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Ophthalmology

DRY EYE DISEASE IN MEDICAL STUDENTS

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ABSTRACT Dry eye disease is a commonly encountered ocular problem. It is a multifactorial disorder associated with tear film instability and ocular surface affectation. It has varying predisposing factors including conditions associated with reduced blinking such as reading. This factor is encountered by students because of likely prolonged hours of reading. The aim of this study was to assess the prevalence of dry eye in a group of final year medical students. A semi structured questionnaire was administered to the students. Schirmer test and TBUT were used to assess dry eye signs in those with dry eye symptoms. Information obtained was analysed using Statistical Package for Social Sciences (SPSS) version 23.
Out of 93 candidates, 10(10.8%) had dry eye symptoms while 7(7.5%) had dry eye disease, and were within 20 to 30 years of age. Females were affected more. The effect of reading from handset or computer, reading books, and presence of eye problem were statistically significant with p=0.000 in all. Students with dry eye symptoms should be investigated and appropriate treatment instituted for maximum ocular comfort.

KEYWORDS : Dry eye disease, medical students

INTRODUCTION

Dry eye disease is a common ocular encounter.[1] It is described as multifactorial in origin and could eventually lead to damage to ocular surface.[2] The cause has been linked to infiltration of ocular surface and lacrimal gland by helper T cells, causing inflammation and damage to ocular surface.[3] The symptoms include, blurred vision, grittiness, fatigue in the eyes after short periods of reading, increased ocular discomfort following visual activities associated with reduced blinking like reading, watching television, or using the computer.[4]

Due to the volume of work in higher institutions, undergraduates especially medical students get engaged in a lot of reading exercises in order to meet up with the workload. This increases periods of reduced blinking and could render them vulnerable to dry eye disease. The aim of this study was to examine the prevalence of dry eye disease in a class of final year medical students.

MATERIALS AND METHODS

A cross sectional prospective study was conducted in the eye clinic of a tertiary institution in a group of final year medical students. A semi structured questionnaire incorporating the Ocular Surface Disease Index questionnaire was used to interview them after an informed consent was obtained. Ethical approval was obtained from the institution as well. Those who were not keen on participating were allowed to opt out. There were 95 students who agreed to complete the questionnaires. Two were however excluded because of incomplete data.

Other information obtained in addition to the OSDI questions included; sex, age, frequency of reading from computer or handset, reading books and presence of eye diseases. The presence of symptoms was classified into none, mild, moderate and severe. Those who had symptomatic evidence of dry eye further had two dry eye tests carried out on them. These were the tear break up time (TBUT) and Schirmer tests. TBUT was performed by wetting fluorescein strip with preservative free normal saline and instilling the fluorescein into the inferior fornix of the conjunctiva of the candidate seated on the slit lamp. The candidate was instructed to blink three times, then keep the eye open, and avoid blinking. The cornea was examined with cobalt blue filter till dark spots signifying areas of dryness appeared. The test was considered significant if the time from the last blink to first appearance of patch of dark spots was less than 10seconds. Both eyes of the candidate were tested, one at a time. Schirmer test was carried out afterwards by inserting the folded end of calibrated Whatman filter paper into the inferior fornix at the junction between the medial and lateral thirds of the lower lid margin of both eyes. The candidate was told to keep the eyes open. After 5 minutes, the level of wetting was noted. Value of less than 10mm was regarded as indicator for dry eye.

A candidate was considered to have dry eye disease if he or she had

positive dry eye symptoms and, one or both eyes showed significant tear break up time or Schirmer test, or both tests were significant.

The results obtained were analysed using the Statistical Package for Social Sciences, version 23 and performed on the bases of persons not eyes. Categorical variables were analysed using the chi-square. P value of less than 0.05 was considered significant.

RESULTS

There were 93 candidates who participated in the study. Their baseline characteristics are shown in table 1.

Table 1: Baseline characteristics of the candidates

Characteristic	Frequency(%) N=93
Age in years	
20-29	70(75.2)
30-39	20(21.5)
40-49	1(1.1)
50-59	2(2.2)
Sex	
Males	58(62.4)
Females	35(37.6)
Presence of eye disorder	
Yes	25(26.9)
No	68(73.1)
Dry eye symptoms	
None	83(89.2)
Mild	6(6.5)
Moderate	4(4.3)

Dry eye symptoms

Ten candidates (10.8%) had dry eye symptoms and involved those in the 20 to 39 year age groups. Age was not significant. (Chi- Square= 2.349, df=9, p value=0.985). The characteristics displayed by the affected students is depicted in table 2. There was a strong association between dry eye symptoms and, reading from handset, reading books, and having eye disorder, p=000.

While dry eye symptoms was present in 7 females, only 3 males were involved. This was not significant as well. (Chi-Square= 6.966, df=3, p value=0.073).

Table 2: Presence of dry eye symptoms and characteristics of candidates

Characteristics	Frequency n=10	P value	df
Reading from handset/computer		0.000	12
All the time	1		

Most of the time	8		
Sometimes	1		
Read books		0.000	15
All the time	3		
Most of the time	7		
Presence of eye disorders		0.000	6
Yes	7		
No	3		

The characteristics displayed were statistically significant.

Dry eye disease
Dry eye tests were carried out in all ten who had dry eye symptoms. In all, dry eye disease was present in 7 of the candidates, six of whom were females. All had positive TBUT, while 2 had significant Schirmer test. Table 3.

Table 3: Result of dry eye tests

	Frequency (%) n=93	Frequency (%) n=10
TBUT less than 10seconds	7(7.5)	7(70.0)
Schirmer test less than 10mm	2(2.2)	2(20.0)
Both tests significant	2(2.2)	2(20.0)

The eye disorder reported was mainly refractive error, with myopia featuring most. Ocular allergy, pterygium and inability to read in dim light (in a 50 year old candidate) were the other problems. All 7 candidates who tested positive for the dry eye tests had refractive error. One of the seven also had bilateral nasal pterygia that had encroached unto the cornea.

DISCUSSION
In this study of 93 students, 10 (10.8%) had dry eye symptoms and 7(7.5%) had dry eye disease. The prevalence of dry eye disease found in this group of people is within documented range of 5 to 73.5% reported by, 'The epidemiology of dry eye disease: Report of the Epidemiology Subcommittee of the International Dry Eye Workshop'.[2] In another study, the prevalence of dry eyes as low as 2.7% was found in persons 18 to 34years of age although, considering all the population studied, an average of 6.8% prevalence was observed.[5]

Females were more affected than the males in the present study. This became even more obvious as there were more males in the class compared to the females. This observation has been documented by earlier studies .[6,7]

There is a possibility that females read for longer periods than their male counterparts, thus exposing them to longer hours of reduced blinking. Post menopausal estrogen administration has been observed as a possible cause of dry eyes in females.[3] This is an unlikely cause however in this situation considering the age of the students.

All 7(100%) students who had dry eye disease admitted to having refractive errors, with one in addition, having bilateral nasal pterygia that had encroached onto the cornea. The candidate with pterygium had TBUT of 1 second and Schirmer test record of 4mm. Pterygium is a well-known documented risk factor for dry eye disease.[8,9]

Eye diseases were also found to have significant association with dry eye in previous studies .[10,11] In some studies however, there was no significant association found between them.[6]

Three of those diagnosed with DED, a male and two females admitted taking some medication six months prior to the study. These were antimalarial, analgesics and antihistamine eye drop respectively.

The presence of dry eye in medical students has been established by this report. This is probably because of the long hours of reading peculiar to their state. This should be borne in mind by the students, who should report to the ophthalmologist as soon as they start experiencing these symptoms.

CONCLUSION
In the current study 10.8 percent of the students studied had dry eye symptoms and 7(7.5%) had dry eye disease. It was found more prevalent in the females despite the greater number of males in the class. All the candidates with dry eye disease had refractive error. The implication of these findings is that students could be susceptible to dry eyes. Those who have symptoms should be investigated for Dry Eye Disease and treated accordingly. This is very important because students need all the ocular comfort to cope with the load of work they have.

Further study is suggested to investigate the correlation between refractive errors and dry eye disease.

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