



**ORIGINAL RESEARCH PAPER**

**Ophthalmology**

**A STUDY OF PREVALENCE OF REFRACTIVE ERRORS AMONG STUDENTS JOINING M.B.B.S COURSE AT A TERTIARY CARE CENTRE**

**KEY WORDS:** Refractive errors, MBBS students, competitive exams

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**ABSTRACT**

**INTRODUCTION:** Refractive errors have become more prevalent among all students and especially in students who are more concentrating on their academics. Students preparing for competitive examinations are more susceptible to ocular disorders, more commonly acquired refractive errors. Ammetropia has become more common than Emmetropia in adolescence. **MATERIALS AND METHODS:** Observational cross-sectional prospective study was conducted at IRT Perudurai medical College Hospital among students who joined MBBS course for academic year 2019 to 2020. The students were grouped according to the nature of refractive errors and its prevalence was assessed. Visual acuity was checked using Snellen's drum. **RESULTS:** Out of the 99 students who joined the MBBS course in year 2019 it was found 11% were emmetropic and 79% were ametropic. The type of refractive error that was prevalent among students are myopia 73%, hypermetropia 3%, astigmatism 3%. **CONCLUSION:** The prevalence of ametropia in MBBS students outnumbers the prevalence of emmetropia. **Inclusion criteria:** All students joining MBBS course at IRT PMCH, academic year 2019 to 2020 **EXCLUSION CRITERIA:** Vision impairment due to causes other than refractive errors

**INTRODUCTION:**

Refractive error is the optical state of the eyes, in which the parallel rays of light coming from infinity are said to be focused either behind or in front of retina in either one or both the meridians, keeping accommodation at rest. Myopia is a refractive error wherein the image forms in front of retina(1). The refractive error wherein the image is formed behind the retina is known as hypermetropia. The type of refractive error wherein the refraction of light varies in different meridians of eye and the rays of light entering the eye cannot converge to a point focus but form focal lines is known as astigmatism.

Refractive errors are becoming problematic for our society and are increasing day by day. According to the Govt. of India, Annual Report, 2004, these are the second most common causative disease leading to blindness in India and other developing countries(2)

Academically active professionals are the major sufferers of this disease of refractive error(3). The concept of avoidable blindness has gained increasing recognition. International agency for the prevention of blindness formed in 1975 has close relationship with WHO the main global initiative taken for prevention of blindness one of the major causes for visual impairment and blindness is refractive. It is estimated that 35 million people in the world required low vision care and 8 million(18%) are blind due to refractive errors(4).

Strategies recommended under mission 2020 initiative includes, Creating awareness for refractive errors and the demand for refractive services, Screening to identify individuals with poor vision and improve the vision by giving appropriate correction, provision of affordable spectacle for individuals with significant refractive errors, provision of low vision aids to those needed.

**MATERIALS AND METHODS:**

Observational cross-sectional prospective study was conducted at IRT Perudurai medical College Hospital among students who joined MBBS course for academic year 2019 to 2020. History of refractive errors in parents, age of onset of symptoms, signs, initial spectacle power, period of study hours, period of monitor use, indoor activities were taken. The students were grouped according to the nature of refractive errors and its prevalence was assessed. Visual acuity was checked using Snellen's drum. Refractive error was diagnosed if spherical equivalent was +0.50D or greater or a sphere/cylinder of ±0.50 dioptres or greater. Those errors which required only cylindrical correction were considered

as simple astigmatism. Compound myopic or mixed astigmatism was diagnosed if cylindrical errors were associated with minus or plus spherical errors respectively. Myopic errors less than -3.00D were considered as low myopia, those between -3.00 to -6.00D as moderate and more than -6 were considered as high myopia(5). The average of students who had refractive error against the total numbers of students in the class was taken to determine the prevalence of refractive error.

**RESULTS:**

Out of the 99 students who joined the MBBS course in year 2019 it was found males were 79 and females were 21. 11% were emmetropic and 79% were ametropic. The type of refractive error that was prevalent among students are myopia 73%, hypermetropia 3%, astigmatism 3%.



■ Myopia ■ Hypermetropia ■ Astigmatism

**Figure 1** Types Of Refractive Error

Of the myopes 60% had mild (0-3D), 39% had moderate (3-6D) and 1% had severe myopia (>6D) Degree Of Myopia

Mild	0-3D
Moderate	3-6D
Severe	>6D

**DISCUSSION:**

Among medical students, the prevalence of refractive error was found to be 79% which is supported by the study conducted by Rajdeep et al(6) and Emmanuel Olu egbelayin et al(7) in which it was 54% and 79.5% respectively. The prevalence of refractive error among males (57%) was slightly greater than that among females (49%), which is similar to previous studies. Majority of students with refractive error had myopia (73%), which is in accordance with the study conducted by R.S.Sood et al who found it to be 45%(8). Whereas the study conducted by Onalet al and Shiny George, (9) reported it to be 32.9% & 39.5% respectively.

Among the myopes 62.8% had mild (0-3D), 35.4% had moderate (3-6D) and 1.7% had severe myopia (>6D) which was comparable to study by Rajdeep et al, which reported that 61.22% were mild, 34.69% were moderate and 4.09% were

severe myopes. While Onaletal51reported slightly higher prevalence rates such that 81% of all the myopes had mild, 17.6% had moderate,1.4% had severe myopia with overall more prevalence of mild myopia. The reason for high prevalence of myopia could be increased reading and close up work and excess screen time. Our study revealed low prevalence of hypermetropia (3%) and astigmatism (3%) as compared to myopia which was in agreement with Matta S, et al.,200511 andSD Jessica et al.12(9)

There limitations of our study were that the other factors for predilection of refractive error were not assessed.

**CONCLUSION:**

Prevalence of refractive error was relatively high in students who joined MBBS. There was association found with the amount of near work in those with refractive error. The predominant refractive error detected among medical students was myopia. Majority of students had mild to moderate degree of myopia .

Smart phones and monitor use has increased the refractive error.(10) There was significant positive parental history ingroup having refractive error. Early diagnosis and timely intervention is essential to prevent visual impairment due to uncorrected refractive errors. Thus this study indicates too much of unhygienic visual exhaustion will lead to impaired vision in medical students(11).

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