

PREVALENCE OF MYOPIA AMONG URBAN SCHOOL CHILDRENSandeep K¹, Venkatram K², Mahesh J. B³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: BACKGROUND: Refractive error is the second leading cause of treatable blindness. 46.69% of all ocular morbidity in the country is directly attributed to refractive errors and myopia is the commonest type of refractive error. School age children constitute a particularly vulnerable group because uncorrected refractive errors may lead to amblyopia, subnormal binocularity or strabismus resulting in permanent visual loss. Studies have shown that there has been an increase in the proportion of myopia among students. In view of the importance of detecting the eye defects in school children in our region where staple food and socio-demography is different from rest of the country an effort has been made in the present study to find out the extent of problem of refractive errors particularly Myopia among school children. **OBJECTIVES:** To study and evaluate Myopia among School children. **METHODS:** A cross-sectional study on random control sample of school children of 7-15 year was carried out in the Hubli city. Visual acuity tests were done all students. Students with 6/6 (p) or less vision were subjected for slit lamp examination, retinoscopy, fundus examination, keratometry and A- scan. **RESULTS:** 13.5% of children had refractive errors. 4.54% had Myopia. Myopia was more common in females with a peak in 13-15 year group. **CONCLUSION:** Significant proportion of children of this area had uncorrected refractive errors. Regular screening and correction of refractive error will help to improve vision, prevent further deterioration and hence irreversible changes in the visual system.

KEYWORDS: Myopia, School children, Preventable blindness.

INTRODUCTION: Vision is one of the most cherished special senses. Refractive error is one of the most common causes of visual impairment around the world and second leading cause of treatable blindness.¹ Uncorrected refractive error is an important cause of visual impairment in many countries. The proportion of children who are blind or visually impaired due to refractive errors can be used to assess the level of development of eye care services in that country.²

The prevalence of Refractive errors in the general population of our country has been estimated to be 14.2%. 7.35% of bilateral blindness, 60% of unilateral blindness, and 18.87% low vision are due Refractive error in India. 46.69% of all ocular morbidity in the country is directly attributable to refractive errors.³

School age children constitute a particularly vulnerable group because uncorrected refractive error may have a dramatic impact on learning capability and education.⁴ High refractive errors in childhood may lead to amblyopia, subnormal binocularity or strabismus resulting in permanent visual loss if not corrected during early childhood. There is a close association between refraction, squint and amblyopia, hence it would seem reasonable to reconsider refraction as a basis of screening young children for visual defects.⁵⁻⁸

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97% of all visual disabilities are preventable or treatable. Refractive error is the commonest type of ocular morbidity and myopia is the commonest type of refractive error.⁹ Studies have shown that there has been an increase in the proportion of myopia among students,¹⁰ prevalence of myopia increase with increasing age of the child;¹¹ Physical growth of students below normal standard develop progressive myopia¹² and annual mean progress of myopia is rapid in male children.¹³

In view of the importance of detecting the eye defects in school children an effort has been made in the present study to find out the extent of problem of refractive errors particularly Myopia among school children of selected age group which also acted as a screening cum prevention, promotion and treatment program.

AIMS AND OBJECTIVES:

1. To study and evaluate the prevalence of Myopia in the selected school Children.
2. To evaluate socio-demographic factors bearing on Myopia.

MATERIALS AND METHODS:

Source of data and sampling procedure: After obtaining permission from Block education officer of Hubli, schools where study to be conducted were selected by random cluster sampling, where in all primary and high schools in Hubli city were listed and numbers were given to each school. Chits bearing the school number were rolled and put in to two boxes separately, one for primary and the other for high school, chits were drawn like lucky draw method and a total of eight schools were selected. Study was conducted from September 2007 to October 2008.

Method of collection of the data: The purpose and method of examination of the students were explained to the Head of the schools concerned. A large room with plugging system and electricity supply was selected. After obtaining socio-demographic details, with the help of concerned physical training teacher and respective class teachers all the students in the school between 7 to 15 years were subjected to visual acuity tests one by one.

The students whose visual acuity was observed to be 6/6 (p) or less were again subjected to visual acuity test. The list of the students was given to the class teacher and school head Mistress/Master. Their parents were informed by the school authority to take the students to the out-patient department of ophthalmology Karnataka Institute of Medical Sciences, Hubli on a particular day for further evaluation under slit lamp, retinoscopy, and fundus examination and some students were also subjected to keratometry and A-scan readings. This being a Cross-sectional cum therapeutic programme prescription was given and the condition and prognosis were discussed with the parents and were advised to get the refraction tested regularly. Data was recorded and analysed.

INCLUSION CRITERIA: School children between 7–15 years of age of either sex in the selected school.

EXCLUSION CRITERIA: Child having visual impairment due to corneal opacities, Lens opacities, Retinal diseases and Optic nerve disease.

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OBSERVATION: Of the 2400 school children screened, 324 had refractive errors accounting to 13.5% in 7-15 year age group. Socio-demographic profile of the sample is shown in Table 1 and type of refractive error in Table 2.

In the present study, 149(45.98%) children had vision of 6/6 (p) to 6/9.120 (37.03%) children had 6/12 to 6/18, 46 (14.19%) had vision of 6/24 to 6/36 and 9(2.80%) children had <6/60 vision. Table 3 details the profile of Myopia. 99(90.82%) children had myopia of <-2D and 10(9.18%) children had myopia of -2 to -6D and none >-6D.

Out of 324 children who were found to be having Refractive error; 34 students (10.49%) were already using spectacles at the time of screening, 106(32.71%) students had symptoms and 184(56.80%) didn't have any symptoms and the same is depicted in Graph. 1.

In the present study 20 children had amblyopia and 65 had anisometropia with a percentage prevalence of 0.83 and 2.70 respectively.

DISCUSSION: An unaided visual acuity of 6/6 (p) or worse was present in one or both eyes due to refractive errors in 324 children and the same is compared with national and international studies as in Table 4.

The prevalence of myopia in the study was 4.54% which can be compared to study conducted by Puttanna¹⁴ and others as shown in Table 5.

Myopia was found most frequently in the age group of 13 to 15 yrs and the prevalence of myopia has increased from 30.27% at 7 to 9 yrs to 35.78% at 13 to 15 yrs.^{15,16}

In the present study, females had higher prevalence of (58.71%) myopia; is in accordance with studies of Kalikivayi⁵ and Zaho et. al.¹⁷ (55.0%) may be due to lesser importance & care in the study conducted area.

The prevalence of anisometropia in the study was 2.7% which can be compared to a study conducted by Akbar Fotouhi in Dezfoul¹⁸ (3.6%).

The prevalence of amblyopia in the study was 0.83% which can be compared to study conducted by Lithander J,¹⁹ which showed a prevalence of 0.92% and a study conducted in Dezfoul²⁰ which showed a prevalence of 0.91%.

This study also aimed at finding the risk factors for refractive errors, According to the classification of economic status, majority of children in our study belonged to the middle group (III, IV, V) by Chandra DB.²⁰ Among the defectives there was no correlation found with the economic status, however a few myopic children belonged to a higher middle class, this was consistent with the findings of a study done at Allahabad.²¹ However, there was no significant correlation found with annual income and refractive errors in our study.

CONCLUSION: Present study shows that significant proportion of children of this area had uncorrected refractive error. Most of the children and parents were not both aware and most of them were detected during the screening. This warrants an urgent action to correct i. e., regular screening and correction. This will help to improve vision, Social participation and psychosocial development. The defective vision is an obstacle to learning process. Screening process helps to prevent further deterioration of vision and blindness and irreversible changes in the visual system.

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SUMMARY: A total of 2400 children aged 7-15 years were screened by simple random sampling method. 58.8% were males and 41.2% were females. 4.54% had Myopia and 13.5% were found to have some refractive error. Myopia was more common in females with a peak in 13-15 year group. Study helped to correct refractive asymptomatic errors in children.

Authors' contributions: SK participated in acquisition of data, literature search and carried out analysis, interpretation, and drafting the manuscript. VK prescribed spectacles, guided and helped revising the manuscript. MJB supervised and carried out revising the manuscript. All authors read and approved the article.

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1. Graph showing percentage of children with symptoms:

Trait	Number	Percentage	Number	Percentage
	Total sample		Refractive error found	
Gender				
Male	1411	58.8	156	48.15
Female	989	41.2	168	51.85
Age in years				
7-9	786	29.01	94	29.01

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10-12	809	37.97	123	37.96
13-15	805	33.02	107	33.03
Socio-economic status *				
I- Upper Class	0	0	0	0
II-High	5	0.21	0	0
III-Upper middle	810	33.75	104	32.10
IV-Lower middle	1050	43.75	149	46.00
V-Poor	525	21.88	70	21.60
VI-Very poor	10	0.42	1	0.30
Total	2400	100	324	13.50

Table 1: Shows Socio-demographic profile of study population.
(*Based on Modified BG Prasad's classification)

Type of error	No. of children with Refractive error	Prevalence	Percentage
Astigmatism	144	6.00	44.44
Myopia	109	4.54	33.65
Hypermetropia	71	2.96	22.01
Total	324	13.50	100.00

Table 2: Type of Refractive error in the study

Trait	No. of students	Student with myopia	Prevalence	Percentage
Age in years				
7-9	786	33	1.37	30.27
10-12	809	37	1.54	33.95
13-15	805	39	1.62	35.78
Gender				
Male	1411	45	1.87	41.29
Female	989	64	2.66	58.71
Total	2400	109	4.54	100.00

Table 3: Profile of Myopia

Study	Conducted by	Age in years	Sample size	Prevalence in percentage
Present study		7-15	2400	13.5
Madurai city	Venkataswami G et al ²²	5-14	1650	15.1
Jodhpur in 1989	Sanjive desai et al ²³	4-16	5135	20.8
IndiaNew Delhi	GVS murthy et al ³	5-15	6447	4.9

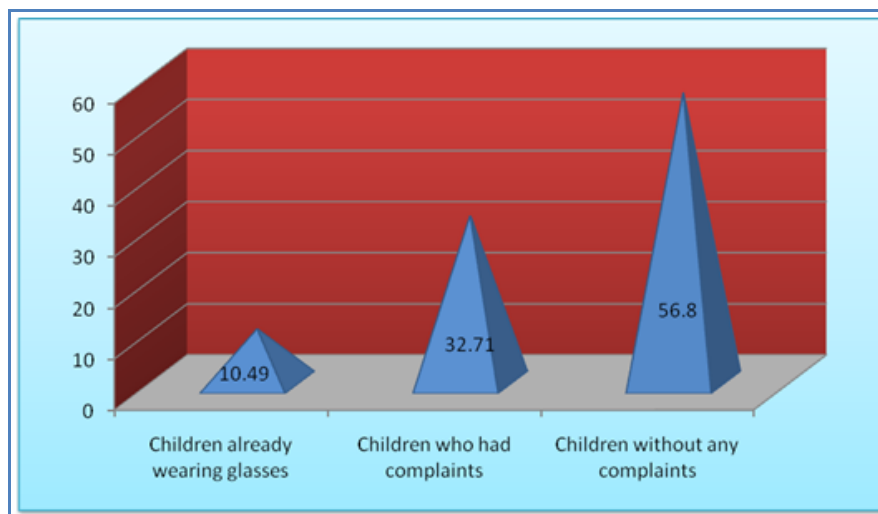
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Southern India Hyderabad 1997	Venkataramanakalikivayi et al ⁵	3-18	4029	3.13
Ahamadabad city 1998	Sonumsethi, G.P kartha ²⁴	12-17	1647	25.3
Ahmadabadgujarath 2006	Bhatt, Janardan ²⁵	7-15	500 house holds	26.3
Kolkata	Angshuman das ²⁶	5-16	2317	25.1
Srinagar 2005	Afroz A khan ²⁷	6-16	1062	26.8
Dezfullran	Akbar fouthi ¹⁸	7-15	5721	14
Shuiny district china	Zhao Jialiang ¹⁷	5-15	5884	12.8
Mchai zone Nepal	PokharelA Gopal ²⁸	5-15	5067	2.9
Lefloridachile	Eugenio Maul ²⁹	5-15	6998	15.8

Table 4: Comparison of different study with the present study

Study	Year	Prevalence
Present study	2007	4.54
Puttanna s. t ¹⁴	1966	4.86
NPCB ³⁰	2001	7.4
Kalikivayi ⁵	1997	8.6
Dandona Rakhi ¹	2001	4.1

Table 5: Comparison of different studies of myopia



Graph 1: Percentage of symptomatic children

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