

## A CROSS SECTIONAL STUDY ON PREVALENCE OF AMBLYOPIA IN SCHOOL GOING CHILDREN

Siddharam S. Janti<sup>1</sup>, A. M. Raja<sup>2</sup>, Adnan Matheen<sup>3</sup>, C. Charanya<sup>4</sup>, R. Pandurangan<sup>5</sup>

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**ABSTRACT:** Amblyopia is that condition in which there is deficiency of form or spatial vision sense resulting in the reduction of visual acuity of greater than two lines between the eyes or an absolute reduction in acuity below 6/9 either eye in Snellen's Vision Chart which cannot be corrected by refraction and cannot be attributed directly to the effect of any structural abnormality of the eye or the posterior visual pathway defects. The aim of our study is to study the prevalence of amblyopia and different types of amblyopia in children between 6 – 14 years of age. This prospective cross sectional study done in tertiary care centre over period of 2 years. 2700 children were screened in this study out of which 54 children were found to be amblyopic. Children aged between 6 years and 14 years of age, with no previous history of strabismus surgery, with corrected or uncorrected refractive errors were included in study. **RESULTS:** Amblyopia was more common in male (63.79%) than female children. It was lower in urban children (32.76%) than in rural children (67.21%). This is because of the lack of awareness among the rural population to have regular eye check-ups. Monocular amblyopic 40(68.96%) cases were common than binocular 18(21.04%) cases. The most common cause of amblyopia in our study were anisometropic (36.20%), strabismic (25.86%), ametropic (12.06%), meridional and visual deprivation (6.89%). Hypermetropia 18(46.15%) was more common refractive error associated with amblyopia compared to myopia 10(25.64) and astigmatism 11(18.20%). In strabismic amblyopia (25.86%), exotropia 8 patients (53.33%) are more frequent than esotropia 6 patients (40%) and hypertropia 1 patient (6.66). **CONCLUSION:** Early diagnosis and treatment of ametropias can minimize permanent loss of vision by amblyopia. Those at greater risks are children of preschool and school going ages.

**KEYWORDS:** Amblyopia, children, refraction.

**INTRODUCTION:** Amblyopia is that condition in which there is deficiency of form or spatial vision sense resulting in the reduction of visual acuity of greater than two lines between the eyes or an absolute reduction in acuity below 6/9 either eye in Snellen's Vision Chart which cannot be corrected by refraction and cannot be attributed directly to the effect of any structural abnormality of the eye or the posterior visual pathway defects.<sup>[1]</sup>

The incidence in Indian school children has been stated to be 0.67%.<sup>[2]</sup> Amblyopia occurs before 6–8 years of age. The duration of this period varies depending on the cause of amblyopia.<sup>[3]</sup> Amblyopia is most common cause of preventable in monocular blindness and affecting up to 5% of general population.<sup>[4]</sup> Diagnosis is based on a reduction in best corrected visual acuity by testing visual acuity in each eye separately with a line of symbols with appropriate effect of crowding, and after exclusion of ocular pathology.<sup>[5,6]</sup>

Amblyopia poses an important socioeconomic problem especially as the amblyopic patients turning blind are significantly higher than general population. Although, amblyopia is the most

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common cause of monocular vision loss in population under 40 years, accounting for more cases than trauma and all other causes combined there is only few study which reflects the ocular morbidity in our country.<sup>[7,8]</sup> It is unfortunate that till date, despite the high prevalence, there are no studies available at the national level which can provide data regarding ocular morbidity due to amblyopia.<sup>[9,10]</sup>

The aim of our study is to study the prevalence of amblyopia and different types of amblyopia in children between 6 – 14 years age of age.

**MATERIALS & METHODS:** This prospective cross sectional study done in tertiary care centre over period of 2years. 2700 children were screened in this study out of which 54 children were found to be amblyopic. Children aged between 6 years and 14 years of age, with no previous history of strabismus surgery, with corrected or uncorrected refractive errors were included in study.

The assessment included family history of strabismus, child coming from rural or urban areas. General and systemic examination was done to rule out any associated problems. Ocular examination included unaided visual acuity, best corrected visual acuity and refraction was made under appropriate cycloplegics according to the age of the patient, assessment of ocular alignment and motility and associated strabismus.

Slit lamp examination was done to rule out any anterior segment pathology and dilated fundus examination to rule out any posterior segment disease. Spectacle correction or contact lenses were prescribed wherever necessary and occlusion therapy was instituted in the form of patching of the eye in all cases with amblyopia after counseling the patient and their parents about the need for compliance.

**RESULTS:** 2700 children were included in the study in which 58 children (4.8%) were found to be amblyopic. Amblyopia was more common in male (63.79%) than female children. It was lower in urban children (32.76%) than in rural children (67.21%). This is because of the lack of awareness among the rural population to have regular eye check-ups. Monocular amblyopic 40(68.96%) cases were common than binocular 18(31.04%) cases.

The most common cause of amblyopia in our study were anisometropic (36.20%), strabismic (25.86%), ametropic (12.06%), meridional and visual deprivation (6.89%). Hypermetropia 18 (46.15%) was more common refractive error associated with amblyopia compared to myopia 10 (25.64) and astigmatism 11 (18.20%). In strabismic amblyopia (25.86%), exotropia 8 patients (53.33%) is more frequent than esotropia 6patients (40%) and hypertropia 1patient (6.66).

**DISCUSSION:** This prospective cross sectional study was done between 2012 to 2014 in children between 6 -14 years of age. Out of 2700 children examined 58 (4.8 %) children found to have amblyopia that is the prevalence of amblyopia was found to be 2.1% which is comparable to radriguez ma (1.8%) and Jensen study.<sup>[11,12,13]</sup>

The prevalence of amblyopia in urban children (32.67%) was to be lower than rural (62.71) children, this is comparable to Goel et al study which found incidence of amblyopia higher in rural children than urban.<sup>[14,15]</sup> The higher prevalence of amblyopia of rural children because of unaware about regular eye check-up & importance of spectacle use among rural children.<sup>[16]</sup>

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Prevalence of amblyopia was compared between the two genders, which showed slight higher prevalence in boys as compare to girls.

In our study, we found a higher prevalence of anisometropic amblyopia when compare to strabismic amblyopia that was comparable to shah et al study which reported a higher prevalence of anisometropia amblyopia (36.20%) of strabismic amblyopia (25.86%) in children.<sup>[17,18]</sup>

Similarly in Attebal et al study done on adult population, prevalence of anisometropic amblyopia (50%) was to higher when compare to strabismic amblyopia (19 %). There was a higher prevalence of exotropia (53.335) than esotropia in our study.<sup>[19]</sup> There were more unilateral cases of amblyopia than bilateral cases of amblyopia.

**CONCLUSION:** Early diagnosis and treatment of ametropias can minimize permanent loss of vision by amblyopia. Those at greater risks are children of preschool and school going ages. Screening programs in very young children would detect not only amblyopia itself but also other amblyogenic factors like ametropias, strabismus and visual stimulation defects, the diagnosis and treatment of which in time will prevent amblyopia and visual loss. There is a very good old saying that goes like this-'a stitch in time saves nine'.<sup>[20,21]</sup>

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| SEX                     | NO. OF PATIENTS | %       |
|-------------------------|-----------------|---------|
| Male                    | 37              | 63.79 % |
| Female                  | 21              | 39.31 % |
| <b>SEX DISTRIBUTION</b> |                 |         |

|                                | NO. OF PATIENTS | %      |
|--------------------------------|-----------------|--------|
| Rural                          | 39              | 67.24% |
| Urban                          | 19              | 32.76% |
| <b>RURAL AND URBAN PROFILE</b> |                 |        |

| TYPE OF AMBLYOPIA                                | NO. OF PATIENTS | %      |
|--|-----------------|--------|
| strabismic                                       | 15              | 25.86% |
| ametropic  | 7               | 12.06% |
| Anisometropic                                    | 21              | 36.20% |
| Meridional                                       | 11              | 18.96% |
| Visual deprivation                               | 4               | 6.89%  |
| <b>PERCENTAGES OF VARIOUS TYPES OF AMBLYOPIA</b> |                 |        |

| INCIDENCE OF DIFFERENT TYPES OF STRABISMUS | NO. OF PATIENTS | %      |
|--|-----------------|--------|
| Exotropia                                  | 8               | 53.33% |
| Esotropia                                  | 6               | 40.0%  |
| hypertropia                                | 1               | 6.66%  |

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|               | NO. OF PATIENTS | %      |
|---------------|-----------------|--------|
| HYPERMETROPIA | 18              | 46.15% |
| MYOPIA        | 10              | 25.64% |
| ASTIGMATISM   | 11              | 18.20% |

**INCIDENCE OF DIFFERENT TYPES OF REFRACTIVE ERRORS IN AMBLYOPIA**

| Laterality of amblyopia | NO. OF PATIENTS | PERCENTAGE |
|-------------------------|-----------------|------------|
| MONOCULAR               | 40              | 68.96      |
| BINOCULAR               | 18              | 21.04      |

**AUTHORS:**

1. Siddharam S. Janti
2. A. M. Raja
3. Adnan Matheen
4. C. Charanya
5. R. Pandurangan

**PARTICULARS OF CONTRIBUTORS:**

1. Assistant Professor, Department of Ophthalmology, Chettinad Hospital and Research Institute.
2. Assistant Professor, Department of Ophthalmology, Chettinad Hospital and Research Institute.
3. Post Graduate, Department of Ophthalmology, Chettinad Hospital and Research Institute.

4. Post Graduate, Department of Ophthalmology, Chettinad Hospital and Research Institute.
5. HOD, Department of Ophthalmology, Chettinad Hospital and Research Institute.

**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Siddharam Janti,  
Flat 1B, Staff Quarters,  
Chettinad Hospital and Research Institute,  
Kelambakkam-603103, Chennai.  
Email: drsiddharam@gmail.com

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