

## A study of refractive errors on students of Baroda Medical College

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### ABSTRACT

**Background:** Refractive error remains one of the primary causes of visual impairment worldwide, and the prevalence of refractive error varies widely.

**Aim:** To determine the prevalence of refractive errors (RE) and also to check whether the number of students having RE remains constant during the successive years of Medical Studies with specific emphasis on myopia among Medical student of Baroda Medical College.

**Method:** An institution based cross sectional study was performed by random selection on medical students of first year to third year. Visual acuity and degree of myopia assessment was measured using Standard Snellen Chart Test. Those having a visual acuity less than 6/6 in one or both eyes were tested for the presence or otherwise of a refractive error by pinhole test.

**Results:** 45.04% of 1<sup>st</sup> year, 58.33% of 2<sup>nd</sup> year, and 61.36% of 3<sup>rd</sup> year students showed positive indication of RE. 147 out of 283 students (51.94%) were having myopia with 90 males and 57 females. Out of all myopics, 61.22% had mild (<-3 Diopters), 34.69% moderate (-3to-6 Diopters), and 4.09% had high myopia (>-6 Diopters). Mild to moderate degree of myopia is common with majority of students.

**Conclusion:** There is a significant increase in occurrence of RE in successive years' students. The overall RE is found to be 54.06%. Majority of them are myopic. However, mild to moderate degree of myopia is more common in male than female.

**Keywords:** refractive errors, myopia, diopters, medical students, Snellen chart, pinhole test

### INTRODUCTION

In the modern human society, everyone is surrounded and influenced by technology in its various forms in day to day activities. Of all the human senses, the sense of sight is used the most, and as a result, is affected the most. Consequently, refractive errors are becoming more of a problem in our societies. Refractive errors are apparently more prevalent among the high educational group. This may be, for this group comes into contact with technology the most in their day-to-day activities. Not much work is done and very little is known about the prevalence of refractive error in medical students. In this study, we have selected students of Baroda Medical College.<sup>1</sup> The reason for selecting this group is that in their routine, they are subjected extensively to work where proximal vision is used.<sup>2,3</sup> These data will help in assessing the exact status, increasing awareness and better planning of eye-care services, because refractive errors are responsible for a significant proportion of moderate visual impairment in this population.

### MATERIALS AND METHODS

An institution based cross sectional study was

performed by random selection on medical students of first year to third year. A total of 283 students (111 of 1<sup>st</sup> year, 84 of 2<sup>nd</sup> year and 88 students of 3<sup>rd</sup> year) after clearly explaining the purpose and procedure of the study were enrolled in the study. Students, who were using glasses, lens or had taken some surgical intervention (LASIKS), were taken as having refractive errors, while students not wearing or not having glasses were further investigated. The students were examined by assessing visual acuity from a standard Snellen chart. Those having a visual acuity less than 6/6 in one or both eyes were tested for the presence or otherwise of a refractive error by pinhole test (indicating refractive error).

### RESULTS

High degree of unawareness was found among medical students in relation to their status of having refractive error. It was found that 70 out of 111 in 1<sup>st</sup> year, 39 out of 84 in 2<sup>nd</sup> years, 35 out of 88 in 3<sup>rd</sup> years were not aware of it. Refractive error (myopia) is more prevalent in male than female students. However, there is no significant difference between the three groups in regard to degree of myopia.

After conducting the tests, their final distribution is as shown below (Table.1, 2 &3).

**Table.1:** Year wise distribution of refractive error

MBBS	% positive RE	Chi-square	DF	P value	Conjency coefficient	Mean diff of RF	Overall % having RE
1 <sup>st</sup> Yr (n=111)	45.04	61.14	2	0.046	0.1	10.54	54.06
2 <sup>nd</sup> Yr (n=84)	58.33						
3 <sup>rd</sup> Yr (n=88)	61.36						

**Table.2:** Year and sex wise distribution of Myopia

Myopia	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	Total	Chi	DF	P Value	Contingency coefficient
Male	22	25	33	90	0.335	2	0.84	0.0048
Female	18	18	21	57				
Total	50	43	54	147				

**Table.3** Distribution of severity of myopia

Myopia	1 <sup>st</sup> year		2 <sup>nd</sup> year		3 <sup>rd</sup> year		Total
	Male	Female	Male	Female	Male	Female	
Mild (0-3D)	21	9	19	11	19	11	90
Moderate (3-6D)	11	7	6	6	11	10	51
Severe (>6D)	0	2	0	1	3	0	6
Total	32	18	25	18	33	21	147

The results showed that 147 out of 283 students (51.94%) were having myopia with males predominance females. Though majority (61.22%) were having mild myopia (<-3Diopters) and only few suffered with high myopia (>-6Diopters). Their successive year wise distribution has shown 33.33%, 33.33% & 33.33% mild myopia, 35.29%, 23.53% & 41.18% moderate myopia and 33.33%, 16.67% & 50% high myopia respectively. The study revealed that myopia is common with majority of students having a mild to moderate degree of myopia.

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## DISCUSSION

There is evidence in literature of a strong relationship between short distance work and the development of refractive errors.<sup>4</sup> In our study 9 students of 1<sup>st</sup> year, 4 students of 2<sup>nd</sup> year and 1 student of 3<sup>rd</sup> year were not aware of their refractive errors. We found a significant association of myopia with higher levels of education in our study compared with the associations reported in some previous studies.<sup>5</sup> Educational status has been shown to be closely related to near-work, and association between near-work activities and myopia has been reported previously, which has also been used in support of the use-abuse theory of myopia.<sup>6</sup>

This study shows that there is increasing number of students having refractive errors in successive years. It has also revealed that myopia is common with majority of students having a mild to moderate degree of myopia.

## CONCLUSION

Data about the high prevalence of refractive errors among medical students and unawareness about it reported in this article can help in estimating the need for refractive correction and reduce the visual impairment due to refractive errors. It also urge for further investigative studies along specific lines that indicate the exact causes of increase in myopia, and the actions to mitigate factors causing refractive errors.

## AUTHOR NOTE

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