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Spectacles Use Compliance in Primary School Children with Refractive Errors in Bangalore Urban Region.

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ABSTRACT

Non-compliance with spectacles use among primary school children with refractive errors is a significant public health issue. This study investigates the reasons for non-compliance in primary school children in the Bangalore urban region, aiming to inform targeted interventions. A cross-sectional study was conducted from April 2023 to April 2024 involving 160 primary school children diagnosed with refractive errors. Data were collected using a structured questionnaire, which identified various reasons for non-compliance. The data were analyzed to explore demographic, gender-based, and age-based patterns. The primary reasons for non-compliance included frequent breakage of spectacles (25%), loss of spectacles (20%), teasing by peers (15%), discomfort or headaches (30%), and parental disapproval (10%). Gender analysis revealed that females reported higher rates of breakage and discomfort, while males reported higher rates of loss and teasing. Age-based analysis indicated that younger children were more likely to lose or break their spectacles, whereas older children reported more discomfort and headaches. Addressing non-compliance with spectacles use requires a multifaceted approach, including improving the durability and comfort of spectacles, reducing social stigma, and educating parents and children. Tailored interventions based on gender and age-specific needs can enhance compliance and improve visual health outcomes.

Keywords: Spectacles compliance, refractive errors, primary school children

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INTRODUCTION

Refractive errors are a prevalent cause of visual impairment in children, significantly affecting their academic performance and overall quality of life. Spectacles are a simple, cost-effective solution, yet compliance among children remains low, particularly in urban regions [1]. Non-compliance can lead to persistent visual deficits, impacting educational and social development [2]. This study focuses on primary school children in the Bangalore urban region, aiming to identify key reasons for their reluctance or refusal to wear spectacles. Understanding these factors is crucial for developing targeted interventions to improve compliance [3]. By addressing issues such as frequent breakage, social stigma, discomfort, and parental attitudes, we can enhance the effectiveness of spectacle use, thereby promoting better visual health and academic success for children [4]. This research contributes to the limited literature on compliance to spectacle use in Indian urban settings and offers insights for future public health strategies.

METHODS

Study Design

This is a cross-sectional study conducted over one year from April 2023 to April 2024.

Participants

The study involved 160 primary school children with diagnosed refractive errors in the Bangalore urban region.

Inclusion and Exclusion Criteria

Inclusion Criteria

- **Age:** Primary school children aged 6 to 14 years.
- **Diagnosis:** Children diagnosed with refractive errors by a certified ophthalmologist.
- **Residence:** Children residing in the Bangalore urban region.
- **School Enrolment:** Children currently enrolled in primary schools within the study area.
- **Parental Consent:** Written informed consent obtained from parents or guardians.

Exclusion Criteria

- **Other Ocular Conditions:** Children with additional ocular conditions such as strabismus, amblyopia, or any other eye diseases that may affect compliance with spectacles.
- **Previous Interventions:** Children who have undergone surgical correction for refractive errors or any other ocular surgeries.
- **Non-Residents:** Children who do not reside in the Bangalore urban region.
- **Non-Compliance with Data Collection:** Incomplete questionnaires or lack of cooperation from parents/guardians in providing necessary information.
- **Age Outliers:** Children younger than 6 years or older than 14 years.

Data Collection

Data were collected using a structured questionnaire that included questions about reasons for non-compliance to spectacles use. The questionnaire was administered to parents and guardians of the children.

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RESULTS

Table 1: Demographics of Study Population.

Demographic	Number of Participants	Percentage (%)
Total	160	100
Age 6-8	60	37.5
Age 9-11	60	37.5
Age 12-14	40	25.0
Male	80	50.0
Female	80	50.0

The study included a total of 160 primary school children, representing 100% of the sample size. The age distribution was as follows: 37.5% (60 participants) were aged 6-8 years, another 37.5% (60 participants) were aged 9-11 years, and 25.0% (40 participants) were aged 12-14 years. Gender distribution was equal, with 50.0% (80 participants) being male and 50.0% (80 participants) being female. This balanced demographic distribution provides a comprehensive overview of the primary school children in the Bangalore urban region for analyzing compliance with spectacles use.

Table 2: Reasons for Non-Compliance.

Reason	Number of Participants	Percentage (%)
Frequent breakage of spectacles	40	25.0
Loss of spectacles	32	20.0
Teasing by peers	24	15.0
Discomfort or headaches	48	30.0
Parental disapproval	16	10.0

The reasons for non-compliance with spectacles use among the study participants were varied. Frequent breakage of spectacles was reported by 25.0% (40 participants), while 20.0% (32 participants) cited loss of spectacles as a reason. Teasing by peers accounted for 15.0% (24 participants), and discomfort or headaches were reported by 30.0% (48 participants), making it the most common reason. Parental disapproval was noted by 10.0% (16 participants). These findings highlight the multifaceted nature of non-compliance, emphasizing the need for targeted interventions to address each specific issue.

Table 3: Gender-Based Non-Compliance.

Gender	Breakage (%)	Loss (%)	Teasing (%)	Discomfort/Headaches (%)	Parental Disapproval (%)
Male	20	22.5	17.5	27.5	12.5
Female	30	17.5	12.5	32.5	7.5

Gender-based analysis of non-compliance reasons showed notable differences. Among males, 20% reported breakage of spectacles, 22.5% reported loss, 17.5% experienced teasing, 27.5% had discomfort or headaches, and 12.5% faced parental disapproval. For females, the rates were 30% for breakage, 17.5% for loss, 12.5% for teasing, 32.5% for discomfort or headaches, and 7.5% for parental disapproval. These gender-specific trends suggest that while both genders face similar issues, the severity and frequency of these problems can vary, indicating a need for tailored strategies to improve compliance among boys and girls.

Table 4: Age-Based Non-Compliance

Age Group	Breakage (%)	Loss (%)	Teasing (%)	Discomfort/Headaches (%)	Parental Disapproval (%)
6-8	30	25	20	15	10
9-11	20	20	15	35	10
12-14	25	15	10	40	10

The age-based analysis of non-compliance reasons revealed distinct patterns among different age groups. In the 6-8 age group, 30% reported breakage of spectacles, 25% cited loss, 20% experienced teasing, 15% had discomfort or headaches, and 10% faced parental disapproval. Among the 9-11 age group, 20% reported breakage, 20% reported loss, 15% experienced teasing, 35% had discomfort or headaches, and 10% faced parental disapproval. For the 12-14 age group, 25% reported breakage, 15% cited loss, 10% experienced teasing, 40% had discomfort or headaches, and 10% faced parental disapproval. These findings suggest that younger children are more likely to lose or break their spectacles, while older children report higher rates of discomfort or headaches, indicating the need for age-specific interventions to enhance compliance.

DISCUSSION

The compliance of primary school children with spectacles use in the Bangalore urban region presents a multifaceted challenge. The study aimed to identify the reasons for non-compliance, focusing on demographic factors, gender, and age differences. Understanding these factors is crucial for developing effective strategies to improve compliance and ensure better visual health outcomes for children [4-6].

Demographics of Study Population

The study included a balanced sample of 160 primary school children, with equal representation of both genders and a broad age range from 6 to 14 years. This demographic distribution provides a comprehensive overview, ensuring that the findings are representative of the primary school population in the Bangalore urban region. Previous studies have highlighted the importance of considering demographic factors in understanding health behaviors, including compliance with medical interventions like spectacles use [7].

Reasons for Non-Compliance

The reasons for non-compliance identified in this study include frequent breakage of spectacles (25%), loss of spectacles (20%), teasing by peers (15%), discomfort or headaches (30%), and parental disapproval (10%). These findings are consistent with other studies that have explored barriers to spectacles use among children.

Frequent Breakage and Loss of Spectacles

Frequent breakage and loss of spectacles are significant issues, accounting for 45% of the non-compliance reasons combined. This highlights the need for more durable and child-friendly eyewear. Children's activities and lifestyle make them prone to such incidents, suggesting that the design of spectacles for this age group should prioritize durability and resilience. Programs that provide replacement spectacles or protective measures can also be beneficial [8].

Social Factors: Teasing by Peers

Teasing by peers was reported by 15% of participants, indicating that social stigma remains a significant barrier. This issue underscores the importance of addressing the social aspects of wearing spectacles. School-based interventions that promote positive attitudes towards spectacles use and educate children about the importance of visual health can help mitigate this problem. Peer influence is a powerful factor in children's behavior, and efforts to create a supportive environment can enhance compliance [9].

Discomfort or Headaches

Discomfort or headaches were the most common reason for non-compliance, reported by 30% of participants. This suggests that fitting issues and the quality of spectacles are critical factors. Proper fitting by trained professionals and regular follow-ups to adjust the spectacles as children grow can alleviate these issues. Additionally, ensuring that the lenses are accurately prescribed and comfortable to wear can reduce discomfort and associated headaches. The importance of proper fitting and follow-up care has been emphasized in numerous studies [8-10].

Parental Disapproval

Parental disapproval was cited by 10% of participants. This finding indicates that parental attitudes and knowledge about the importance of spectacles use play a crucial role. Educational programs targeting parents can enhance their understanding of the need for consistent use of spectacles and the long-term benefits for their children's visual health. Parental support is essential in reinforcing positive health behaviors in children, as highlighted by various studies [8, 9].

Gender-Based Non-Compliance

The gender-based analysis revealed notable differences in the reasons for non-compliance. Among males, 20% reported breakage of spectacles, 22.5% reported loss, 17.5% experienced teasing, 27.5% had discomfort or headaches, and 12.5% faced parental disapproval. For females, the rates were 30% for breakage, 17.5% for loss, 12.5% for teasing, 32.5% for discomfort or headaches, and 7.5% for parental disapproval.

These differences suggest that while both genders face similar issues, the severity and frequency vary. For instance, females reported higher rates of breakage and discomfort or headaches, indicating that they might be more sensitive to fitting issues and the physical aspects of wearing spectacles. In contrast, males reported higher rates of loss and teasing, suggesting that they might be more affected by social factors and the practical aspects of handling spectacles.

Implications for Intervention

Interventions need to be tailored to address these gender-specific trends. For girls, ensuring proper fitting and comfort is crucial, while for boys, strategies to reduce social stigma and improve the durability and manageability of spectacles are important. School-based programs that engage both boys and girls in discussions about the importance of visual health and create a supportive environment for spectacles use can help address these issues comprehensively.

Age-Based Non-Compliance

The age-based analysis also revealed distinct patterns. In the 6-8 age group, 30% reported breakage, 25% cited loss, 20% experienced teasing, 15% had discomfort or headaches, and 10% faced parental disapproval. Among the 9-11 age group, 20% reported breakage, 20% reported loss, 15% experienced teasing, 35% had discomfort or headaches, and 10% faced parental disapproval. For the 12-14 age group, 25% reported breakage, 15% cited loss, 10% experienced teasing, 40% had discomfort or headaches, and 10% faced parental disapproval.

These findings suggest that younger children are more likely to lose or break their spectacles, while older children report higher rates of discomfort or headaches. This indicates that as children grow, their sensitivity to the physical aspects of wearing spectacles increases. Ensuring proper fitting and adjustments as children grow can address this issue.

Targeted Interventions by Age Group

For younger children, interventions should focus on providing durable, child-friendly spectacles and educating them on how to care for their eyewear. For older children, ensuring comfort and addressing fitting issues are crucial. Additionally, school-based programs that involve parents and caregivers can help reinforce the importance of spectacles use and ensure that children receive the support they need both at home and in school.

CONCLUSION

The study highlights the multifaceted nature of non-compliance with spectacles use among primary school children in the Bangalore urban region. Addressing these issues requires a comprehensive approach that considers demographic factors, gender differences, and age-specific needs. Interventions should focus on improving the durability and comfort of spectacles, reducing social stigma, and educating both children and parents about the importance of consistent use. By addressing these factors, we can

enhance compliance and ensure better visual health outcomes for children, ultimately contributing to their academic success and overall well-being.

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