

Original Research Article

Prevalence and pattern of amblyopia among children attending at tertiary eye care centre in Eastern India

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ABSTRACT

Background: The objective of this study was to determine the prevalence and pattern of amblyopia of children attending at tertiary eye care centre in eastern India.

Methods: A cross-sectional study was conducted from April 2020 to May 2021 among children (5-15 years age) at regional institute of ophthalmology, medical college, Kolkata, underwent visual acuity assessment, detailed ocular examinations and cycloplegic refractions.

Results: A total of 500 children are taken in the study, out of which 264 (52.8%) were males. The age range was 5-15 years with 479 (95.8%) within the ages of 5 to 10 years. Amblyopia was detected in 57 (11.4%). Refractive amblyopia (58.4%) was the most common type of amblyopia out of which anisometropic amblyopia accounted for 74.6%. Unilateral amblyopia was observed in 80.5%. All the types of amblyopia were more common within the age group of 5-10 years.

Conclusions: More common children are affected with amblyopia within the ages of 5 to 10 years with refractive amblyopia.

Keywords: Amblyopia, Pattern, Prevalence, Tertiary hospital, Eastern India

INTRODUCTION

Amblyopia, sometimes called lazy eye, is a unilateral or, less commonly, bilateral reduction of best-corrected visual acuity (also referred to as corrected distance visual acuity) that cannot be attributed directly to the effect of any structural abnormality of the eye or visual pathways.

Amblyopia is a common problem in babies and young children and signifies a failure of normal neural development in the immature visual system and is caused by abnormal visual experience early in life resulting from strabismus, refractive error such as anisometropia or high bilateral refractive errors (isometropia) and visual deprivation. Refractive error is one of the common causes of amblyopia.¹⁻³ The prevalence of amblyopia is increased in children with a family history of amblyopia, children

born prematurely, and those with developmental delay. It is important to diagnose and treat amblyopia as early as possible. In current study, the prevalence and etiology of amblyopia among the children of 5-15 years of age at our institute was evaluated.

METHODS

A cross-sectional study was conducted from April 2020 to May 2021 among children (5-15 years age). All the children underwent detailed history related to the age of onset, as noticed by the patient or his/her guardian. Ophthalmic examination included visual acuity by Snellen vision chart, cycloplegic refraction by streak retinoscope, auto-refractometer, and thorough anterior segment examination by slit lamp biomicroscopy,

posterior segment examined by direct and indirect ophthalmoscopy and assessment of the ocular alignment by cover-uncover test, assessment of ocular motility.

Study design, location and sample size

A cross-sectional study was conducted at regional institute of ophthalmology, medical college, Kolkata on 500 patients.

Inclusion and exclusion criteria

Inclusion criterion for current study was best corrected visual acuity in one or both eye 6/12 or less than 6/12 in absence of any organic lesion. Exclusion criteria for current study were cases of trauma, previous history of ocular surgery and diseases affecting the vision.

The criteria used for each subtype and diagnosis

Amblyopia associated with degraded visual input due to high refractive error was labelled ametropic amblyopia. Anisometropic amblyopia was diagnosed in participants with interocular refractive error difference ≥ 1 dioptre. Strabismic amblyopia included that due to conflicting visual inputs between the eyes due to squint. Stimulus deprivation amblyopia was defined as amblyopia due to obstruction of visual axis. Anisometropic amblyopia is caused by a difference in refractive error between the eyes and may result from a difference of as little as 1 dioptre.

Statistical analysis

Study subject patients record was entered in study formula. Finally all data was entered in Microsoft excel 2017 and statistically analysed by calculating mean, median, average and percentage.

RESULTS

The prevalence of amblyopia in our study was found to be in 57 cases 11.4%. Out of 500 cases 443 cases showed no sign of amblyopia.

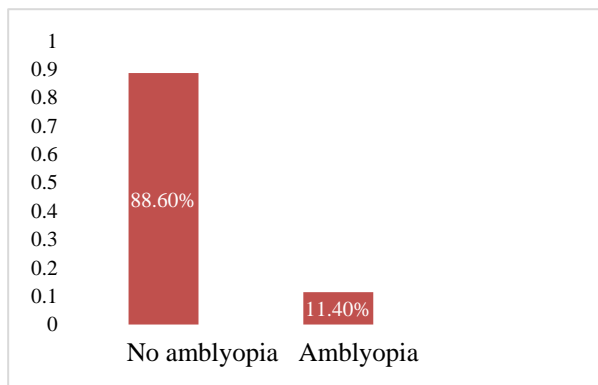


Figure 1: Percentage of amblyopia.

Table 1: Age of presentation of amblyopia.

Age group (n=57) (years)	N	%
5-10	52	90.80
10-15	5	9.20

Table 2: Gender distribution of amblyopia.

Gender (n=57)	N	%
Male	35	60.80
Female	22	39.20

Table 3: Type of amblyopia.

Type (n=57)	N	%
Refractive	33	58.40
Strabismus	12	21.60
Visual deprivation	8	13.70
Combined	4	6.30

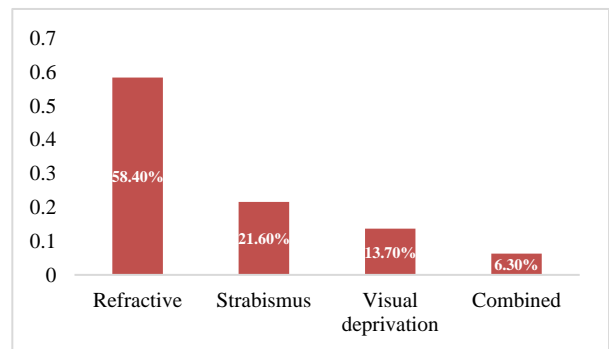


Figure 2: Type of amblyopia.

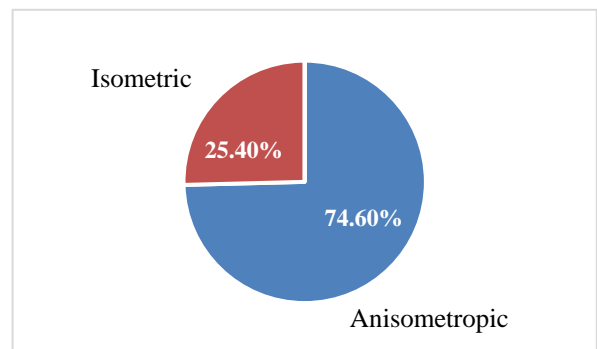


Figure 3: Type of refractive amblyopia.

Most of the patients present with amblyopia were in the age group of 5 to 10 years age 90.8% and for 10 to 15 year-old age group was 9.2%. Amblyopic male cases 60.8% and female amblyopic cases 39.2%. The most common cause of amblyopia was due to refractive amblyopia (58.4%), followed by strabismus (21.6%), visual deprivation (13.7%) and combined causes was least common (6.3%). Out of refractive amblyopia, anisometropic amblyopia accounted 25 cases (74.6%) and isometric amblyopia 8 cases (25.40%). Unilateral

amblyopia was observed in 46 cases (80.5%) and bilateral amblyopia in 11 cases (19.5%).

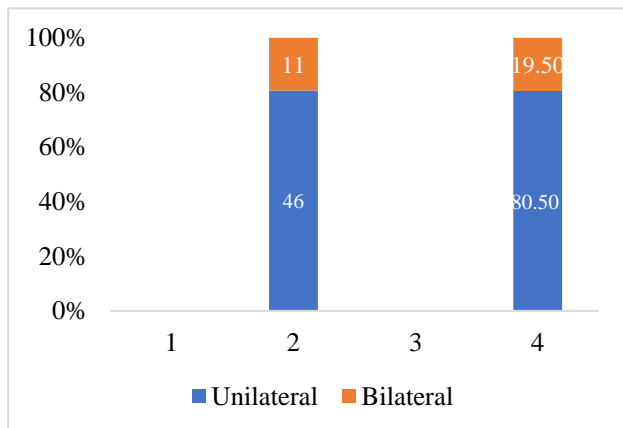


Figure 4: Distribution of patients according to unilateral and bilateral amblyopia.

DISCUSSION

Prevalence of amblyopia varies because of different age-group of studied populations and different factors prevailing in that region, like literacy rate, frequency of visual screening programmes and geographical factors. The population based regional studies in India related to childhood blindness and prevalence of refractive errors showed prevalence rate of amblyopia to be 1.1% (V Kaliliyavi et al.¹

This study showed 11.4% prevalence which is lower than the study by Rahi et al involving nine states in our country, cataract, uncorrected aphakia and amblyopia comprised of 12.3% severe visual impairment.⁴ In the urban population, the study reported the prevalence rate of amblyopia to be about 4.4% in a study in Andhra Pradesh in India, the prevalence of amblyopia was 6.6% in South-Asian region the Chinese studies showed prevalence rate which varies between 0.8% to 2.5% in different subsets of population Chia et al and Jing Fu et al) respectively in Nepalese hospital based study the prevalence was 1% another hospital based study done in Bharatpur, Nepal, the prevalence rate was 1.40%.⁵⁻¹⁰ In our study, the percentage of Amblyopia was 11.4%, which is more compared to these studies.⁴⁻⁶

In our study, the age of presentation of amblyopia in 5-10 years age group was more than 10-15 years age group but there is no sex prediction which is different from a study by Sapkota et al where male/female ratio was 44/20 for younger age group and 15/19 for older age group.⁹ In current study, where the male amblyopia was 52.8% and female was 47.2% Similar finding was found in study done in Nepal.⁹ In current study, most common type of amblyopia is refractive out of which anisometropic amblyopia was the most common type of amblyopia which is comparable with Nepalese study showed amblyopia due to astigmatism was most common

(59.2%) followed by hypermetropia (33.5%). In Indian study done by Menon et al amblyopia due to hypermetropia was highest (51.65%).¹¹

In current study, unilateral amblyopia was higher (80.5%) than bilateral amblyopia (19.5%), which is similar to the study done in Nepal (71% unilateral amblyopia), in Andhra Pradesh.^{3,9,11} If left untreated, paediatric amblyopia may result in monocular and binocular low vision with associated deterioration in quality-of-life indices in adulthood.¹²⁻¹⁴ Therefore measures for early detection and dedicated rehabilitation of amblyopia should be a priority and also should be evidence-based.

CONCLUSION

In current study, the prevalence of amblyopia was 11.4%. Anisometropia was the most common amblyopia. We found in the study that refractive error is the major common cause of amblyopia. The results of our study emphasize the need for more screening for prescribing the correct spectacles and educating the parents to help their children to use them (if needed).

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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