

THE PREVALENCE OF MYOPIA AMONG SCHOOL-GOING CHILDREN (6-14 YEARS)

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Abstract

Background: Refractive errors are one of the most common causes of visual impairment worldwide. Uncorrected, under corrected and undetected refractive errors among school-going children are the most significant problem in developing countries like India. Schools are the best place for early detection of ocular morbidity. Myopia, hypermetropia and astigmatism are the three main types of refractive errors, of which myopia is the most common type in school-going children.

Methods: This descriptive cross-sectional study was carried among school-going. 500 students were selected conveniently. Data were collected using a pre-tested, semi-structured questionnaire and analysed using Statistical Package for social sciences (SPSS) software. Descriptive statistics were used and a Chi-square test of significance was applied.

Results: The prevalence of myopia was found to be 12.2%. There is a significant association between the Age & sex and the presence of myopia.

Conclusions: Myopia is the most common refractive errors among school-going children that can be treated with early intervention to prevent irreversible complications

Keywords: Prevalence, Refractive error, Myopia, Risk factors

Introduction

The eye is one of the most remarkable sensory systems in the human body.¹ Refractive error is one of the primary causes of visual impairment in children worldwide.² To focus the issue of blindness in children, the WHO recently launched a global initiative, VISION 2020- the right to sight, to eliminate avoidable blindness among children. Myopia is the most common refractive error. A recent study in Southeast Asia estimated a global potential productivity loss of US\$244 billion from uncorrected myopia, bearing the greatest potential burden.³

The prevalence of myopia is more than 2 times higher among East Asians in different countries and it seems to be increasing among younger people in East Asia. Severe cases of myopia are associated with the risk of visual impairment and blindness due to pathological changes in the retina like a retinal tear, retinal detachment, macular degeneration, cataract and glaucoma which are irreversible.⁴

Most cases of myopia are corrected with spectacles, contact lenses or refractive surgery hence it is considered to be a benign condition. Globally 285 million people are with visual impairment. . The main causes of visual impairment are uncorrected refractive errors (myopia, hypermetropia, astigmatism) 43%, cataract 33%, glaucoma 2% of population in developing countries.⁵

Materials and Methods

In this cross sectional study, collected data regarding nearsightedness was obtained from 500 students(6-14 years of school children). Out of the 500 students, 350(70.00%) were males and 150 (30.00%) were females).

A pre-tested semi-structured questionnaire was used to collect the data. Information on socio-demographic details and risk factors associated with a refractive error such as hours of reading a book per day, hours on the usage of mobile per day and hours spent on outdoor activities were collected individually and the examination of the eye was carried out by the investigator. Based on WHO guidelines refractive error was tested by the investigator. Each student was examined and data were collected simultaneously in their respective schools. Students aged between 6-14 years who were permitted by their parents and those present on the survey days were included in the study population. A class with good illumination or a class with good natural light was chosen.

The general eye examination like the appearance of the eye, conjunctivitis, bitot's spots, stye, amblyopia, blepharitis, congenital cataract for both the eye was examined with the help of Torchlight for the students individually.

Snellen's chart in English and E chart was used based on the student's preference for few children to test visual acuity for Distant vision who doesn't read the English.

The distance of 6 m was measured using a measuring tape, the Snellen's chart was hung on the wall and the procedure was explained to the students and they were made to sit/stand at a distance of 6m from the chart and were asked to read the letters from the top line with the one eye and the other being covered at a time with the palm of the student's hand. The smallest line he/she can read will be expressed as a fraction, e.g., 6/18 or 6/24 is the visual acuity. The upper number refers to the distance between the chart and the patient (6 metres) and the lower number is the distance in metres at which a student with no impairment should be able to see the chart. If the student cannot read the largest letter (first letter) at 6 metres, move him/her closer, one metre at a time until the top letter can be seen by the student. The Visual acuity will then be recorded as 5/60 or 4/60, etc accordingly. If the top letter cannot be read at 1 metre (1/60), hold up your fingers at varying distances of less than 1 m and

check whether the student can count them or not. This is recorded as counting fingers (CF). Record as visual acuity is equal to counting fingers. The whole procedure is repeated for the next eye. If the student already wearing spectacles, the procedure was done without spectacles first and with spectacles after for each eye. 'Tumbling E' chart, was used for few children who do not know the alphabet. The 'Tumbling E' eye chart uses a capital letter E that faces in different directions instead of using alphabets and the student being tested to use their fingers to show the direction in which the "fingers" of the E are pointing/facing. Then the same procedure and recording methods were followed as mentioned above

Data analysis- Data was analyzed using SPSS software program (version 22). Conferring percentage and 95% confidence interval were used to define the prevalence and distribution of the different variables. Pearson Chi-squared test was used for qualitative data. A P-value of < 5% was statistically significant.

Results

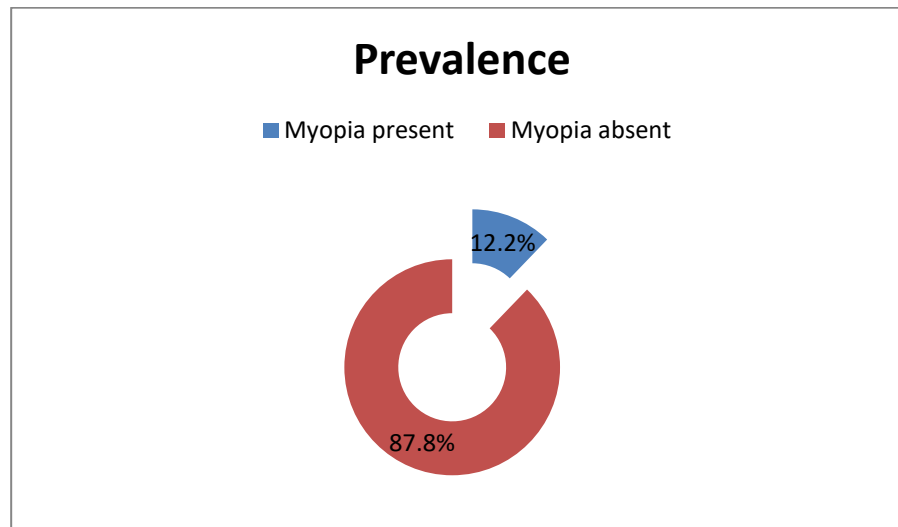


Table 1: Association between myopia and age

Variable	Myopia present (61)	Myopia present (439)
Age	10.23±3.62	10.42±3.12
Male : Female	51 : 10	389 : 50

Discussion

In the present study, the overall prevalence of myopia is 12.2%. In a study by Saxena et al on prevalence of myopia and its risk factors in urban school children in Delhi, was found to be 13.1%.⁶

In another similar study in rural Vietnam by Hung et al showed that the prevalence of myopia among secondary school children was 14.2%.⁷ Meta-analysis of the last four decades by Agarwal et al showed 10% prevalence of myopia among Indian school children.⁸ Higher prevalence was found by Holden et al and Fan et al as 22.9% and 36.71% respectively which is a contrast to a recent study

by Grzybowski et al, where the prevalence of myopia was found to be low under 10% in African and South American children.⁹⁻¹¹

Conclusion

Myopia is the most common refractive errors among school-going children that can be treated with early intervention to prevent irreversible complications.

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