

Screening For Ocular Morbidity in School Children – Early Detection for Better Future

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Abstract : This study was done to determine the prevalence of visual impairment due to refractive errors and ocular diseases in lower middle class school children of Imphal, India. A total of 842 children, which included 481 males and 361 females, in the age range of 4 to 17 years from 5 schools were screened with a detailed ocular examination protocol. Among 842 children in whom 20 students (2.37%) had visual acuity < 6/18 in the better eye (equivalent to visual impairment), while 2 (0.2%) had visual acuity < 6/60 in the better eye (equivalent to economic blindness). data support the assumption that vision screening of school children in developing countries could be useful in detecting correctable causes of decreased vision, especially refractive errors, and in minimizing long term permanent visual disability. A total approach in a school eye health programme must include teacher orientation and health education of children in addition to screening for eye diseases. Considering the fact that one-third of India's blind lose their eyesight before the age of 20 years and many of them are under five when they become blind, early detection and treatment of ocular morbidity among children is important.

Keywords: Ocular disorders, ocular morbidity, refractive errors, school children, vision screening

I. Introduction

Vision has an essential role in a child's development, and visual deficit is a risk factor not only for altered Visio-sensory development, but also for overall socioeconomic status throughout life. Early detection provides the best opportunity for effective treatment of eye and vision problems in children. Therefore, timely screening is vital to avoid lifelong visual impairment [1]. School children form an important large target group which must be screened adequately [7]. Globally, uncorrected Refractive errors (RE) are the main cause of vision impairment in school going children aged 4–17 years, and the prevalence of myopia is increasing dramatically. Corneal scarring secondary to vitamin-A deficiency, infective keratitis and other causes is also an important cause of visual impairment which may leads to blindness. Early detection provides effective treatment of eye and vision problems in children.

Aims and objectives

To study ocular morbidity due to refractive errors and other ocular diseases among school children of age 4-17 years.

II. Materials and methods

This study was conducted in 5 schools in different area of Imphal, Manipur (2013). 842 students in age group of 4-17 years. A complete history and meticulous examination was done with torch light examination of external adnexa and gross anterior segment. Squint was evaluated by Hirschberg corneal light reflex test. Vision assessments were done using Pseudoisochromatic Ishihara charts for colour vision and Snellen's vision chart for visual acuity. Objective and subjective refraction was done till best corrected visual acuity was achieved. In selected students cycloplegic refraction was done. Fundus examination, by direct ophthalmoscopy in every students and indirect ophthalmoscopy in selected students was done. Some of the students were called in hospital for slit lamp examination, non-contact tonometry, peripheral retina screening, fundus picture and follow up according to findings. Data was tabulated including variables such as Sex, age group, BCVA (best corrected visual acuity) and cause of visual impairment.

III. Result

More males (57.2%) were enrolled in this study than females (41.8%), Male: Female ratio being 1.4:1 **Fig 1.** Students in the age group of 4-17 were included in this study and the mean age of the study group was 9.23 years **Table 1.** Only 654 students had uncorrected visual acuity (UCBA) of 6/6. After correction of refractive error majority had best corrected visual acuity (BCVA) of 6/6 (786 students), 36 had BCVA of <6/6-6/18 and 20 students had BCVA of <6/18-6/60. 2 students had uncorrected vision of <6/60-3/60 that improved with refraction **Fig 2.**

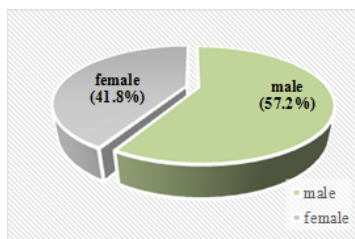


Fig 1- showing sex distribution

Age group	Percentage
4-8 year	426 (50.59%)
9-12 year	222 (26.37%)
13-17 year	194 (23.04%)

Table 1: Age group Distribution

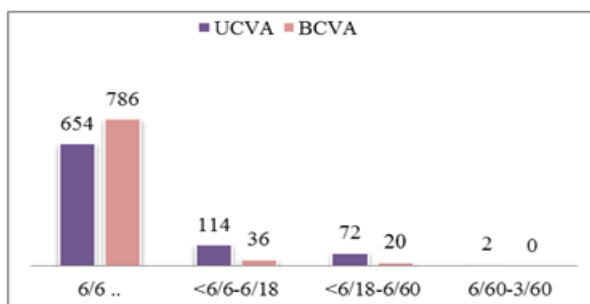
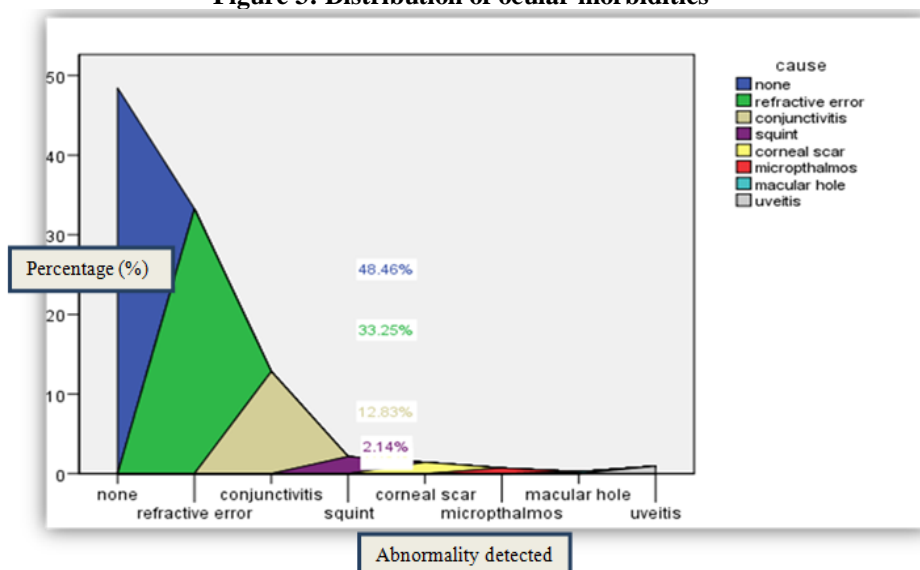


Figure 2: Distribution of UCVA and BCVA in the study group

Although majority (48.46%) had no ocular abnormality detected, around 33.25% cases of refractive error were detected in this study. 12.83% students had conjunctivitis due of varied etiologies and 2.14% presented with squint. Other abnormalities detected were corneal scar (1.4 %), Uveitis (1.0 %), Microphthalmos (0.7 %), Ptosis (0.71%) and Macular hole (0.2 %) **Fig 3**. Among those with refractive error, majority were Myopia (17.10%) followed by hyperopia (14.01%), hyperopic astigmatism (1.18%) and myopic astigmatism (0.95%) **Fig 4(a)**. While most of the myopic eyes had mild myopia (<2 Dioptres), around 4.75% had moderate degree of myopia (2-6Dioptres) and 1% had high myopia (>6Dioptres) **Fig 4(b)**.

Figure 3: Distribution of ocular morbidities



Corneal scar	12	1.4 %
Uveitis	8	1.0 %
Microphthalmos	6	0.7 %
Ptosis	6	0.71%
Macular hole	2	0.2 %

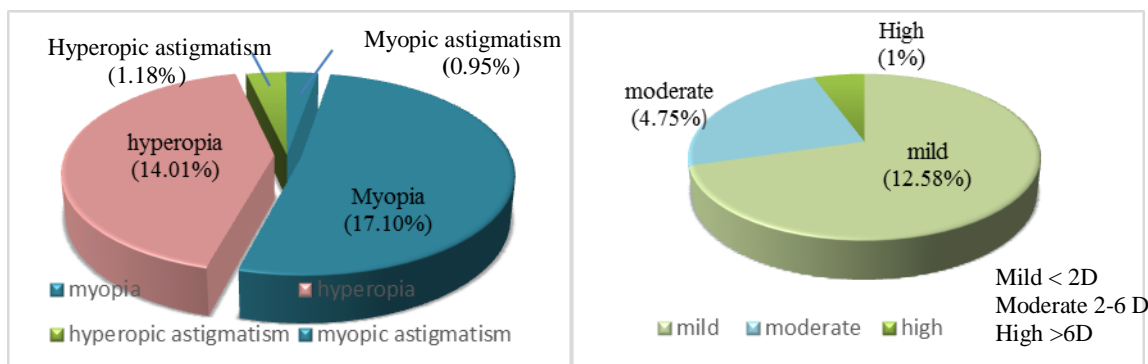


Fig 4(a): Refractive errors (33.25%)

Fig 4(b): Myopia (18.05%)

IV. Discussion

In the present study, vision equivalent to economic blindness was seen in 0.2%. There was no legally or economically blind child after refractive correction which signifies the importance of vision screening of school children. More than half the students (51.5%) had some ocular problem of which refractive error was the most common (33.25%). Different studies done in different regions of India showed varied results with respect to refractive error prevalence in school children (Madhu gupta et al ^[2] 22%, Agarwal et al ^[3] 17.83%). Prevalence of myopia in this study was 18.05%, while in a study done by V Kalikivayi ^[4] et al in south india it was 8.6%. Such differences in prevalence of myopia could be due to racial variations. Garner et al ^[5] reported that there was no difference in the prevalence of myopia between girls and boys which is similar to our results. Higher (3-17.5%) prevalence of conjunctivitis has been reported in other parts of India ^[6,7,8,9] which is similar in this study (12.83%). Variation in the prevalence of conjunctivitis can be explained by difference in socioeconomic status, personal hygiene of children and seasonal variations of occurrence of conjunctivitis. Prevalence of squint as reported by Pratap et al ^[9] of 2.8%, a bit more than this study (2.1%).

One also has to realize that with a significant proportion of children not going to school in rural India and other parts of the developing world, the exact assessment of visual impairment in the country remains uncertain. In view of these findings, there appears to be a need for propagating awareness of the importance of eye care and to teach the essentials of ocular hygiene to general population.

Teachers should be able to recognize changes in behaviour such as child rubbing eyes frequently, blinking excessively and holding books close to the face. Poor vision in childhood affects performance in school and has a negative influence on the future life of a child.

V. Conclusion

Regular and intensive screening for ocular disorders in every school is a must and should be carried out meticulously so that RE which if corrected in time could prevent permanent visual impairment and amblyopia could be detected early. A complete approach in a school eye health programme must include teacher orientation and health education of children in addition to screening for eye diseases. Teachers should be made aware regarding certain significant eye diseases (RE). This will help in early detection, early initiation of treatment and furthermore reduce the burden of eye health care services. Community human resources mobilization to remote and inaccessible areas should also be considered.

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