

Original Article

Prevalence of Myopia in School Going Children

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ABSTRACT:

Background: The present study was conducted to assess prevalence of myopia in school going children. **Materials & Methods:** 210 school children age ranged 6-12 years of both genders was recruited. Myopia was defined as refractive error ≥ -1.0 D. **Results:** Age group 6-7 years had 90, 8-9 years had 70 and 10-12 years had 50 children. The prevalence was seen in 12, 9 and 8 children in age group 6-7 years, 8-9 years and 10-12 years respectively. **Conclusion:** The prevalence of myopia in children found to be 13.8%. Maximum cases were observed in 6-7 years. **Key words:** Children, Myopia, School.

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INTRODUCTION

Myopia has gained particular importance in epidemiological studies. It is estimated that 1.4 billion people were myopic in 2000, and it is predicted that by 2050 the number will reach 4.8 billion.¹ Socioeconomically, refractive errors, particularly if uncorrected, can affect school performance, limit employability and impair quality of life. Myopia is known to be associated with several ocular complications such as retinal detachment, glaucoma, cataract, optic disk changes and maculopathy. High prevalence rates pose a major public health challenge due to visual impairment.² If untreated, myopia can inhibit academic performance in children. A recent estimate suggests that visual impairment among preschool children will increase by 26% by 2060 with uncorrected refractive error comprising 69% of cases.³ Myopes carry higher risks of important causes of ocular morbidity including retinal detachment, glaucoma, myopic macular degeneration, and cataracts. Uncorrectable visual impairment is seen in 4% and 39% of 75 year olds with myopia and high myopia, respectively. The disease burden of myopia is expected to increase, with 49.8% of individuals.⁴

During the early childhood, the eye grows in a way that reserve the balance of the change in the corneal power, lens power, anterior chamber depth (ACD), and the axial length (AL) which keeps the refractive state towards emmetropia. Several earlier studies have shown that the ocular axial length (AL) increases parallel to the overall growth and development of the child.⁵ The present study was conducted to assess prevalence of myopia in school going children.

MATERIALS & METHODS

The present study was conducted among 210 school children age ranged 6-12 years of both genders. All were informed regarding the study and written consent was obtained. General information such as name, age, gender etc. was recorded. Myopia was defined as refractive error ≥ -1.0 D and high myopia was defined as refractive error ≥ -6.0 D. Ocular alignment was assessed using the cover and uncover test. Cover testing was performed using fixation targets at near (0.5 m) and distance (4.0 m). Degree of tropia was measured using the Hirschberg corneal light reflex. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Prevalence of myopia

Age group (Years)	Total number	Myopia prevalence
6-7	90	12
8-9	70	9
10-12	50	8

Table I, graph I shows that age group 6-7 years had 90, 8-9 years had 70 and 10-12 years had 50 children. The prevalence was seen in 12, 9 and 8 children in age group 6-7 years, 8-9 years and 10-12 years respectively.

Graph I Prevalence of myopia

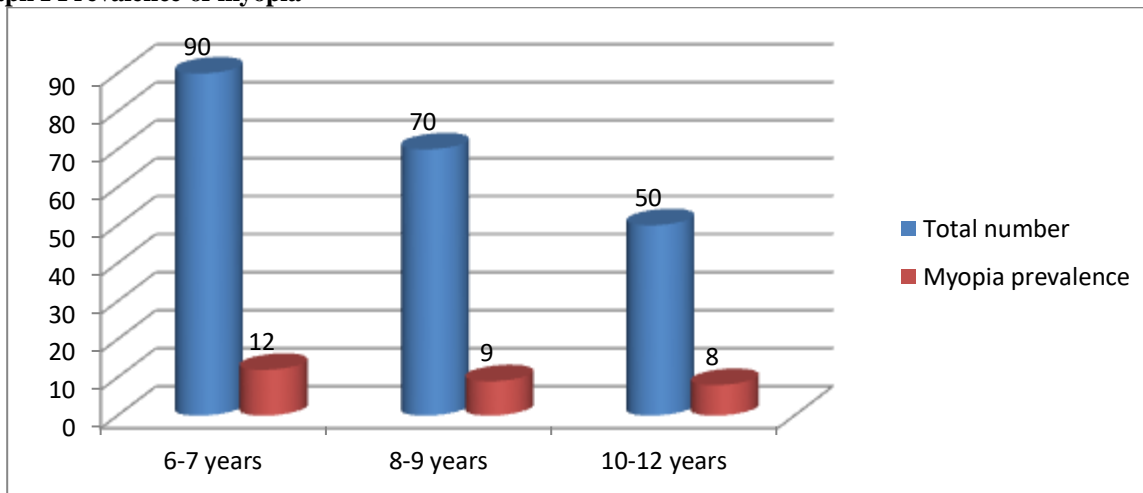
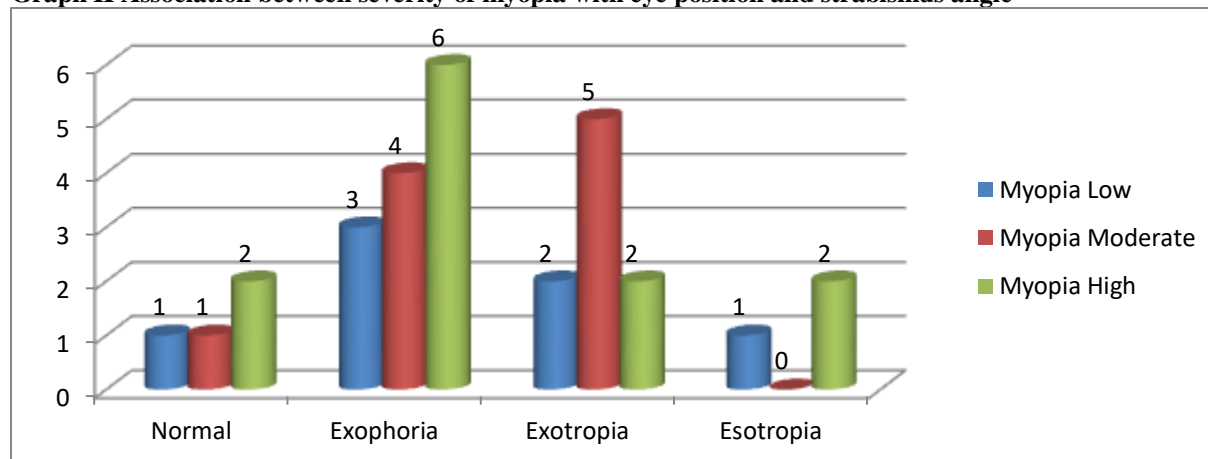


Table II Association between severity of myopia with eye position and strabismus angle

Eye position	Myopia			P value
	Low	Moderate	High	
Normal	1	1	2	0.02
Exophoria	3	4	6	
Exotropia	2	5	2	
Esotropia	1	0	2	

Table II, graph II shows that myopia was low, moderate and high. In 6 cases of high myopia, eye position was exophoria, in 2 cases, it was exotropia and in 2 cases was esotropia. The difference was significant ($P < 0.05$).

Graph II Association between severity of myopia with eye position and strabismus angle



DISCUSSION

Refractive errors (RE) are common health issue worldwide affecting a large proportion of the population, regardless of the sex, age, or race. Fortunately, it can be easily measured, diagnosed, and managed either by spectacles or other refractive correction methods.⁶ If the RE is corrected inadequately or did not get treated at all, it may become a major cause of impaired vision or even blindness.⁷ Uncorrected refractive errors (URE) represent almost half of the visually impaired population worldwide.⁸ Of those errors, myopia is the most commonly occurring. Uncorrected vision should be screened early and treated immediately to minimize long-term complications on both children and adults.⁹ The present study was conducted to assess prevalence of myopia in school going children.

In present study, age group 6-7 years had 90, 8-9 years had 70 and 10-12 years had 50 children. The prevalence was seen in 12, 9 and 8 children in age group 6-7 years, 8-9 years and 10-12 years respectively. Zadnik et al¹⁰ determined sample of 716 children (662 non-myopic) in the first, third, and sixth grades. Refractive error (measured by autorefraction), corneal curvature (measured by photokeratoscopy), crystalline lens power (measured by video phakometry), and axial ocular dimensions (measured by ultrasonography) was recorded. With prevalent cases of myopia excluded and grade in school and "near work" controlled for, children with two myopic parents had longer eyes and less hyperopic refractive error (analysis of covariance, $P < .01$) than children with only one myopic parent or no myopic parents. A model incorporating parental history is only improved by the addition of near work for the prediction of refractive error. Even before the onset of juvenile myopia, children of myopic parents have longer eyes. These results suggest that the premyopic eye in children with a family history of myopia already resembles the elongated eye present in myopia.

We found that myopia was low, moderate and high. In 6 cases of high myopia, eye position was exophoria, in 2 cases, it was exotropia and in 2 cases was esotropia. Robinson et al¹¹ described the frequency of and risk factors associated with myopia in grade one children. Refractive error was measured by static retinoscopy, without cycloplegia, for 10,616 children in the first year of a province-wide vision-screening program. The prevalence of myopia, greater than -0.25 D, was 6%. The estimated relative risk of myopia was increased significantly among children whose birth weight was <2500 g and whose mothers had a history of early spectacle use.

Fan et al¹² in their study determined the prevalence, incidence, and progression of myopia of Chinese children in Hong Kong. A total of 7560 children of

mean age 9.33 years participated in the study. Mean spherical equivalent refraction (SER) was -0.33 D (SD = 11.56; range, -13.13 to $+14.25$ D). Myopia (SER ≤ -0.50 D) was the most common refractive error and was found in $36.71\% \pm 2.87\%$ (SD) of children. Prevalence of myopia correlated positively with older age. Children aged 11 years were almost 15 times more likely to have myopia than were children younger than 7 years. Incidence of myopia was 144.1 ± 2.31 per 1000 primary school children per annum. Increasing age was correlated with increased incidence of myopia, with highest risk in children ages 11 years. The average annual change in SER for children with myopia (SER ≤ -0.50 D) was -0.63 D compared with -0.29 D for those who were not myopic at the beginning of the study ($P < 0.001$).

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that the prevalence of myopia in children found to be 13.8%. Maximum cases were observed in 6-7 years.

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