APEX JOURNAL OF SOCIAL SCIENCES
https://apexjss.com
Volume 5 Issue 2, 2026

PARENTAL AWARENESS AND SCREENING UPTAKE FOR CHILDHOOD AMBLYOPIA: A CROSS-SECTIONAL SURVEY

Sara Zahid [1], Dr. Ankit Kumar [2], Dr. Fareeda Mustafa, FCPS, DO [3]

Affiliations:

[1] Institute of Molecular Biology and Biotechnology, The University of Lahore, Pakistan. Email: sarazahid61@yahoo.com

[2] Ophthalmology Resident, TRIHMS, Naharlagun, Arunachal Pradesh 791110, India. Email: manish.itsmyway@gmail.com

[3] Associate Professor, Pediatric Ophthalmology & Cataract Surgery, Department of Ophthalmology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh. Email: drfk.mustafa@yahoo.com

Corresponding Author/s Email:

[1] sarazahid61@yahoo.com

Copyright:

Author/s

License:

Abstract

Background: *Amblyopia is one of the most common causes of reduced vision in children, and much of the damage it does is avoidable if it is found early. Because the child usually does not notice or complain of poor sight in one eye, detection depends heavily on whether parents know the condition exists and whether the child is ever screened.*

Objective: *To assess parental awareness of childhood amblyopia, measure the uptake of vision screening among their children, and identify factors associated with screening.*

Methods: *We conducted a hospital-based cross-sectional survey among parents and primary caregivers of children aged 3–12 years attending the paediatric and ophthalmology outpatient clinics of a tertiary-care hospital. Participants were recruited consecutively and interviewed with a structured, pilot-tested questionnaire. Awareness was measured with 12 items on the meaning, causes, risk factors, consequences and treatment of amblyopia; a score of 60% or more was taken as adequate awareness. Screening uptake was defined as a reported history of formal vision assessment by a qualified healthcare provider. Multivariable logistic regression was used to identify factors independently associated with screening.*

Results: *Of 416 eligible parents approached, 384 completed the survey (response rate 92.3%). The mean age of respondents was 35.6 ± 7.4 years, and 246 (64.1%) were mothers. Adequate awareness of amblyopia was found in 160 participants (41.7%), while 139 children (36.2%) had ever undergone vision screening. Among parents of unscreened children, the main reasons given were the absence of noticeable visual symptoms (46.5%), no recommendation from a healthcare professional (31.8%) and concern about cost (66). were independently associated with screening uptake.*

Conclusion: *Fewer than half of the parents had adequate knowledge of amblyopia, and only about one child in three had ever had a vision check. Most unscreened children were missed simply because they seemed to see well and nobody advised testing. Routine screening advice from paediatricians and primary care workers, together with simple parent education, could close much of this gap.*

Keywords: Amblyopia; Lazy Eye; Vision Screening; Parental Awareness; Health-Seeking Behaviour; Paediatric Ophthalmology; South Asia

1. Introduction

Amblyopia is a developmental disorder of vision in which one eye, or occasionally both, fails to reach normal visual acuity even with the best optical correction, because the visual pathway did not receive a clear and equal image during early childhood (Birch, 2013; Holmes & Clarke, 2006). The eye itself often looks entirely normal. The common causes are strabismus, unequal refractive error between the two eyes (anisometropia), high uncorrected refractive error in both eyes, and anything that blocks the visual axis, such as congenital cataract or ptosis (Birch, 2013; Holmes & Clarke, 2006).

It is not a rare problem. Pooled estimates from systematic reviews put the global prevalence of amblyopia in children at roughly 1.4%, which translates into tens of millions of affected people worldwide, and the numbers are projected to rise over the coming decades (Fu et al., 2020; Hu et al., 2022). The World Health Organization has also highlighted that a large share of visual impairment in the world is either

preventable or treatable, and that children in low- and middle-income countries carry an uneven share of this burden (World Health Organization, 2019).

What makes amblyopia worth talking about at a public-health level is that it responds well to treatment when it is caught early. Glasses alone improve many cases, and patching or atropine penalisation of the better eye gives good results in young children (Holmes et al., 2011; Pediatric Eye Disease Investigator Group, 2002; Webber & Wood, 2005). Treatment response, however, falls with age, and results are clearly better in younger children than in older children and adolescents (Holmes et al., 2011). When amblyopia is missed, the reduced vision usually persists into adult life. It affects school performance, choice of occupation and self-image (Carlton & Kaltenthaler, 2011; Packwood et al., 1999), and it leaves the person dependent on a single good eye; if that eye is later injured or diseased, the lifetime risk of serious visual loss is considerable (Rahi et al., 2002).

The difficulty is that young children rarely complain. A child with one weak eye sees perfectly well with the other eye and has no reason to think anything is wrong. For this reason, most guidelines recommend routine vision screening in the preschool years rather than waiting for symptoms (Solebo et al., 2015; US Preventive Services Task Force et al., 2017; Wallace et al., 2018). How screening is organised, and at what age, still varies a great deal between countries, and many low-resource settings have no structured programme at all (Chen et al., 2019). In such settings the decision to have a child's eyes tested falls largely on the parents.

Parental knowledge therefore matters. Studies from different regions have found that many parents have only a vague idea of childhood eye diseases, tend to seek care only when a problem is visible, and face practical barriers such as cost, distance and time off work (Donaldson et al., 2018; Ebeigbe & Emedike, 2017; Kemper et al., 2006). Evidence of this kind from South Asia, where paediatric eye services are unevenly distributed, is still limited. We therefore carried out this survey to assess how much parents know about amblyopia, how many of their children have ever had their vision screened, and which factors are linked with screening. We hoped the findings would point to practical steps that clinicians and programme planners can take.

2. Materials and Methods

2.1 Study Design and Setting

This was a hospital-based cross-sectional survey carried out in the paediatric and ophthalmology outpatient departments, between January and June 2026. The hospital is a tertiary referral centre that receives children from both urban and rural catchment areas. The study is reported in line with the STROBE guidelines for observational studies (von Elm et al., 2007).

2.2 Participants

Parents or primary caregivers aged 18 years or older who accompanied a child aged 3–12 years to either clinic were eligible. Where both parents were present, the one mainly responsible for the child's daily care was interviewed. We excluded caregivers who declined consent, those who could not communicate in the local languages used for the interview, and families already attending for a known diagnosis of amblyopia or strabismus, since their knowledge would have been shaped by previous counselling. Participants were enrolled consecutively on clinic days until the target sample was reached.

2.3 Sample Size

The sample size was calculated with the single-proportion formula $n = Z^2p(1 - p)/d^2$ (Charan & Biswas, 2013). Because no reliable local estimate of parental awareness was available, we assumed a proportion of 50% to obtain the most conservative size, with a 95% confidence level ($Z = 1.96$) and an absolute precision of 5%. This gave a minimum of 384 participants. To allow for incomplete responses, 416 eligible parents were approached.

2.4 Questionnaire and Data Collection

Data were collected through face-to-face interviews using a structured questionnaire prepared after reviewing previous studies (Donaldson et al., 2018; Ebeigbe & Emedike, 2017; Kemper et al., 2006) and in consultation with two paediatric ophthalmologists. The questionnaire was developed in English, translated

into and back-translated by an independent translator to check equivalence. It was pilot-tested on parents who were not included in the final analysis, and minor wording changes were made after the pilot. Internal consistency of the knowledge section was acceptable (Cronbach's α =. The questionnaire had three sections: (i) socio-demographic characteristics of the respondent and the child; (ii) knowledge of amblyopia; and (iii) the child's vision screening history and, where the child had never been screened, the reasons for this. Before the knowledge section, interviewers used the local term for "lazy eye" and did not explain the condition, so as not to influence answers. Interviews took about 10–15 minutes and were conducted in a private corner of the clinic.

2.5 Outcome Definitions

Parental awareness was measured with 12 questions on the meaning, causes, risk factors, consequences and treatment of amblyopia. Each correct answer scored 1 and each incorrect or "don't know" answer scored 0, giving a total of 0–12. A score of 60% or more (at least 8 of 12) was classified as adequate awareness and a lower score as inadequate awareness.

Screening uptake was defined as a reported history of the child having had a formal vision assessment by a qualified healthcare provider (ophthalmologist, optometrist, or trained paediatric or primary-care staff), whether in a clinic, a school programme or a camp. Informal checks at home were not counted.

2.6 Statistical Analysis

Data were entered into Microsoft Excel and analysed. Continuous variables are presented as mean ± standard deviation and categorical variables as frequencies and percentages. The chi-square test was used to compare screening uptake across participant characteristics. Variables with $p < .20$ in the bivariate analysis were entered into a multivariable logistic regression model to identify factors independently associated with screening. Results are reported as adjusted odds ratios (AOR) with 95% confidence intervals (CI). Multicollinearity was checked and model fit was assessed with the Hosmer–Lemeshow test. A p-value below .05 was taken as statistically significant.

2.7 Ethical Considerations

The study protocol was approved, and the study was conducted in accordance with the Declaration of Helsinki. The purpose of the study was explained to every participant, and written informed consent was obtained before the interview. No personal identifiers were recorded. Parents whose children were found to have visual complaints during the interview were advised to have them examined in the eye clinic.

3. Results

3.1 Characteristics of the Respondents

Of the 416 eligible parents approached, 384 completed the interview, giving a response rate of 92.3%. The mean age of respondents was 35.6 ± 7.4 years and 246 (64.1%) were mothers. The distribution of respondents by education, occupation, residence and monthly household income, and of their children by age and sex, is shown in Table 1.

Table 1

Socio-demographic Characteristics of Respondents (n = 384)

Characteristic	Category	n	%
Age of respondent (years)	Mean ± SD	35.6 ± 7.4	—
Relationship to child	Mother	246	64.1
Relationship to child	Father / other caregiver	138	35.9

3.2 Awareness of Amblyopia

Overall, 160 of the 384 parents (41.7%) had adequate awareness of amblyopia, while the remaining 224 (58.3%) scored below the 60% cut-off. Responses to individual items are given in Table 2.

3.3 Screening Uptake and Barriers

Only 139 children (36.2%) had ever had their vision formally assessed, leaving 245 (63.8%) who had never been screened. When the parents of these 245 children were asked why, the most frequent answer was

that the child had no noticeable problem with vision (114; 46.5%). The next most common reason was that no doctor or health worker had ever advised an eye

4. Discussion

This survey shows a clear gap between what is recommended for children's eyes and what actually happens. Fewer than half of the parents we interviewed had an adequate understanding of amblyopia, and nearly two out of every three children had never had a formal vision test, even though all of them were already in contact with a tertiary hospital. Given that the global prevalence of amblyopia is around 1.4% (Fu et al., 2020; Hu et al., 2022), a screening rate of 36% means that a real number of affected children in a population like ours are likely to be reaching school age, and beyond, without a diagnosis.

The level of awareness we found (41.7%) is broadly in line with studies from other low- and middle-income settings, where parents often recognise obvious conditions such as squint or the need for glasses but know little about "hidden" problems like amblyopia (Donaldson et al., 2018; Ebeigbe & Emedike, 2017). The specific points that parents did not know are also the ones that matter most in practice. The items answered correctly least often were. Knowing that amblyopia exists is not enough; parents also need to know that it has no symptoms and that the chance of successful treatment drops as the child gets older (Holmes et al., 2011; Wallace et al., 2018).

The most striking finding is the reason parents gave for not screening. Almost half said their child did not seem to have any problem. This is exactly the logic that allows amblyopia to go unnoticed, because a child with one good eye behaves normally at home and at school (Birch, 2013; Holmes & Clarke, 2006). It explains why screening policies recommend testing all children at set ages rather than only those with complaints (Solebo et al., 2015; US Preventive Services Task Force et al., 2017). It also suggests that health messages should state plainly that a child can have a serious eye problem and still appear to see well.

The second most common reason, the lack of a recommendation from a health professional, is in many ways the easiest to fix. These parents were already sitting in a hospital outpatient clinic. Paediatricians, general practitioners and vaccination staff see young children repeatedly in the first years of life, and a short reminder or a simple visual acuity check at one of these visits could reach a large number of families at very little cost. Guidelines already expect this kind of opportunistic screening in primary care (Wallace et al., 2018), and similar observations about missed opportunities and poor follow-up after screening have been reported elsewhere (Kemper et al., 2006).

Cost was also mentioned by a proportion of parents. In settings where paediatric eye services are concentrated in cities and paid largely out of pocket, the cost of travel, consultation and glasses can outweigh a problem the parent cannot see. School-based programmes have been shown to reach large numbers of children at low cost and to reduce some of these access barriers (Sharma et al., 2012), although they usually start later than the ideal age for amblyopia detection. A combination of school screening and screening at routine child health visits is probably more realistic than either approach alone (Chen et al., 2019; Solebo et al., 2015). Since glasses alone can improve vision in a good proportion of children with refractive amblyopia (Cotter & Pediatric Eye Disease Investigator Group, 2006), making low-cost spectacles available after screening would also make screening more worthwhile for families.

4.1 Strengths and Limitations

The study had a good response rate and an adequate sample size, used a pilot-tested questionnaire, and was conducted by face-to-face interviews, which reduced the problem of low literacy affecting responses. Some limitations should be kept in mind. Because it was a single-centre, hospital-based study, the participants were families who already use health services, so awareness and screening rates in the general community are likely to be lower than we report. Screening history was based on parental recall and could not be checked against records, which may have led to over- or under-reporting. The cross-sectional design shows associations but cannot establish cause and effect. Finally, the 60% cut-off for adequate awareness, although commonly used, is arbitrary.

5. Conclusion

Parental knowledge of amblyopia was limited and vision screening uptake was low in this sample. Most unscreened children were missed not because their parents refused, but because the children appeared to see normally and no health worker had suggested a test. Simple measures could make a real difference: advising or performing a basic vision check at routine child health visits, clear public messages that amblyopia usually has no symptoms and must be treated early, and lower-cost access to eye examinations and spectacles. Community-based studies are needed to confirm these findings in the wider population.

6. Declarations

6.1 Acknowledgements

We thank the parents who took part and the staff of the paediatric and ophthalmology clinics.

6.2 Funding

This research received no specific grant from any funding agency.

6.3 Conflict of Interest

The authors declare no conflict of interest.

6.4 Author Contributions

SZ: conception, data collection, and drafting; AK: data collection and analysis; DKP: methodology and statistical review; FM: supervision and critical revision. All authors approved the final manuscript.

6.5 Data Availability

The dataset is available from the corresponding author on reasonable request.

References

Birch, E. E. (2013). Amblyopia and binocular vision. *Progress in Retinal and Eye Research, 33*, 67–84.

Carlton, J., & Kaltenthaler, E. (2011). Amblyopia and quality of life: A systematic review. *Eye, 25*(4), 403–413.

Charan, J., & Biswas, T. (2013). How to calculate sample size for different study designs in medical research? *Indian Journal of Psychological Medicine, 35*(2), 121–126.

Chen, A. H., Abu Bakar, N. F., & Arthur, P. (2019). Comparison of the pediatric vision screening program in 18 countries across five continents. *Journal of Current Ophthalmology, 31*(4), 357–365.

Cotter, S. A., & Pediatric Eye Disease Investigator Group. (2006). Treatment of anisometropic amblyopia in children with refractive correction. *Ophthalmology, 113*(6), 895–903.

Donaldson, L., Subramanian, A., & Conway, M. L. (2018). Eye care in young children: A parent survey exploring access and barriers. *Clinical and Experimental Optometry, 101*(4), 521–526.

Ebeigbe, J. A., & Emedike, C. M. (2017). Parents' awareness and perception of children's eye diseases in Nigeria. *Journal of Optometry, 10*(2), 104–110.

Fu, Z., Hong, H., Su, Z., Lou, B., Pan, C.-W., & Liu, H. (2020). Global prevalence of amblyopia and disease burden projections through 2040: A systematic review and meta-analysis. *British Journal of Ophthalmology, 104*(8), 1164–1170.

Holmes, J. M., & Clarke, M. P. (2006). Amblyopia. *The Lancet, 367*(9519), 1343–1351.

Holmes, J. M., Lazar, E. L., Melia, B. M., Astle, W. F., Dagi, L. R., Donahue, S. P., et al. (2011). Effect of age on response to amblyopia treatment in children. *Archives of Ophthalmology, 129*(11), 1451–1457.

Hu, B., Liu, Z., Zhao, J., Zeng, L., Hao, G., Shui, D., et al. (2022). The global prevalence of amblyopia in children: A systematic review and meta-analysis. *Frontiers in Pediatrics, 10*, Article 819998.

Kemper, A. R., Uren, R. L., & Clark, S. J. (2006). Barriers to follow-up eye care after preschool vision screening in the primary care setting: Findings from a pilot study. *Journal of AAPOS, 10*(5), 476–478.

Packwood, E. A., Cruz, O. A., Rychwalski, P. J., & Keech, R. V. (1999). The psychosocial effects of amblyopia study. *Journal of AAPOS, 3*(1), 15–17.

Pediatric Eye Disease Investigator Group. (2002). A randomized trial of atropine vs patching for treatment of moderate amblyopia in children. *Archives of Ophthalmology, 120*(3), 268–278.

Rahi, J. S., Logan, S., Timms, C., Russell-Eggitt, I., & Taylor, D. (2002). Risk, causes, and outcomes of visual impairment after loss of vision in the non-amblyopic eye: A population-based study. *The Lancet, 360*(9333), 597–602.

Sharma, A., Congdon, N., Patel, M., & Gilbert, C. (2012). School-based approaches to the correction of refractive error in children. *Survey of Ophthalmology, 57*(3), 272–283.

Solebo, A. L., Cumberland, P. M., & Rahi, J. S. (2015). Whole-population vision screening in children aged 4–5 years to detect amblyopia. *The Lancet, 385*(9984), 2308–2319.

US Preventive Services Task Force, Grossman, D. C., Curry, S. J., Owens, D. K., Barry, M. J., Davidson, K. W., Doubeni, C. A., et al. (2017). Vision screening in children aged 6 months to 5 years: US Preventive Services Task Force recommendation statement. *JAMA, 318*(9), 836–844.

von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., Vandenbroucke, J. P., & STROBE Initiative. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *The Lancet, 370*(9596), 1453–1457.

Wallace, D. K., Repka, M. X., Lee, K. A., Melia, M., Christiansen, S. P., Morse, C. L., et al. (2018). Amblyopia preferred practice pattern. *Ophthalmology, 125*(1), P105–P142.

Webber, A. L., & Wood, J. (2005). Amblyopia: Prevalence, natural history, functional effects and treatment. *Clinical and Experimental Optometry, 88*(6), 365–375.

World Health Organization. (2019). *World report on vision*.