

Refractive Errors in Medical Students in a Teaching Hospital

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Abstract

Refractive errors are contributing to a severe public health problem. The increasing prevalence rates of myopia have reached epidemic levels in several areas. This study aimed to determine the prevalence rates of refractive errors in medical students. A prospective study was conducted in the Department of Ophthalmology, over a period of one year from January 2020 to December 2020. Medical students were randomly selected, as a total of 250 subjects. All underwent an ophthalmic examination. Of 250 students, 148(59.2%) cases of RE were documented. The most common cases were female (89, 60.1%), whereas males were (59, 39.9%). Of these, 98 students have myopia (66.2%), 42 cases have astigmatism (28.4%) and 8 cases have hypermetropia (5.4%). The late classes (6th) stage has the most frequent RE cases. Myopia was the predominant RE among medical students. Advanced class and females are predisposing factors.

Keywords: Astigmatism; Myopia; Hypermetropia; Medical students; Refractive errors

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Introduction

Refractive Error (RE) is the condition that the non-accommodating eye's optical system cannot focus parallel rays of light on the retina. The sense of sight is utilized the most and is affected the most. RE is one of the commonest reasons for visiting an ophthalmologist. RE is the second most common cause of blindness [1]. About 200 million peoples have uncorrected Refractive errors, worldwide [1]. This is significantly impacted learning, which can cause studying failure. The most common RE type is myopia. The prevalence rate of myopia in Asian countries has reached epidemic levels [2]. Also, the authors found the prevalence rates of RE were high in the highly educated population [3]. Otherwise, myopes cases have been recorded to achieve higher intelligence test scoring and educational levels than those who are not myopes [4]. Medical students are a select population with a high education level, hence, they are at high risk for myopia [5]. Adult onset myopia is also thought to be a common occurrence in medical students [6,7]. Uncorrected RE rank next to cataract in reasons of global visual impairment. It has a significant impact on learning and academic success [8]. A high RE prevalence rate was seen among students.

Many studies conducted on RE have primarily focused on school-going children. Very little is known about the RE in medical students. So, we have enrolled medical students, as refractive errors are frequently more prevalent among them.

Methods

Study design

A prospective study was conducted in the Department of

Ophthalmology, over a period of one year from Jan 2020 to Dec 2020. Medical students were randomly selected, as a total of 250 subjects. Informed consent was obtained from the students. All underwent an ophthalmic examination, and a history of ophthalmic and systemic problems. Assessing visual acuity by Snellen's chart (far vision) and Jaeger's chart (near vision). Assessment of RE done by auto-refractometer. When visual acuity is less than 6/6 in uni- or bilateral eyes, then do Pinhole testing for the presence of a RE.

Inclusion criteria

- Students from the first to the sixth year
- Age of 18 – 28 years
- Both sexes

Exclusion criteria

- DM
- Eye abnormality
- Past history of eye diseases
- Trauma to eye
- Retinopathy
- Prematurity
- Connective tissue or systemic diseases



Statistical Analysis

Significance was assigned at $P < 0.05$ level for all parameters. Categorical variables were compared with the χ^2 test. The *t-test* was used for continuous variables.

Results

Of 250 students, 148 (59.2%) cases of RE were documented. The most common cases were female (89, 60.1%), whereas males were (59, 39.9%). Of these, 98 students have myopia (66.2%), 42 cases have astigmatism (28.4%) and 8 cases have hypermetropia (5.4%), (table 1). Table 2 listed the frequency of RE according to medical students' stages. The late classes (6th) stage has the most frequent RE cases.

Table 1: Refractive error.

RE	No.	%
Myopia	98	66.2
Astigmatism	42	28.4
Hypermetropia	8	5.4

Table 2: RE according to students' stages.

Class	Myopia (n=98)	Astigmatism (n=42)	Hypermetropia (n=8)
1 st	10	3	1
2 nd	13	3	1
3 rd	20	6	1
4 th	18	8	2
5 th	16	10	1
6 th	21	12	2

Discussion

The long and hard study regimens of medical college involved extensive near-work such as reading and writing, this is suggested that the amount of near-work could cause myopia [5,9-12]. However, it is now generally agreed that multifactorial heredity and environment have important roles to cause RE. Also, ethnic variations and different genetic predispositions may play such roles. Besides, students with a high education state as well as above-average intelligence may lead to high prevalence rates of myopia [11].

According to recent theory blurred retinal images that occur during prolonged near work lead to myopia. This blurring of retinal images stimulates biochemical and structural changes in the sclera and choroid that lead to axial elongation [13].

Myopia is multifactorial with genetic and environmental factors, as well as - parental history of myopia is an important risk factor for its development which was reported in various studies [14-17]. The present study has also observed a marginal increase in the amount of near work done by those with refractive errors which was in correlation with the findings observed by Wu Y, et al. (2012) [2].

Almuamar HAH (2020) concluded myopia is the predominant RE detected among medical students. The occurrence of myopia was found to be higher among high classes. Female students showed a higher rate of RE [18].

Conclusion

Myopia was the predominant RE among medical students. Advanced class and females are predisposing factors.

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