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RESEARCH ARTICLE
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PREVALENCE OF MYOPIA AND ITS RISK FACTORS AMONG THE MBBS STUDENTS OF SZMC RYK

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Abstract

Background: The prevalence of Myopia among the MBBS students due to long studying hours is a significant issue. It can lead to various challenges including headache, depression and difficulty in studying, as well.

Objective: The objective in this research was to determine the frequency and risk factors of myopia among the MBBS students in the Sheikh Zayed Medical College, Rahim Yar Khan.

Methodology:

Study design: "Cross-sectional study" design was used for this research. Study site: The study was conducted in the Sheikh Zayed Medical College, Rahim Yar Khan. Study subjects: Study subjects were five batches of MBBS with the age group of 17-25. Study duration: The duration was one month after approval of synopsis. Sample size: A sample size of 300 MBBS students was included in this study. Before study, the consent was taken from the subjects. Data collection: The questionnaire was shared via Whatsapp groups to collect information with complete anonymity. Study variables: The variables included age, gender, socioeconomic status, year of study and residence.

Results:

According to our study notable 48% of the students were identified as myopic, highlighting the widespread presence of this condition within the student population. One big reason for myopia was having family members with the same problem. In the study, 41.3% of the students said they had family with myopia, while 49% did not, and 9.7% weren't sure. This shows that genetics play a major role in whether someone gets myopia or not. The way students behaved also seemed to matter. Most of them, about 65.7%, took breaks while studying, which can help rest the eyes. But 14.3% didn't take any breaks, and 20% only sometimes did. Also, 30.3% of the students said they studied lying down, which can make it harder to focus and strain the eyes more. Only 11.7% studied in low light, while 58.3% avoided dim light, showing they knew bad lighting isn't good for the eyes. Using electronic devices, a lot was another big factor. The study found that 48.7% of the students used

devices for 3 to 6 hours a day, and 25% used them for more than 6 hours. This much screen time can tire out the eyes and maybe lead to myopia. They also found that 16% of students started using devices in middle school, and 25.7% started in college. The study had both girls (58.7%) and boys (41.3%). Most of the students, about 78.3%, were from cities, and the rest
(21.7%) were from rural areas. This might mean that living in a city could make myopia more likely. The study also looked at how school pressure affects myopia. A lot of the students, about 37.7%, said they felt really pressured to study a lot, which could mean they study too long without breaks. This can make myopia more likely. Also, most students (52.3%) liked to study at night, so they might not get enough natural light and use artificial light more, which can be bad for the eyes. 66.7% awake late at night and about 15% experienced depression. Most of them faced headache after using mobile phones. More than 97% go to bed after 10 PM. About 50% were not using any visual aid. More than 50% had family history. Intake of vitamin A is not common among 70%. These insights underscore the need for targeted educational programs to promote eye health and prevent the progression of myopia within this demographic area. This data highlights significant risk factors and behavioral trends associated with myopia among the student population. Overall, the findings from this study suggest that myopia among MBBS students is influenced by a combination of genetic predispositions and modifiable lifestyle factors, such as study habits, electronic device usage, and environmental conditions. These insights emphasize the need for targeted interventions and educational programs to promote better eye health practices and reduce the incidence of myopia in this demographic area.

Conclusion:

Our study revealed female predominance of myopia. It was significantly associated with positive family history, irregular sleep pattern, long reading hours, increased applicability of electronic gadgets and Vitamin A deficient diet.

Keywords: Myopia, Risk factors, Prevalence, MBBS Students.

INTRODUCTION

Myopia is a refractive error that results from irreversible axial elongation [1], which subsequently can be associated with a higher risk of complications in adulthood, including retinal detachment, glaucoma, cataract, and myopic macular degeneration (MMD) [2].Myopia, often known as nearsightedness or short-sightedness, is a spherical refractive defect that causes the eye to fail to see distant objects.[3] Myopia is a growing public health concern worldwide, with significant implications for eye health and quality of life [4].According to the World Health Organization (WHO), myopia affects over 1.9 billion people worldwide, with estimates projecting this number to reach 4.9 billion by 2050 [5].High myopia is associated with pathologic myopia, which can lead to irreversible vision impairment or even blindness [6-8].

MBBS students, due to their intense academic demands and prolonged near-work activities, may be at increased risk of developing myopia [9]. The high volume of near-work, including reading, writing, and screen time, has been identified as a significant risk factor for myopia development [10]. Over the last decades, the rise in myopia prevalence coincided with urbanization, an intensified focus on education, and reduced time outdoors [11]. As a consequence, the prevalence of myopia varies depending on geographical and ethnic factors, with rates reaching as high as 90% for myopia and up to 30% for high myopia in schoolchildren from East and Southeast Asia [12]. Worryingly, the onset of myopia is increasingly seen in younger children in East Asia [13], with Asians having earlier onset, faster progression, and longer duration than other ethnic groups [14].

MBBS students' lifestyle factors, such as irregular sleep patterns, physical inactivity, and poor dietary habits, contribute to myopia risk [15]. The high volume of near-work required for medical studies can lead to eye strain and fatigue, exacerbating myopia development [16]. A survey of Pakistani MBBS students revealed that 71.4% spent more than 4 hours daily on near-work activities, increasing myopia risk [17]. Myopia can impact MBBS students' academic performance and future career prospects, particularly in specialties requiring precise visual acuity [18]. Education on eye care and myopia prevention is often inadequate in medical curriculum, highlighting the need for increased awareness

[19]. Interventions targeting MBBS students, such as regular eye exams and vision breaks, can help mitigate myopia risk and promote eye health [20].

In Pakistan, where Sheikh Zayed Medical College is located, the burden of myopia is substantial, with an estimated 34.6% of the population affected [21]. The country's rapidly growing population, coupled with increasing urbanization and changes in lifestyle, has contributed to the rising prevalence of myopia [22]. Despite the elevated myopia rates in some urbanized areas of East Asian countries, there exists variability—likely due to ethnic disparities and divergent behavioral [23]. Because of changing behaviors, myopia prevalence is also increasing in other geographical regions [24-26].

Objective: Prevalence of myopia in MBBS Students of Sheikh Zayed Medical College and Hospital risk factors of myopia in MBBS students of Sheikh Zayed Medical College and Hospital.

MATERIALS AND METHODS

Study Design: Cross-sectional.

Study setting: The study was conducted at Sheikh Zayed Medical College, Rahim Yar Khan, Punjab, Pakistan.

Duration of the study: The duration of our study was from 29TH April, 2024 to 4TH June, 2024.

Inclusion Criteria

MBBS students of SZMC Rahim Yar Khan, First year MBBS to Final year MBBS students. Both males and females. Who have given informed consent.

Exclusion Criteria

Students other than SZMC Rahim Yar Khan. Students of Allied Health Sciences and other disciplines.

Sample size

The data was collected from 300 students of First year to Final year MBBS SZMC RYK.

Sample method

It was based on method of convenient sampling.

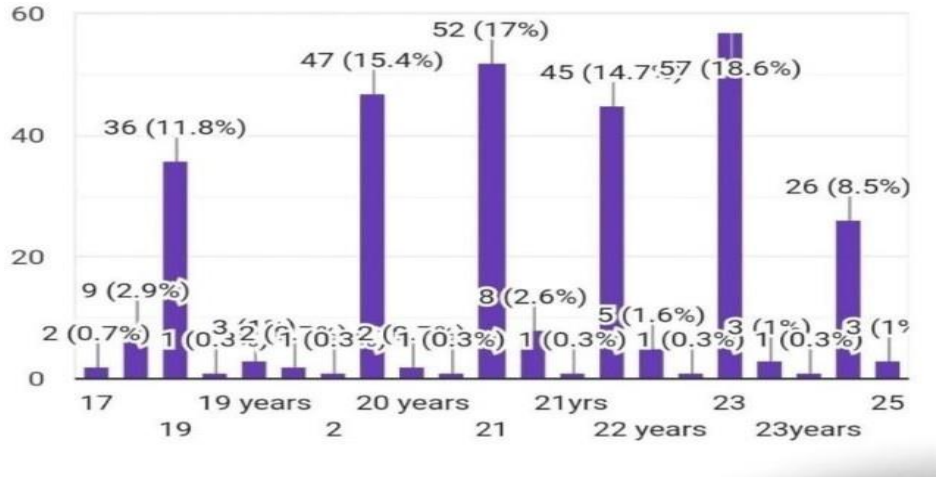
Data collection

After taking informed consent from the respondents, data was collected through online questionnaire which contained questions regarding prevalence and risk factors of myopia in MBBS students of SZMC RYK. The self- constructed questionnaire including the variables as age, gender, family history of myopia, habits such as studying late at night, history of headache, duration of use of smartphones per day, studying late at night, awakening and sleeping patterns, study habit in dim light were considered. Elaborated literature review and discussion with senior Ophthalmologist was made sure before generating the questionnaire and modified accordingly.

Data analysis

The data was summarized into tables, graphs and charts. The data was analyzed by using the software SPSS version 2023.

Age



(Average age is 21 year with ages ranging from 17 to 25 years)
Gender of Respondent
(300 Responses)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	124	41.3	41.3	41.3
	female	176	58.7	58.7	100.0
	Total	300	100.0	100.0	

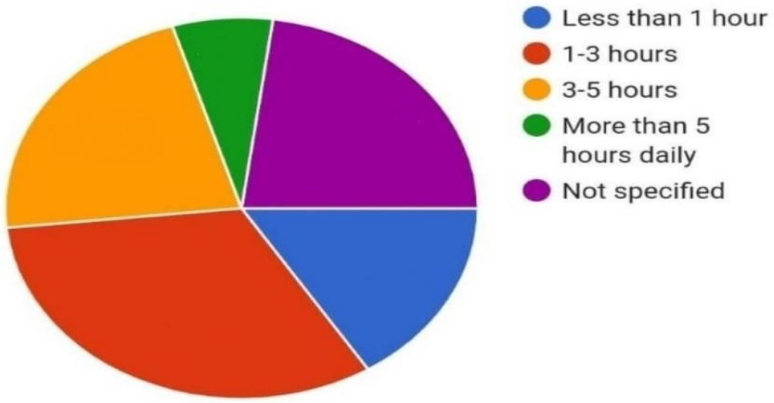
This table shows the Gender of Respondents, male and female. Total 300 students participated in survey in which 41.3% were male and 58.7% were female.

Status of Myopia
(300 Responses)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1	27	9.0	9.0	9.0
	1-2	57	19.0	19.0	28.0
	3-4	48	16.0	16.0	44.0
	4-5	14	4.7	4.7	48.7
	5-6	10	3.3	3.3	52.0
	more than 6	5	1.7	1.7	53.7
	none	139	46.3	46.3	100.0

This table shows status of myopia with percentage 9%,19%,16%,4.7%,3.3%,1.7%and 46.3% of less than 1,1-2,3-4,4-5,5-6, more than 6 and none respectively.

Duration of Study
(300 Responses)



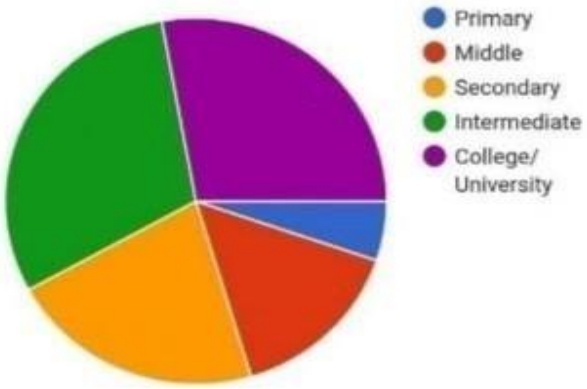
This chart shows the duration of study with 16%, 32.7%,21.7%,7% and 22.7% study less than 1 hour, 1-3 hours, 3-5 hours, more than 5 hours and no specific time respectively.

Study in Dim Light
(300 Responses)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	35	11.7	11.7	11.7
	no	175	58.3	58.3	70.0
	sometimes	90	30.0	30.0	100.0
	Total	300	100.0	100.0	

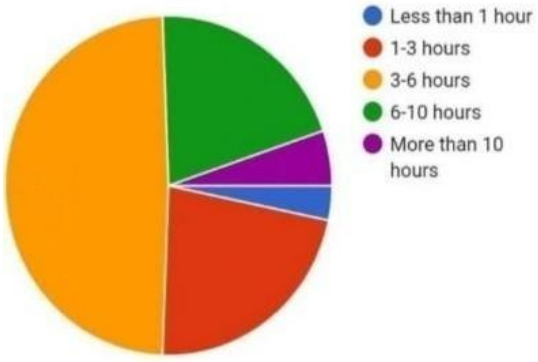
This table shows the percentage of students who study in dim light are 11.7%. Those who don't study in dim light are 58.3 % and those who sometimes study in dim light are 30%.

Starting Stage of Using Mobile Phone Laptop and Gadgets
(300 responses)



This chart shows the percentage of students who started using mobile phone and other devices like this during primary are 4.3%, middle 16%, secondary 22.7%, intermediate 31.3%, and college 25.7%.

Duration Of Screen Time
(300 Responses)



This chart shows the percentage of duration of electronic device usage for less than 1 hour is 3.3%. 1-3 hours is 22.7%. 3-6 hours is 48.7% and 6-10 hours is 20 % and more than 10 hours is 5.3%.

Bed Time
(300 Responses)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	before 10 pm	8	2.7	2.7	2.7
	10-12 pm	60	20.0	20.0	22.7
	after 12am	174	58.0	58.0	80.7
	not fixed	58	19.3	19.3	100.0
	Total	300	100.0	100.0	

Out of 300 students, those who sleep before 10 pm are 2.7%, those with 10-12pm are 20%, those after 12am are 58%and those with no fixed time are 19.3%.

Type of Visual Aid
(300 Responses)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	glasses	103	34.3	34.3	34.3
	contact lens	27	9.0	9.0	43.3
	both	19	6.3	6.3	49.7
	none	151	50.3	50.3	100.0
	Total	300	100.0	100.0	

The students who use glasses are 34.3%, those who use contact lens are 9%, students who use both are 6.3%and those with none are 50.3.

Vitamin A Supplements Intake
(300 Responses)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	32	10.7	10.7	10.7
	no	235	78.3	78.3	89.0
	sometimes	33	11.0	11.0	100.0
	Total	300	100.0	100.0	

Out of 300 students, only 10.7% take vitamin A supplements, while 78.3% don't and those who take it sometimes are 11%.

Ethical approval
It was approved by the Ethical Committee of Sheikh Zayed Medical College, Rahim Yar Khan

Discussion:
The study was conducted among undergraduates of SZMC. 300 responses were collected through google form questionnaire. A descriptive cross-sectional study was carried in June. In this study, high prevalence of myopia was found among the MBBS students, which was in agreement with the study conducted by the final year MBBS students of Islamabad and Rawalpindi to our findings. In present study, the prevalence of myopia was more in females (58.7%) compared to males. This difference was found statistically significant.

Myopia is a complex disease with a wide range of risk factors. According to WHO, uncorrected refractive errors is the 2nd commonest cause of global visual impairment, next only to cataract. Even with extensive research, we are yet to understand and identify all the predisposing elements of this ocular disease. Furthermore, it is important to note that not all the risk factors in this research are causative; certain determinants play a more aggravating role. In our study, 48.7% of the targeted sample reported myopia (status of myopia 3-4D) Female were more affected than male (58.7%). 41.8% of the total 144 students with myopia reported positive family history, which highlights that genetic factor plays a major role. The present study and many previous studies support the observation that refractive errors are multifactorial with genetic and environmental factors and interaction between them as well as parental history of refractive error is an important risk factor for its development such as the Rawalpindi and Islamabad research reported a positive parental history of refractive error.
Also, significant percentage of students (43.3%) were using some kind of visual aids; glasses and contact lens.83.2% suffered from headache, out of which 49.7% fell under mild category. A huge portion of students reported sleeping past 12 midnight (57.5%) and 67.3% used to stay awake late at night. Moreover, 42.5% of the total students with myopia reported that they had sleep duration of six hours. The electronic device usage among the students was significantly higher (3-6 hour per day). Vast majority of these students had never taken vitamin A supplements (78.7%) suggesting negligence towards their diet.
Many of the researches carried out in last 10-15 years have reported a greater prevalence of myopia in elderly. Recently, however, it has been observed that occurrence of myopia has increased considerably among young people particularly between ages of 19-25 years. It has also been noted that young individuals pursuing higher education are more prone to acquiring myopia. While all the fields of education are equally important in the diverse world of today, certain disciplines of knowledge are more physically taxing and demanding, thereby

increasing risk of myopia in the individuals that are enrolled in these degrees. It is interesting to note that higher incidence of myopia among MBBS students were reported. The rising frequency of myopia in students is the core incentive behind this study. It is also essential to track the advancement of myopia since many complications like retinal detachment, macular atrophy etc can develop because of high myopia i.e., greater than 6 Diopters. This knowledge is imperative as it will allow MBBS students to better understand the measures to combat myopia. Furthermore, new and innovative ways can be introduced at various levels of education which will not only decrease the prevalence but also reduce the progression of myopia.
Thus, based on our observation of this study and comparing it with many other studies, we recommend the following steps to be taken to reduce the prevalence of myopia. Eye screening programs and eye tests should be done at school and college levels. Proper diet should be taken and it must include vitamin A containing foods. Proper sleep schedule should be followed and minimum device usage should be encouraged. While conducting our study we came across some limitations: Small sample size. Study restricted to MBBS students only.

CONCLUSION

Our study revealed female predominance of myopia. It was significantly associated with positive family history, irregular sleep pattern, long reading hours, increased applicability of electronic gadgets and Vitamin A deficient diet.

Recommendations

- To prevent the risk of early myopia, the students should take multivitamin supplements or vitamin-rich diet (fatty fish, leafy green, nuts, seeds).
- The screen time of mobile should be minimum for the teenagers and adults.
- Avoid studying under dim light to reduce eye strain and risk of myopia.
- Adequate sleep of 8-10 hours every night for the medical students.
- Maintain proper reading distance (30-40 cm).

• Study under good light (avoid harsh or dim light).
• Monitor eye health with regular examinations.
• The students should take breaks while studying and practice relaxation techniques (meditation and deep breathing).

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