ORIGINAL ARTICLE

PROGRESSION OF MYOPIA AMONG THE STUDENTS OF KHYBER MEDICAL COLLEGE, PESHAWAR

Aiyna Usman, Eman Arif, Rubeena Gul, Aziza Alam

[1]Department of Public Health and Community Medicine, Khyber Medical College, Peshawar - Pakistan

ABSTRACT

Objectives: To assess the progression of myopia in the medical students of Khyber Medical College (KMC), Peshawar, Pakistan.

Materials and methods: This cross-sectional descriptive study was conducted at Khyber Medical College from May to June 2022. Data was collected after obtaining approval from the Ethical Board. Responses from 203 students were collected. An online questionnaire was designed using Google Forms and was shared through the official WhatsApp groups of all five years of KMC via a simple random sampling technique was used. The progression of myopia was estimated by analyzing the increase in the dioptre number among myopic students. Various factors such as screen time, study hours, and family history were also taken into account. The responses were recorded and analyzed using SPSS version 22 software.

Results: Out of the 203 collected samples, 59.61% of the students were myopic, and among those myopic students, 53.39% noticed an increase in their dioptre number after admission to medical college. Additionally, various factors such as screen time, study hours, and family history were also considered. 50.4% of the myopic students reported their screen time to be 4-6 hours. Similarly, 64.4% of the myopic students had 1-3 hours as their reading time. Moreover, 75.2% of the myopic students had a positive family history of myopia.

Conclusion: Myopia is highly prevalent among medical students at Khyber Medical College. The study revealed a significant number of myopic students experiencing progression of myopia after admission to medical college.

Keywords: Myopia, dioptre, screen time, study hours

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INTRODUCTION

Myopia, also known as nearsightedness, is a disorder of the eye in which the image is formed in front of the retina instead of forming on it. It is characterized by the elongation of the eyeball. The affected person is unable to see distant objects clearly. It is reaching epidemic proportions in East Asia. [1] Both environmental and genetic risk factors cause myopia. [2] Myopia is a significant public health problem and its prevalence is increasing over time. [3] This is linked to increasing educational pressures and changes in lifestyle which have reduced the time children spend outside and have bounded them to stay indoors[4]. It affects 36.5% population in Pakistan and 11.4% of blindness is reported due to uncorrected refractive errors. [5] Nearsightedness (myopia) causes blurry vision when one is looking at distant objects. [6] Most commonly, simple or school myopia starts manifesting between 7 to 10 years and is bilateral. The greater the degree of myopia, the greater the visual defect. In small degrees of error, symptoms of eye strain are present. In progressive myopia, there may be pseudo-proptosis with a large pupil. [7] For students, focusing on the white/blackboard during lectures may be difficult. Most of the time myopia goes unnoticed and people simply ignore its symptoms. Interventions to slow the progression of myopia in children include multifocal spectacles, contact lenses, and pharmaceutical agents. [6]

Medical students spend prolonged periods on reading and close-up work. [8] They usually have to do late-night studies and have increased screen time. So they are at a greater risk of developing myopia. On the examination of the medical students at the University of Gondar, Ethiopia, the prevalence of myopia was found to be 16.7%. [9] While in a study conducted among the medical students at Services Institute of Medical Sciences, Lahore, the prevalence of myopia was found to be 83.6% which is a significantly large number and it reflects that it is very common among the medical students of Pakistan. [10] A survey conducted at Fatima Jinnah Medical University showed 61.2% of the medical students to be myopic. [11] Information regarding the progression of myopia is rising but data regarding it is deficient. Timely actions must be taken to limit the impact of this public health menace, especially in this computer-dependent era. Primordial and primary prevention must be taken to prevent myopia progression among medical students. Thus, the objective of our study was to

Correspondence
Dr. Aziza Alam
Senior Lecturer
Department of Public Health and Community Medicine,
Khyber Medical College, Peshawar - Pakistan
Cell: +92-333-9231819
Email: azizagrc@yahoo.com
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assess the progression of myopia in medical students at Khyber Medical College.

MATERIALS AND METHODS

A Cross-Sectional descriptive study was conducted among the medical students at Khyber Medical College in the months of May and June 2022 among 203 medical students of KMC. The sample size was calculated by using the formula $n=[z^2*p(1-p)]/d^2$ where $z=1.96$, $p=0.836$ (from the same study conducted by the students of SIMS, Lahore), and $d=0.05$. There were no exclusion criteria. [10] Data was collected after the approval by the Ethical Board dated 26/04/22. An online questionnaire, containing queries regarding students' demographic data, refractive errors, family history, screen time, and reading hours, was generated using Google Forms. The questionnaire was then shared with the official WhatsApp groups of all five years of the college. The form was made available for two weeks. Online responses were generated which were then analyzed using SPSS version 22 software. Progression of myopia was estimated by a reported increase in diopter number of students after admission to KMC. Similarly, screen time (the number of hours per day spent using laptops, mobiles, and televisions), study hours (hours spent on reading hard copies), and family history were also considered.

RESULTS

Out of the 203 samples that were collected, 121(59.61%) students were myopic (Table 1). 63 (53.39%) noticed an increase in their diopter number after admission to medical college due to long hours of reading and screen time (table 1) while 14 students (6.9%) developed myopia after their admission to medical college. Most of the students reported screen time ranging between 4-6 hours while the reading hours ranged from 1 to 3 hours. Moreover, 75.2% of the myopic students had a positive family history of myopia of the total 121 myopic students, 56 (46.3 %) had no progression in their diopter number while 65 (53.7 %) had progressive myopia. Most of the students had their dioptre numbers ranging from -0.25 to -1D (see Figure 1).

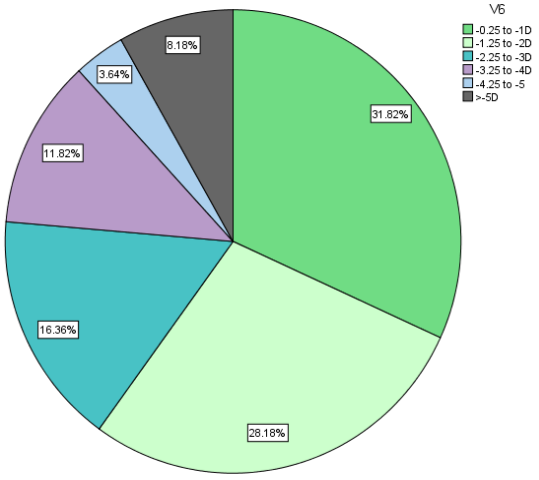

Fig 1: DISTRIBUTION OF DIOPTRE NUMBERS OF EYES IN MYOPIC STUDENTS

DISCUSSION

We selected medical students as our target population as they are prone to increased exposure to screens as well as long and exhausting hours of reading. The frequency of myopia calculated in our study is 121(59.6%). Our results were consistent with the research carried out in Saudi Arabia (53.5%). [12] Our study revealed a greater frequency of myopia than the medical students of Jazan University, Saudi Arabia which was 48.8%. [13] In contrast to our study, medical students in China showed a myopic percentage between 69.21%. [14] Moreover, according to research conducted at the Services Institute of Medical Sciences, Lahore, the occurrence of myopia among medical students came out to be 83.6% which is significantly greater than our findings. [10]

These variations in the frequency of myopia could be justified on the basis of different diagnostic criteria used, ethnicity variation, differences in lifestyle, and socioeconomic factors. The most probable reason is that these medical students spend less time outdoors. Research has identified a positive correlation between myopia and time spent outdoors. [15] Researchers have shown that the frequency of myopia reaches a high level during intense study periods like the ones experienced by medical students. [16] In our study, we observed that the majority of the students were spending more than 4 hours on electronic gadgets like smartphones, laptops, etc which is consistent with the study that suggests that 90% of digital device users experience digital eye strain. [17] In our study, 75% of the myopic students had a positive family history of myopia and previous reports have shown that myopic parents are more likely to have myopic children. While in a study the heritable parental myopia showed to be 66.57% for boys while 67.82% for girls. [18] This study is limited in terms of sample size, single-center, and limited to online survey design. Further, large-scale, multicenter cohort studies using objective instruments for diagnosing and quantifying myopia should be conducted to determine the true mag-

Table 1: Demographic information of myopic medical students

	GENDER		YEAR OF STUDY					FAMILY HISTORY		SCREEN TIME				READING HOURS		
	MALE	FEMALE	1st YR	2nd YR	3rd YR	4th YR	5th YR	PRESENT	ABSENT	3-1 hrs	6-4 hrs	10-7 hrs	>1 hrs	3-1 hrs	6-4 hrs	10-7 hrs
n	49	72	21	40	20	25	15	91	30	22	61	33	5	78	36	7
(%)	40.5	59.5	17.3	33.1	16.5	20.7	12.4	75.2	24.8	18.2	50.4	27.3	4.1	64.4	29.8	5.8

nitude of the problem.

CONCLUSION

A high frequency of myopia was found among medical students. The associated risk factors were increased use of electronic gadgets, especially smartphones, and laptops, and having a positive family history. Awareness programs regarding the prevention of myopia in medical students should be in place in all medical colleges upon college admission. Similarly, a healthy lifestyle like spending more time in outdoor activities should be encouraged.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Usman A:	Concept, Critical appraisal, and Discussion Writing
Arif E:	Data collection, compilation of results, formatting of the article
Gul R:	Data Collection, Manuscript writing
Alam A:	Manuscript Writing, Bibliography

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.