RESEARCH ARTICLE

PROGRESSION OF MYOPIA AT KING ABDUL-AZIZ UNIVERSITY MEDICAL STUDENT IN 2015 JEDDAH, SAUDI ARABIA

[1]Nizar MOHAMMED Al-Hibshi, *,[2]Hawazin Hawazin Fallatah, [2]Nada Sougan Al-zahrani and [2]Bayan Ghassan Badgish

[1]Department of Ophthalmology, Faculty of Medicine, King Abdulaziz University, Jeddah Saudi Arabia
[2]Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

ABSTRACT

Introduction: Myopia of eyes characterized by a limited vision of remote objects while nearby objects appear in focus. It is the most common refractive error attacking (1). Several studies have revealed that increasing t prevalence of myopia over the past few decades, reaching up to 80% in some populations. (2,3). Objective: The primary objective of this study was to measure the prevalence of myopia among senior medical students, and the secondary objective was to identify any relationship between different types of study electronic and non- electronic methods used by students.
Methods: An analytic cross-sectional study conducted at King Abdul-Aziz University in 2015. A two-staged sampling technique. A questionnaire was constructed with Questions included measuring risk factors for myopia.
Results: Out of 240, 76%were females and 24% were males. Prevalence of myopia was 19%. 34% complained of a progressive worsening of their symptoms. (74%) had a first degree relative with myopia. 37% of the myopic students complained of headaches after reading. The correlation between myopia and non-electronic type of study was significant (p-value .027). And with electronic (p-value.175)
Conclusion: The results of this study indicate progression of myopia during medical school was very significant: chi- square test =36.06 (p-value .000). And suggest an association between the types of study and the progression of their eye diseases.

INTRODUCTION

Myopia is one of the refractive errors of the eye characterized by limited vision of remote objects while nearby objects appear in focus. It is the most common refractive error attacking a range of ages, from school children to adults, and limiting outdoor activities and occupational preferences. Nemours classifies Myopia according to the age of initial diagnosis (congenital, infancy, early adult, late adult), whether it is physiological or pathological, and by the degree of the symptoms: high (>6.00 D), medium (3.00 D-6.00 D), or low (<3.00 D). Myopia is also classified by its nature, as simple myopia, nocturnal myopia, pseudo-myopia, and degenerative myopia. In previous studies it has been suggested that there is an association between pathological myopia and cataracts, glaucoma, macular degeneration and retinal diseases. Several studies done around the world have revealed that the prevalence of myopia alters considerably with geographic areas and that it has been increasing over the past few decades, reaching up to 80% in some populations.

The causes of myopia differ according to age, sex, ethnicity, genetic factors, intelligence and environment. According to some studies, myopia is correlated positively with the tendency to have a high IQ and increased mathematical ability (Sun *et al.,* 2012; Krishnakumar *et al.,* 2014). The prevalence of myopia in adults has been reported as about 26.2% in the USA, 50% in Japan, and up to 80 % in young adults in a study done in Taiwan. (Wang *et al.,* 1994; Hosaka, 1988; Lin *et al.,* 1988) From these studies it was concluded that there is a higher prevalence of myopia in eastern Asia as compared to in western countries (Fan *et al.,* 2004). A study in the USA reported that up to US$3.9 and individuals and health organizations spend US$7.2 billion on myopia yearly, respectively, reflecting the burden and economic impact of the disease on society (Pan *et al.,* 2012). Thus, this study aims to find out whether there is a relation between study types and myopia.

Research objectives

- To measure the prevalence of myopia among king Abdul Aziza university medical student.

Corresponding author: Hawazin Fallatah
Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia.

- To determine the relation between myopia and different types of studying among medical student king Abdul-Aziz University.

MATERIALS AND METHODS

An analytic cross-sectional study was initiated after obtaining approval from the university research ethical committee. The population was selected from the King Abdul-Aziz University medical students in their senior year. The only inclusion criterion was that they must be medical students. There were no exclusion criteria. The sample size was calculated on the basis of the size of the medical faculty. Based on the total number of 1500 medical students registered at the King Abdul Aziz University, a two staged sampling technique was used in which a "subset of elements within each selected cluster is randomly selected for inclusion in the sample". This resulted in a sample of 240 students of both sexes. The primary objective of this study was to measure the rate of myopia among King Abdul-Aziz University (KAU) senior medical students, and the secondary objective was to identify any relationship between the degree to which the myopia worsened and the different types of study used by KAU students. A questionnaire was constructed with a valid number of questions. Others were added under the supervision of an ophthalmologist and epidemiologist. A consent form was completed by all students. Questions included measured the risk factors for myopia, such as age, onset of diagnosis and the most recent spectacle prescription. Family history; method of study (in terms of soft-copy or hard copy); number of hours spent studying, daily and weekly; posture and amount of light used when studying; the degree to which the symptoms have worsened; difficulty in reading; and an assessment of the effect of their myopia on their academic achievement were all included in the questionnaire. All data was managed with the SPSS Ver.22.

RESULTS AND DISCUSSION

Out of 240 Participants, 183 (76%) were females and 57(24%) were males. The mean age was 21.83 years. A number of students were diagnosed with refractive errors: myopia 137 (56%), astigmatism 61(25%), and hyperopia 13 (5%). Of the total number of students, 81 (34%) complained of a progressive worsening of their symptoms, 109 (45%) of them said their eyes had deteriorated during medical school. Twenty three (14%) said their myopia started in elementary school, 26(10%) said it started in intermediate school, and 35(14%) said it started during high school. 177(74%) of the total sample had a first degree relative with myopia; 36 (15%) had more than four relatives with myopia. Fifty-three (37%) of the 137 students with myopia complained of headaches after reading.

Of the total student group, 210 (87%) were found to be right handed and 13 (5%) were left-handed, which did not support evidence associating myopia with left handiness that was mentioned in previous studies (Krishnakumar *et al.*, 2014). The study reveals that there is a high prevalence of myopia among King Abdul-Aziz University medical students, affecting more than the half of the total number of the sample. The prevalence of myopia in senior medical students was found to be19%. This is significantly similar than the findings of a similar study done in India (which found between 6.9 and 19.7%) but much lower than the prevalence calculated in Taiwan (92.8%) or Singapore (83%). These high rates may be due to the increase in the prevalence of myopia in eastern

Asian populations that was observed in previous studies. (8, 10, 11) However, the results of our study lower than the results of studies done among medical students in Greece (54%), Denmark (50%) and Norway (50.3%). (12) In our study, a higher prevalence was found among males than among females. Sixteen (7%) of the total sample of students had had surgical procedures to correct their myopia. The correlation between myopia and non-electronic type of study that the students customarily used was found to be significant (p-value .027). And with electronic (p-value .175)

Table 1. Numbers of total number of myopic and nun myopic student of both sexes

	Male	Female
Myopic	39(73%)	98 (53%)
Not myopic	14	84
Total	53	182

Table 2. Result of myopia and different study types

Myopia	Percentage of student	Chi-square test	P-value
Study Hours			
<3 hours			
>3 hours	(73.7%)	2.788	.095 NS
	(38%)	1.219	.270 NS
Electronic	(56.2%)	3.481	.172 NS
Non – electronic	(87.5%)	4.868	.027 Sig
Light:			
Dim	(2.9%)	.159	.691 NS
Moderate	(44%)	.028	.866 NS
Bright	(54%)	.140	.708 NS
Study Posture:			
Walking	(5%)	.129	.719 NS
Sitting	(63.2%)	.002	.962 NS
Changing posture	(33%)	.002	.969 NS
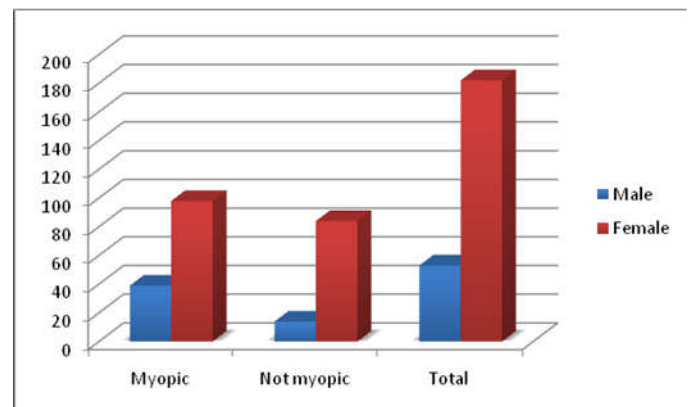
Figure 1. Total number of myopic and nun myopic student of both sexes

A relationship was also found between astigmatism and the electronic method of study (p-value.013). While not any significant with non-electronic methods (p-value .859). However, the Chi square test did not detect any significant differences between myopia and the number of hours of study, study posture or the amount light in the progression of the eye diseases. Observations by the UN showed that the progression of myopia during students' period of study in medical school was very significant: chi square test =36.06 (p-value .000).

Conclusion

The results of this study indicate the high prevalence of myopia and other refractive error diseases in medical school students was (56%) and suggest an association between the

types of study and the progression of their eye diseases and links genetic and intelligence factors to the diseases.

Perspectives

We will recommend the results of the study to help medical students to select their types and time for studying without visual discomfort and to prevent farther progression of their myopia. Further studies should be conducted to help identify the prevalence and risk factors associated with the increased risk on myopia and other refractive errors among students and the general population.

REFERENCES

Chow, Y.C., Dhillon, B., Chew, P.T., Chew, S.J. 1990. Refractive errors in Singapore medical students. *Singapore Med J.,* 31:472–473.

Fan, D.S.P., Lam, D.S.C., Lam, R.F., Lau, J.T.F., Chong, K.S., Cheung, E.Y.Y., Lai, R.Y.K., Chew, S.J. 2004. Prevalence, incidence, and progression of myopia of school children in Hong Kong, 45:1071-1075.

Hosaka, A. 1988. Population studies–myopia experience in Japan. *ActaOphthalmol Suppl.,* 185:37–40. [PubMed]

Krishnakumar, M., Atheeshwar, S., Chandrasekar, M.D. 2014. Myopia and digit ratio in medical college students.*PLoS One,* Jan;9(2):e89800

Lin, L.L., Chen, C.J., Hung, P.T., Ko, L.S. 1988. Nation-wide survey of myopia among school children in Taiwan, 1986. *ActaOphthalmol Suppl.,* 185:29–33. [PubMed]

Lin, L.L., Shih, Y.F., Lee, Y.C., Hung, P.T., Hou, P.K. 1996. Changes in ocular refraction and its components among medical students–a 5-year longitudinal study. *Optom Vis Sci* 73:495–498.

Lin, L.L.K., YF Shih, CK Hsiao, *et al.,* 2000. Epidemiologic study of the prevalence and severity of myopia among schoolchildren in Taiwan in 2000**.**

Midelfart, A., Aamo, B., Sjohaug, K.A., Dysthe, B.E. 1992. Myopia among medical students in Norway. *ActaOphthalmol* (Copenh) 70: 317–322.

Myopia: Prevalence and Progression. Available from: http://www.nap.edu/openbook.php?record_id=1420&page=3

Pan, C.W., Ramamurthy, D. and Saw, S.M. 2012. Worldwide prevalence and risk factors for myopia.*Ophthalmic Physiol Opt,* 32,3–16.doi: 10.1111/j.1475-1313.2011.00884.x

Sun, J., Zhou, J.B., Zhao, P.Q., *et al.* 2012. High prevalence of myopia and high myopia in 5060 Chinese university students in Shanghai. *Invest Ophthalmol Vis Sci.,* 53:7504-7509.

Wang, Q., Klein, B.E., Klein, R., Moss, S.E. 1994. Refractive status in the Beaver Dam Eye Study. *Invest Ophthalmol Vis Sci.,* 35:4344–4347. [PubMed]

****