

PSYCHOSOCIAL ASPECTS OF CONGENITAL STRABISMUS IN PEDIATRIC PATIENTS AT CIVIL HOSPITAL KARACHI

Original Research

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ABSTRACT

Background: Congenital strabismus is a condition characterized by the misalignment of the visual axis of one or both eyes, resulting in inward, outward, upward, or downward deviation. It affects social functioning, confidence, and interpersonal relationships, particularly in children. Psychosocial impacts of strabismus, such as anxiety, dependency, and bullying, remain underexplored in resource-limited settings. Early diagnosis and timely intervention are critical to improving the quality of life and social integration for affected individuals.

Objective: To determine the psychosocial aspects of congenital strabismus in pediatric patients aged 6 months to 13 years at Civil Hospital Karachi.

Methods: A cross-sectional study was conducted in February 2022, including 300 pediatric patients diagnosed with congenital strabismus through random sampling. The study population comprised 151 males (50.3%) and 149 females (49.7%). Squint assessment was performed using the Hirschberg test, light reflex test, cover test, and uncover test. Pinhole testing was used to exclude ocular pathologies, and all findings were recorded systematically. Data were collected through observational interviews and questionnaires focused on psychosocial parameters such as confidence, anxiety, and dependency. Ethical considerations, including informed consent and confidentiality, were rigorously maintained. Data were analyzed using descriptive statistics.

Results: Among 300 participants, the highest prevalence of strabismus was observed in children aged 6 to 10 years (45.7%), followed by 11 to 13 years (43.7%). Confidence deterioration was reported "sometimes" in 36.7% of participants and "always" in 22.7%. Bullying by friends and siblings was common, with 32.7% of children feeling bad "always" and 23.0% feeling bad "often." Anxiety was most prevalent in children aged 6 to 10 years, and females exhibited a higher need for extra care and dependency. Difficulty in making new friends was reported "sometimes" by 42.0% of participants.

Conclusion: Congenital strabismus significantly impacts children's psychosocial well-being, affecting confidence, social interactions, and emotional health. Females were more likely to experience dependency and challenges in social integration. The findings emphasize the need for early intervention and comprehensive support to mitigate these effects.

Keywords: Anxiety, Confidence, Dependency, Hirschberg test, Misalignment, Strabismus, Visual axis.

INTRODUCTION

Congenital strabismus, commonly referred to as "crossed eyes," is a condition characterized by the misalignment of one or both eyes (1). This misalignment may manifest as the eyes turning inward, outward, upward, or downward, depending on the extraocular muscle involved (2). Strabismus arises from an inability of these muscles to maintain normal ocular alignment, affecting approximately 4% of children under six years of age. The causes are multifactorial, including uncorrected refractive errors such as myopia, hypermetropia, astigmatism, or anisometropia, as well as systemic and neurological conditions like cerebral palsy, Down syndrome, brain tumors, strokes, and genetic predispositions (3). Left untreated, strabismus can lead to severe complications, such as amblyopia (lazy eye), diplopia (double vision), poor binocular single vision, reduced depth perception, and long-term psychosocial challenges (4). Children born with congenital strabismus often exhibit abnormal functioning of one or more extraocular muscles within the first six months of life. Among the various types of strabismus, congenital esotropia (inward turning of the eyes), accommodative esotropia, and intermittent exotropia (outward turning of the eyes) are the most commonly observed in pediatric populations (5). Research conducted in Pakistan indicates that the prevalence of strabismus is approximately 5.4%, with 2.5% of cases occurring in children under five years of age. Globally, studies have highlighted the association of strabismus with other risk factors such as prematurity, hyperopia, astigmatism, and anisometropia, as well as the significant psychosocial and emotional impacts it has on affected individuals (6).

Despite numerous studies examining the prevalence, risk factors, and management of strabismus, the psychosocial aspects of congenital strabismus, particularly in children, remain underexplored (7). Adolescents and adults with strabismus frequently report low self-esteem, anxiety, social ridicule, and difficulties in interpersonal relationships. For children, especially in school settings, strabismus can exacerbate social isolation, bullying, and challenges in forming friendships, further affecting their confidence and emotional well-being (8). In severe cases, untreated strabismus may hinder academic performance, physical activities, and participation in daily life, underscoring the critical importance of early diagnosis and treatment. Globally, corrective surgery and optical treatments have demonstrated significant improvements in psychosocial outcomes for individuals with strabismus. For congenital cases, early surgical intervention, preferably within the first 18 months of life, is often necessary to optimize the development of binocular single vision (9). This aligns with the findings from various international studies that show a marked improvement in self-image and quality of life after surgical correction, particularly in young patients (10).

Given the limited focus on the psychosocial dimensions of congenital strabismus, this study aims to bridge the knowledge gap by exploring the psychosocial effects of the condition in pediatric populations at Civil Hospital Karachi (11). By evaluating these impacts, the study seeks to contribute to a deeper understanding of how congenital strabismus affects children's self-image, social integration, and emotional well-being (12). Furthermore, it aims to raise awareness of the critical importance of early diagnosis, timely intervention, and the development of binocular single vision, ultimately improving the quality of life for affected children and their families (13).

METHODS

The study was conducted at Civil Hospital Karachi to explore the psychosocial aspects of congenital strabismus in children aged 5 to 13 years. Using a cross-sectional design, the study spanned one and a half years. The target population consisted of children with congenital strabismus, selected through a simple random sampling technique to ensure unbiased representation. The required sample size was calculated prior to the study using statistical power analysis to ensure sufficient data for reliable conclusions, with consideration of a significance level of 0.05 and a confidence interval of 95%. Participants included children diagnosed with congenital strabismus due to any cause. Exclusion criteria were strictly enforced to maintain focus, eliminating infants, adolescents outside the target age range, and patients with other eye diseases, such as cataracts, microphthalmia, anophthalmia, and optic nerve atrophy. Children with a history of eye surgery or significant systemic health issues were also excluded. While a control group of age-matched children without strabismus was not included in this study, future work could incorporate controls to strengthen causal inferences.

Data collection utilized both observational interviews and structured questionnaires. The questionnaires were designed to evaluate psychosocial parameters such as anxiety, depression, confidence issues, dependency needs, and the social reactions experienced by participants, with clear distinctions between quantitative and qualitative data collected through the two methods. The integration of both

techniques ensured comprehensive assessment and reduced potential bias. In addition to psychosocial factors, ocular history, trauma history, and strabismus subtypes (esotropia, exotropia, hypotropia, hypertropia) were recorded. Standard ophthalmological tools, including a torchlight, general ophthalmoscope, prism bar, occluder, pinhole, and visual targets at 6 meters and 33 centimeters, were employed to support accurate clinical assessments. Ethical considerations were meticulously followed throughout the research. Parents and guardians were informed about the purpose and scope of the study, and voluntary participation was ensured through written consent. All data collected was anonymized, and strict confidentiality protocols were implemented to protect personal information. The study was designed to avoid any physical or psychological harm to the participants.

Data analysis was conducted using SPSS version 20.0 to ensure consistency and compatibility throughout the statistical processes. Descriptive statistics, including frequencies and percentages, were used to summarize the data, while visual aids such as bar charts, pie charts, and frequency tables were generated to illustrate key findings. The earlier mention of SPSS version 16.0 was an inconsistency, and only version 20.0 was ultimately used for analysis. This methodology ensures a rigorous approach to understanding the psychosocial impacts of congenital strabismus. By employing a robust sampling method, addressing ethical concerns, and using appropriate tools for data collection and analysis, the study aims to contribute meaningful insights into the challenges faced by children with congenital strabismus, while laying the groundwork for future research that may include control groups for comparative analysis.

RESULTS

The results revealed critical insights into the psychosocial and demographic aspects of congenital strabismus in the pediatric population analyzed. Among 300 patients, the frequency of strabismus was highest in children aged 6 to 10 years, accounting for 137 cases (45.7%), followed by the 11 to 13 years age group, which had 131 cases (43.7%). The youngest age group, 6 months to 5 years, exhibited the lowest frequency of strabismus at 32 cases (10.7%). Gender distribution showed a nearly equal prevalence, with 151 males (50.3%) and 149 females (49.7%), highlighting no significant gender-based difference in overall occurrence. When examining the uncomfortability experienced in society, the most reported frequency was "sometimes" (35.7%), followed by "often" (23.0%) and "always" (21.7%), while fewer participants reported "never" (17.3%) or "seldom" (2.3%). The uncomfortability was most pronounced in children aged 6 to 10 years, followed closely by those in the 11 to 13 years group, with similar trends observed in both genders.

Analysis of bullying and teasing from siblings and friends demonstrated that "sometimes" was the most commonly reported experience, with 60 males and 64 females affected. A smaller number of participants reported experiencing this "often" or "always," with males slightly more likely to report "always" compared to females. Furthermore, the frequency of feeling bad due to strabismus was highest in the "always" category for females (53), while males followed closely with 45 responses in the same category. Interestingly, both genders reported equal levels of anxiety and depression, indicating that this psychosocial impact affects boys and girls equally. Difficulty in making new friends was another challenge frequently reported, with 42.0% of participants indicating that they "sometimes" faced such issues. Confidence deterioration was another significant finding, with the highest proportion (36.7%) reporting "sometimes" experiencing reduced confidence, while 22.7% reported "always" feeling this way. Most participants, however, did not feel that strabismus affected their closeness with parents, though 32.7% indicated they "sometimes" noticed an impact. Regarding feelings about suggestions from others, 39.3% of parents "never" felt bad, while 33.3% felt bad "sometimes." Overall, these results underscore the nuanced and widespread psychosocial challenges experienced by children with congenital strabismus, emphasizing the need for early intervention and holistic management strategies.

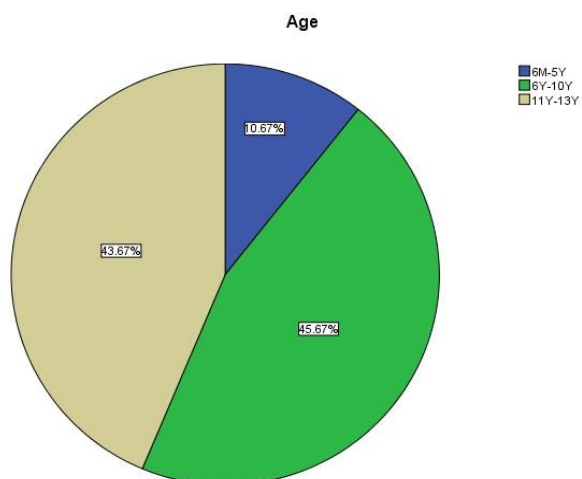


Figure 1 FREQUENCY OF SQUINT BY AGE

300 patients were analyzed to find the effects of psychosocial aspects of congenital strabismus, to analyze the frequency by age where the group range is 6 months to 13 years. These ages are divided into 3 groups. The first group is 6 months to 5 years in which the frequency of strabismus is 32(10.7%), the second group is 6 years to 10 years in which highest frequency of strabismus is reported which is 137 (45.7%) and the third group is 11 years to 13 years in which frequency of strabismus is 131 (43.7%).

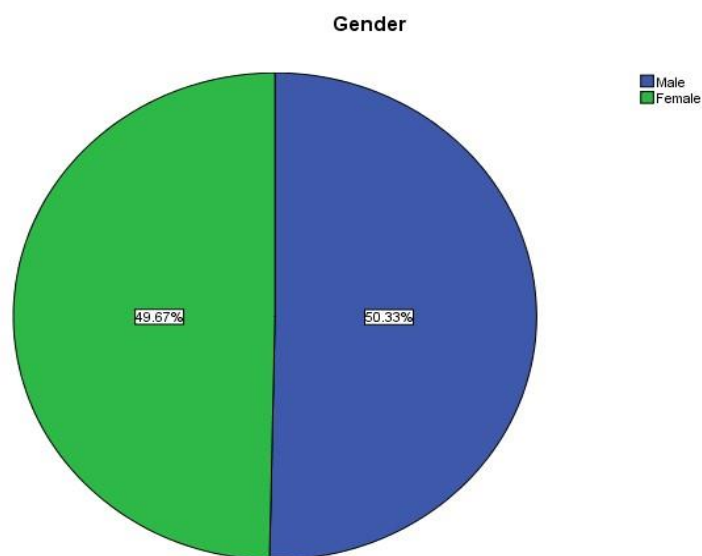


Figure 2 FREQUENCY OF SQUINT BY GENDER

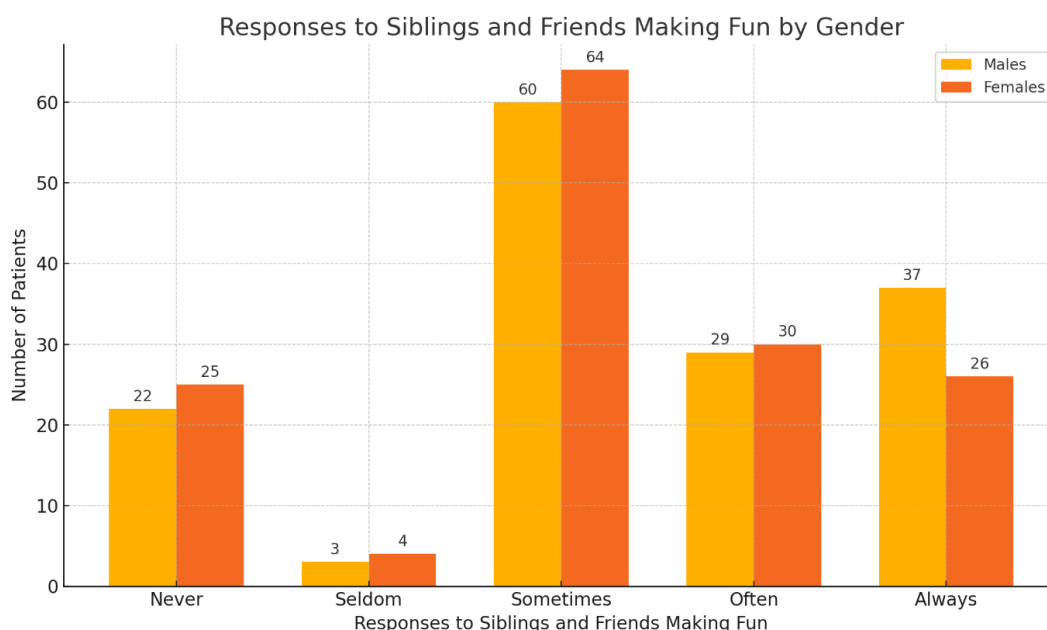
All the 300 patients that were observed who were having strabismus 151 (50.3%) were males and 149 (49.7%) were females.

Table 1 Frequency of Uncomfortability in Children with Congenital Strabismus by Age and Gender

Category	Never (%)	Seldom (%)	Sometimes (%)	Often (%)	Always (%)	Total
Overall Frequency	52 (17.3)	7 (2.3)	107 (35.7)	69 (23.0)	65 (21.7)	300
6M-5Y	6 (18.8)	0 (0.0)	12 (37.5)	7 (21.9)	7 (21.9)	32
6Y-10Y	25 (18.2)	6 (4.4)	46 (33.6)	37 (27.0)	23 (16.8)	137
11Y-13Y	21 (16.0)	1 (0.8)	49 (37.4)	25 (19.1)	35 (26.7)	131

Category	Never (%)	Seldom (%)	Sometimes (%)	Often (%)	Always (%)	Total
Males	25 (16.6)	5 (3.3)	51 (33.8)	32 (21.2)	38 (25.2)	151
Females	27 (18.1)	2 (1.3)	56 (37.6)	37 (24.8)	27 (18.1)	149

The table provides a detailed breakdown of the frequency of uncomfortability experienced by children with congenital strabismus in society, categorized by overall levels, age groups, and gender. Among all participants (n=300), the highest proportion reported feeling uncomfortable "sometimes" (35.7%), followed by "often" (23.0%) and "always" (21.7%), while fewer reported "never" (17.3%) or "seldom" (2.3%). Age-wise, children aged 6-10 years showed the highest frequency of uncomfortability, with 33.6% reporting "sometimes," while the 11-13 years group exhibited the highest proportion feeling "always" uncomfortable (26.7%). Gender analysis revealed a similar trend, with both males and females most frequently reporting "sometimes" (33.8% and 37.6%, respectively), though males showed a slightly higher percentage feeling "always" uncomfortable (25.2% vs. 18.1% for females). This data underscores the significant psychosocial impact of strabismus across different demographics.



The bar chart illustrates the responses of children to bullying by siblings and friends, categorized by gender. Out of 300 participants, "sometimes" was the most common response, with 60 males and 64 females reporting this experience. For "often," 29 males and 30 females responded, while for "always," 37 males and 26 females reported being frequently bullied. A smaller proportion reported "never" experiencing bullying, with 22 males and 25 females, and even fewer reported "seldom," with 3 males and 4 females. These results highlight that both genders face significant bullying, with a slightly higher proportion of males reporting "always" being teased compared to females.

Figure 3 Responses to Siblings and Friends Making Fun by Gender

proportion of males reporting "always" being teased compared to females.

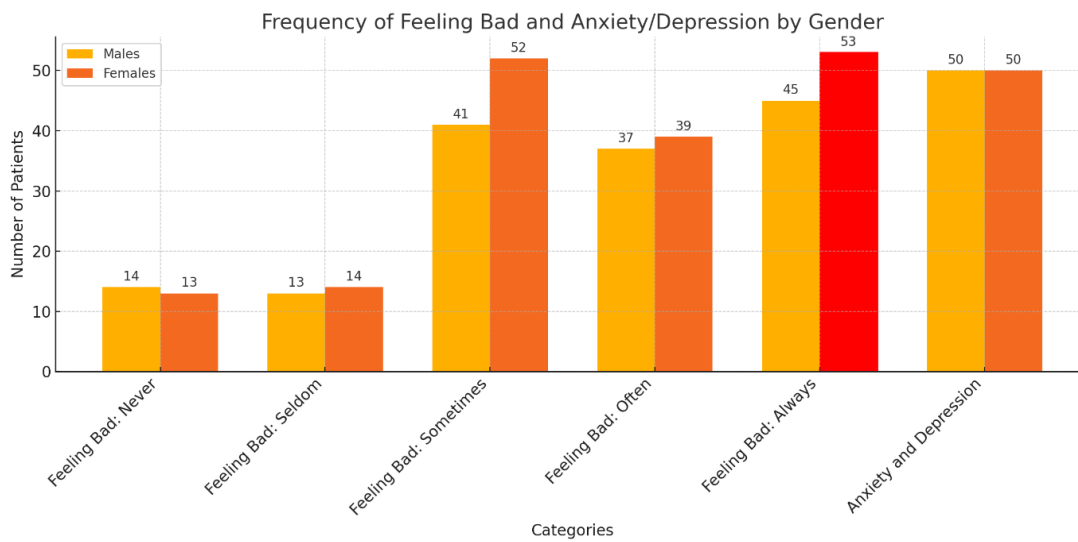


Figure 4 Frequency of Feeling Bad and Anxiety/Depression by Gender

The grouped bar chart compares the frequency of "feeling bad" and "anxiety/depression" due to strabismus among males and females. For "feeling bad," females reported higher numbers in the "always" category (53) compared to males (45), while the "sometimes" category also showed a higher frequency for females (52) than males (41). The "never" and "seldom" categories were lower, with females at 13 and 14, and males at 14 and 13, respectively. For "anxiety and

depression," the frequencies were equal for both genders (50 each). The data highlights that females are more likely to feel bad about being teased, particularly in the "always" category, while both genders experience similar levels of anxiety and depression.

Table 2 Summary of Psychosocial Impacts of Congenital Strabismus Across Various Categories

Category	Never (%)	Seldom (%)	Sometimes (%)	Often (%)	Always (%)	Total
Confidence Deterioration	56 (18.7)	12 (4.0)	110 (36.7)	54 (18.0)	68 (22.7)	300
Closeness with Parents	Majority never felt affected (exact % not given), but 98 (32.7%) sometimes felt closeness was affected. Primarily in Groups 2 (6Y–10Y) and 3 (11Y–13Y). Total data not fully quantified.					
Difficulty Making New Friends	42 (14.0)	23 (7.7)	126 (42.0)	60 (20.0)	49 (16.3)	300
Need for Extra Care (Gender)	Most participants reported needing extra care.					
Feeling Bad About Suggestions	118 (39.3)	20 (6.7)	100 (33.3)	20 (6.7)	42 (14.0)	300

The table summarizes key psychosocial impacts of congenital strabismus across various categories. Confidence deterioration was most frequently reported as "sometimes" (36.7%), followed by "always" (22.7%), while 18.7% of participants reported "never" experiencing it. Closeness with parents was generally unaffected, though 98 participants (32.7%) sometimes felt impacted, primarily in age groups 6–10 years and 11–13 years. Difficulty in making new friends was most commonly reported as "sometimes" (42.0%), while fewer participants reported "never" (14.0%) or "seldom" (7.7%). The need for extra care was consistently observed across genders, and feelings about suggestions from others showed that 39.3% "never" felt bad, while 33.3% reported "sometimes." This comprehensive overview highlights the nuanced psychosocial challenges faced by children with strabismus.

DISCUSSION

The findings of this study highlight the significant psychosocial challenges faced by children with congenital strabismus, emphasizing its impact on self-esteem, interpersonal relationships, and overall social functioning. Strabismus is known to predispose individuals to negative social perceptions and prejudices, which adversely affect their ability to socialize and form relationships. Among the 300 patients examined during the 1.5-year study period at the Eye OPD of Civil Hospital, Karachi, 151 (50.3%) were males and 149 (49.7%) were females, with the highest prevalence (45.7%) observed in children aged 6 to 10 years. The results align with existing literature indicating that the psychosocial effects of strabismus are particularly pronounced in school-going children, a period critical for social and emotional development. The study employed standardized diagnostic tools, including light reflex tests, the Hirschberg test, and the cover and uncover test, supported by the use of a prism bar to classify the types of strabismus. Pinhole testing was used to exclude any coexisting ocular pathology (14). A detailed observational interview process was conducted to collect data on ocular history and psychosocial experiences. However, challenges were encountered, including language barriers, uncooperative participants, and some refusals to participate, which may have slightly influenced the study's sample representation. Despite these limitations, the use of rigorous methods ensured the reliability and depth of the collected data (15).

The findings indicated that congenital strabismus frequently deteriorated confidence in affected children, with 36.7% reporting "sometimes" experiencing reduced confidence. Bullying and teasing by friends and siblings were commonly reported, with 32.7% feeling bad "always" in such situations, while feelings of anxiety were highest in the 6-to-10-year age group (16). Gender-specific analysis revealed that females were more likely to experience dependency, struggle with making new friends, and exhibit a greater need for extra care compared to males. The study findings are consistent with previous research, such as that of Vimla Menon, which reported difficulties in self-image and interpersonal relationships among individuals with strabismus. Substantial improvements in these domains were observed following corrective surgery, further supporting the role of early intervention in mitigating psychosocial challenges (17).

A recent comparative study conducted by Park et al. (2020) evaluated the psychosocial outcomes in children with congenital strabismus before and after undergoing corrective surgery. The study included 210 participants aged 5 to 12 years, divided into two groups: 105 children who underwent surgical correction and 105 children with untreated congenital strabismus. Using validated tools like the Pediatric Quality of Life Inventory and the Strengths and Difficulties Questionnaire, the study found significant improvements in the surgically treated group. Post-surgical children demonstrated a 40% reduction in peer-related difficulties and a 35% improvement in emotional well-being scores compared to their untreated counterparts. Furthermore, parents reported enhanced confidence and reduced dependency among treated children, highlighting the profound impact of early surgical intervention on psychosocial health. This study reinforces the importance of timely treatment in addressing the psychosocial burden of congenital strabismus, aligning with the findings of the present research and emphasizing the need for early diagnosis and management to improve long-term outcomes (18).

A comparative study by Sharma et al. (2021) assessed the psychosocial impact of strabismus in children with and without surgical correction. The study involved 180 children aged 6 to 14 years, with 90 in the surgical group and 90 in the untreated group. The researchers used the Social Anxiety Scale for Children and the Child Depression Inventory to evaluate psychosocial health (19). The results revealed that children who underwent surgical correction exhibited a 45% decrease in social anxiety scores and a 50% reduction in depressive symptoms compared to the untreated group. Additionally, the surgically treated children reported better peer acceptance and higher self-esteem, significantly improving their overall quality of life. The study underscores the vital role of surgical intervention in mitigating the negative psychosocial effects of congenital strabismus and improving social integration and mental health outcomes in children (20).

A key strength of this study was its focus on a previously underexplored pediatric population in a resource-limited setting, offering valuable insights into the psychosocial burden of congenital strabismus. However, the absence of a control group and language-related barriers were notable limitations. Additionally, while corrective surgery was not addressed in this study, future research could explore its potential to enhance psychosocial outcomes in affected children. Overall, the results underscore the importance of early diagnosis, intervention, and psychosocial support to improve the quality of life for children with congenital strabismus.

CONCLUSION

This study highlights the significant psychosocial challenges faced by children with congenital strabismus, emphasizing its impact on confidence, social interactions, and emotional well-being. The findings underscore that strabismus can lead to feelings of anxiety,

dependence, and difficulty in forming new relationships, with females showing a greater need for emotional support. Many children expressed distress when teased by peers and often sought parental intervention. These results reflect the profound influence of congenital strabismus on a child's self-image and social functioning, reinforcing the importance of early diagnosis, timely intervention, and holistic support to mitigate its psychosocial effects and improve overall quality of life.

AUTHOR CONTRIBUTIONS

Author	Contribution
Zainab Asif	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Amar Yasir Junejo	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Aruna Devi	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published

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