



Original Research Article

Prevalence of Refractive Errors in Medical Students

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ABSTRACT

Introduction: Prevalence of refractive errors among students pursuing higher studies is very high. Very little data about the prevalence of refractive errors among medical students in eastern India is available. The present study intends to throw light on the above perspective.

Objectives: Cross-sectional study to determine the prevalence of refractive errors among medical students attending Burdwan Medical College and Hospital.

Materials and Methods: Randomly selected 580 medical students were subjected to evaluation of refractive errors in department of Ophthalmology, Burdwan Medical College over a period of six months. All students were assessed for refractive errors using auto-refractometer (TOPCON RM-8000B, TOPCON Corporation, Tokyo, Japan). Refractive errors have been further categorized according to the Dioptric power.

Results: Refractive errors were found in 330(56.90%) medical students out of which 215(65.15%) were male students and 115(34.85%) were female students. Myopia, 208(63.03%) was the commonest type of refractive error. According to the categorization of refractive errors in terms of diopter (D) it was more common in 1-2.99D, category 2.

Conclusion: From the present study the significance of prevalence of refractive errors among medical students is very much highlighted.

Key Word: Medical students, Prevalence of refractive error.

INTRODUCTION

Uncorrected refractive error remains the second commonest cause of global visual impairment next only to cataract. [1] Uncorrected refractive errors create a significant impact on learning and academic success. [2] High prevalence rate of

refractive errors was seen among medical students and they were unaware about it. [3] But studies on refractive errors have primarily focused on school going children in different parts of India. [4-7] Very little is known about the prevalence of refractive errors in medical students. In this study we

have included both under graduate and post graduate medical students of Burdwan Medical College and Hospital. The reason for selecting this group is that refractive errors are frequently more prevalent among students pursuing higher education. It is believed that information obtained from this study will help in making future planning and rendering better eye care services.

MATERIALS AND METHODS

This is an institution based cross sectional study. This study was conducted in the department of ophthalmology, Burdwan Medical College, West Bengal, India over a period of six month, from November 2013 to April 2014. We randomly selected medical students for this study. A total 580 students were included in this study. Students who were using spectacle, contact lens or had a history surgical intervention like LASIK, were taken as having refractive errors and others were evaluated for refractive errors. All students were assessed

for refractive errors using auto-refractometer (TOPCON RM-8000B, TOPCON Corporation, Tokyo, Japan).

We have categorized refractive errors: myopia, hyperopia and astigmatism, in the following way Category: 1- from 0.25 to 0.99 D, category: 2; 1.0 to 2.99D, category: 3; 3.00 to 5.99D and category: 4; 6D or greater. Age groups were categorized as: 18-23 years, 24- 29 years, 30- 35 years and 36 years or more. Prevalence of refractive errors was calculated as a ratio of subjects detected to have refractive errors, per hundred medical students.

RESULT

A total of 580 medical students were included in this study, Out of them 390 were males (67.24%) and rest 190 (32.76%) were females with a Male : Female ratio 2:1. Refractive errors was found in 330(56.90%) medical students out of which 215(65.15%) were male students and 115(34.85%) were female students.

Table 1: showing distribution of refractive errors (n=330)

Refractive errors	Male	Female	Total
Myopia	135(40.91%)	73(22.12%)	208(63.03%)
Hypermetropia	52(15.76%)	30(9.09%)	82(24.85%)
Astigmatism	28(8.48%)	12(3.64%)	40(12.12%)
Total	215(65.15%)	115(34.85%)	330(100%)

Myopia, 208(63.03%) was the commonest type of refractive error followed by Hypermetropia and Astigmatism [Table 1]. Association of refractive errors with age and sex was studied and it was more

common in 18-23 years of age [Table 2]. According to the categorization of refractive errors in terms of diopter (D) it was more common in 1-2.99D, category 2 [Figure 1].

Table 2: showing prevalence of refractive errors in relation to age and sex (n=330).

Age in years	Refractive errors		
	Myopia	Hypermetropia	Astigmatism
18-23	M-61(29.33%)	M-28(34.15%)	M-15(37.5%)
	F-31(14.9%)	F-14(17.07%)	F-5(12.5%)
24-29	M-49(23.56%)	M-12(14.63%)	M-6(15%)
	F-27(12.98%)	F-12(14.63%)	F-3(7.5%)
30-35	M-14(6.73%)	M-9(10.97%)	M-3(7.5%)
	F-8(3.85%)	F-2(0.96%)	F-3(7.5%)
36 or more	M-11(5.28%)	M-3(3.65%)	M-4(10%)
	F-7(3.36%)	F-2(0.96%)	F-1(2.5%)

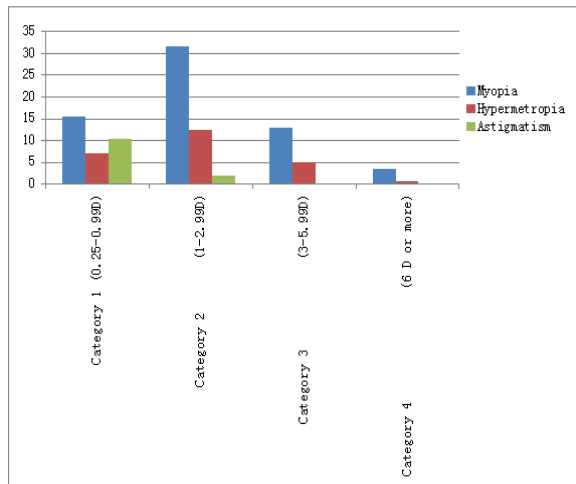


Figure 1: Categorical prevalence of refractive errors per diopter in medical students

DISCUSSION

The overall occurrence of refractive errors in our study was 56.9%, myopia being the most common type. This finding is similar with the studies on medical students in Pakistan (58%), [8] Norway (50%), [9] Copenhagen (50.3%). [10] Lower prevalence of refractive errors have been reported from Turkey (32.9%). [11] The prevalence of refractive errors reported in our study much lower than that reported from Taiwan (93%), [12] Singapore (90%), [13] China (71%). [14]

The present study correlates with the findings of refractive errors in central (55%) [15] and western, [16] (56%) Indian study but lower than southern India (70%) [17] and higher than another study from western India. [18]

The higher rate of refractive errors in medical students was probably due to high level of educational achievement, [19] above average intelligence, [20] long and exhaustive study schedule¹³, and prolonged near-work. [21] Medical students are a group of young adults who expend prolonged periods on reading and close work. With their rigorous study schedule that spans on the average 5 to 6 years, they have been reported to be at high risk for myopia [9,13,14,21]

The precise pathogenic mechanisms of the myopisation of ocular refractive machinery by near-work are yet to be fully established. According to recent theory blurred retinal image that occurs during prolonged near work leads to myopia. This blurring of retinal images stimulates biochemical and structural changes in the sclera and choroid that lead to axial elongation. [22]

CONCLUSION

Thus, from the present study the significance of prevalence of refractive errors among medical students is very much highlighted. Still, before going to drawn any conclusion, it requires further studies. In spite of some limitation in the present study, it can be concluded that myopia is the predominant refractive error among the medical students and correction of refractive error could benefit the society and nation at large.

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