Review & Editing, Assistance with Data Curation
Ayesha Saleem	Writing - Review & Editing, Assistance with Data Curation

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