



A Study on Prevalence of Errors of Refraction Among School Students

KEYWORDS

Refractive error, School children , Myopia, Prevalence

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ABSTRACT *Background* A refractive error may be defined as a state in which the optical systemic of the non-accommodating eye fails to bring parallel rays of light to focus on the retina. *Objective* To determine the prevalence of errors of refraction among children in age group 9 to 13 yrs in Govt.U.P School Vencode. Thiruvananthapuram. *Material and methods* Study Design: Cross-sectional study. *Methodology* : A descriptive study on errors of refraction in school going children was conducted in a rural area at Govt.School of Vencode. A sample of 62 students was selected from the age group 9-13 yrs. Prevalence of refractive errors among male and females was estimated. *Setting*: Govt.U.P School of Vencode. *Participants*: 62 school going children of age group 9-13 yrs. *Study period*: Sept 27- Oct 5 2013 *Results* : Prevalence of refraction is 14.52%. Myopia was the most common among them *Conclusion*. Among school children prevalence of refractive error, particularly Myopia is high. Early detection can improve the academic performance of children

Introduction

A refractive error may be defined as a state in which the optical systemic of the non-accommodating eye fails to bring parallel rays of light to focus on the retina. Numerous studies have provided clues about refractive error distribution¹. For example, reviewing data from studies by Sorsby (672 individuals age 4-8), Wilbaut (2,398 newborns), Brown (4,431 adults) and Scheerer and Betsch (25,000 adults), Baldwin was able to plot frequency versus refractive error on a continuous diopter scale from plus (hyperopia) to minus (myopia) for each study, showing a family of essentially normal distributions, but with a shift in mean from low plus towards 0 diopters (emmetropia) as a function of age². Snyder using his own data plotted as a bar graph was also able to construct a "normal" distribution with the mean slightly positive for 393 subjects³. Almost all longitudinal (over time) studies have shown approximations of normal distributions with a trend toward increasing myopia or lessening hyperopia as a function of age⁴.

Objective

To determine the prevalence of errors of refraction among children in age group 9 to 13 yrs in Govt.U.P School Vencode.

Review of literature:

Factors that might account for refractive errors have been under consideration since the latter part of the 19th century. Nicati in 1879 found a higher rate of myopia in Jewish populations in Europe. Stephenson in 1919 discovered a rate of 10 percent for myopia in Jews compared with 1.2 percent for non-Jews working in the same environment.⁵ Sorsby analyzing refraction data from school children in 1933 found that from ages 10 to 14, Jewish school children presented with a myopia rate of 33.5 percent as opposed to the non-Jewish rate of 25.5 percent⁶. Other studies around the same time by Gallus also showed a greater prevalence of high refractive errors among Jews for both myopia and hyperopia⁷.

Material and methods

Study Design: Cross-sectional study.

Methodology :

A descriptive study on errors of refraction in school going children was conducted in a rural area at Govt.School of Vencode. Most of the students are coming from a low socio-economic family. A sample of 62 students will be selected from the age group 9-13 yrs. Their name, age and other relevant data was collected. The raw data collected was tabulated and the relative proportion of children with refractive errors was recorded. Prevalence of refractive errors among male and females was estimated. The data was collected through questionnaire from each class for the study.

Setting: Study was conducted in Govt.U.P School of Vencode.

Participants: 62 school going children of age group 9-13 yrs.

Study period: Sept 27-Oct 5 2013

Results and discussion

Among 62 students examined, 38 were males and 24 were females. The age of students ranged from 9-13 yrs.

Table 1: Prevalence of refractive error among the school children

With refractive error	9(14.52%)
Without refractive error	53(85.48%)
Total	62

Out of 62 students examined 9 were found to have refractive error.

Table 2: Sex wise distribution of students with and without refractive errors

Sex	Yes	%	No	%
Males	4	10.52%	34	89.48
Females	5	20.83	19	79.17
Total	9(14.51%)		53(85.49%)	

Prevalence of refractive error is more among females than in males

Table 3: Distribution of students according to various types of refractive errors

Type	Number	%
Myopia	7	77.78
Hypermetropia	1	11.11
Myopia & Astigmatism	1	11.11
Total	9	100

Out of total subjects 7 has myopia , 1 have hypermetropia & 1 have Myopia with Astigmatism

Prevalence of myopia among those with refractive errors was found to be 77.78%.Prevalence of hypermetropia is 11.11% & prevalence of Myopia with Astigmatism is obtained as 11.11%

Table 4: Prevalence of different refractive errors among males and females

Type	Number	
	Males	Females
Myopia	2(50%)	5(100%)
Hypermetropia	1(25%)	0
Myopia & Astigmatism	1(25%)	0
Total	4	5

Conclusion.

Among school children, prevalence of refractive error, particularly myopia is high, . Early detection can improve the academic performance of children

References:

- Dandona R, Dandona L, Srinivas M, et al. Refractive errors in children in Rural Population of India. Invest Ophthalmol Vis Sci 2002; 43: 616 - 622.
- Seema S, Vashisht B, Meenakshi K and Manish G (2009) Magnitude of refractive errors among school children in a rural block of Haryana. The Internet J. Epidemiol. 2(6), 21-24.
- Sonam Sethi and Kartha GP (2010) Prevalence of refractive errors in school children (12-17 Years) of Ahmedabad City. Indian J. Community Medicine. 4(25), 16-20
- Chandra DB, Swarup D, Srivastava RK. Prevalence and pattern along with socio-economic factor of myopia in school-going children 8 to 16 years. Indian J Ophthalmol 1982; 30: 517 -518
- Dandona R, Dandona L, Naduvilath TJ, et al. Refractive errors in an urban population in Southern India: The Andhra Pradesh Eye disease study. Invest Ophthalmol Vis Sci 1999; 40: 2810 -2814. 4. Dandona R, Dandona L, Srinivas M, et al. Refractive errors in children in rural population of India. Bull WHO 2001; 96-1002.
- W.H.O. Data on Blindness throughout the World. W.H.O Chronicle 1979; Vol. 33, No. 718,275 [2]. GP Kantha, Sonam Sethi. Prevalence of refractive errors in school children (12-17 years) of Ahmedabad city. Indian Journal of Community Medicine 1987; 24 (4). [3]. Khurana A.K.et al 1984: Ocular morbidity among school children in Rohtak city: I. J.P.H; vol XX VIII, No- 4.
- Chaturvedi Sanjay, Agarwal et al. 1999: Pattern and distribution of ocular morbidity in primary school children of rural Delhi: Asia Pac J Public Hea1th. 1999; 11(1): 30-3