

**DISSERTATION SUBMITTED FOR THE MASTER'S DEGREE  
IN  
MEDICAL PHYSIOLOGY**



**TITLE**

**“STUDY OF MYOPIA AND ITS ASSOCIATED RISK FACTORS IN  
MEDICAL STUDENTS”**

**SUBMITTED BY**

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**2023**

**DEPARTMENT OF MEDICAL PHYSIOLOGY**

**INTEGRAL INSTITUTE OF MEDICAL SCIENCES & RESEARCH**

**INTEGRAL UNIVERSITY LUCKNOW- 226026, U.P.**

# **Study of myopia and its associated risk factors in medical students**

**DISSERTATION  
SUBMITTED TO  
INTEGRAL UNIVERSITY**



**In partial fulfillment of the requirements for the reward of degree of  
Master of science**

**In Medical physiology**

**By**

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**DECLARATION BY CANDIDATE**

I hereby declare that this dissertation entitled “**STUDY OF MYOPIA AND ITS ASSOCIATED RISK FACTORS IN MEDICAL STUDENTS**” is a bonafide & genuine research worked carried out by me under the guidance of Dr. Sara Siddiqui, assistant professor, Department of physiology and under the co-supervision of Dr. Ausaf Ahmad, Associate Professor, Department of Community Medicine and Dr. S.M. Akram, Assistant professor, Department of ophthalmology.

**Date**

**Signature of the candidate**

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This is to certify that the dissertation entitled “**STUDY OF MYOPIA AND ITS ASSOCIATED RISK FACTORS IN MEDICAL STUDENTS**” is a Bonafide & genuine research work carried out by Arpita Shukla, under the guidance of **Dr. Sara Siddiqui**, Assistant Professor, Department of Physiology and under the co-supervision of **Dr. Ausaf Ahmad**, Associate Professor, Department of Community Medicine and **Dr. S.M Akram**, Assistant professor, department of Ophthalmology, in partial fulfilment of requirement for the degree of Master of Science in Medical Physiology. The research methods and procedures described have been done by the candidate and result observed by the Guides periodically.

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## ACKNOWLEDGEMENT

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## **ABBREVIATIONS**

WHO= World Health Organisation

NPCB= National Programme for Control of Blindness & Visual  
Impairment

OPD= Out Patient Department

# **INTRODUCTION**

Myopia is a Refractive Error in which parallel rays of light are brought to focus in front of the retina when accommodation is at rest, due to which eyes fails to see the distant objects properly. The increase in rate of prevalence of Myopia is a threat to the Health and Economy of developing countries.<sup>1</sup>

### **CHARACTERSTIC FEATURES OF MYOPIA:**

Short-sightedness: Far point of vision is a finite point in front of the eye (in emmetropes, at infinity). Therefore, the Myopic persons cannot see the distant objects. This is why myopia is also called short-sightedness.<sup>2</sup>

Myopia affects 20–25% of people in school age and 25–35% of people in their mid- to late teens worldwide. Students between the ages of 16 and 18 have an 80% incidence of mild to moderate myopia, 10% of severe myopia, and a high prevalence of myopia among university students.

Myopia prevalence dramatically decreases in the population between the ages of 40 and 79, but increases in those above the age of 80.<sup>3</sup>

According to multiple studies, the prevalence of myopia was reported to be 6.3% in school-age children with both emmetropic parents, 18.2% in children with one myopic parent, and 32.9% in children with both myopic parents.<sup>5</sup>

Myopia affects 7-11% of 15-year-olds and 35% of adults in India.

According to recent estimates, Myopia among students is becoming "epidemic" in proportions in East Asia.<sup>6</sup>

The World Health Organisation (WHO)-NPCB survey from 1989 found that 7.35 percent of India's population is blind, with refractive problems accounting for the remaining 14.9%.<sup>7</sup>

Children in developed countries have a higher prevalence of myopia than children in less developed areas.<sup>8</sup>

Myopia prevalence rates are much higher in younger persons and lower in older ones, according to the Andhra Pradesh Eye Disease Study (India).<sup>14</sup> Myopic children were shown to spend considerably more time reading and using computers in a Jordon study.<sup>9</sup>

Both hereditary and environmental variables may have a role in the development of myopia. The prevalence of myopia in children is correlated with family history of the condition. In daily life, computers and smartphones are widely used and pervasive. Use of display devices may contribute to the onset or progression of myopia.<sup>4</sup> Persons whose parents have myopia appear to be affected by it more frequently<sup>5</sup>.

Studies have indicated that myopia in school-aged children may be significantly influenced by both genetic and environmental variables. Parental myopia, close job activities, extensive study sessions, and prolonged indoor activity are now myopia risk factors; nevertheless, prolonged outdoor exercise has been linked to a decrease in the incidence rate of myopia.<sup>10</sup>

Children and adults who pursue higher education and spend a lot of time reading and using electronic devices in this age of developing technology are at a greater risk of developing myopia.<sup>9</sup>

Myopia is a common condition that affects people differently according on their ethnicity, age, and country. In addition to its enormous incidence, myopia is a very serious issue because it raises the risk of vision-threatening disorders and can contribute to visual morbidity.<sup>11</sup>

Medical students are regarded as an intellectually active group and a very promising future for the human resource in any growing country. But when refractive problems become more common in these people, they could enhance the financial burden. Therefore, knowledge of the factors which cause myopia would greatly aid in its prevention and the design of public health initiatives.<sup>12</sup>

A person who develops myopia blindness at an early age, experiences more years of blindness than a person who develops cataract blindness. This condition tends to strain society more socioeconomically.<sup>13</sup>

It is important to take into account the rapid development of myopia, especially extreme myopia, as it not only creates problems in daily life but also ocular disorders such cataracts, glaucoma, retinal detachment etc.<sup>14</sup>

The most frequent cause of vision impairment and the second leading cause of blindness in India are uncorrected refractive errors.<sup>6</sup>

The smallest high contrast detail that a person can resolve is measured by their visual acuity. A 6/6 visual acuity is regarded as having a normal ability to see minute details at the tested distance.<sup>15</sup>

There are two types of myopia: pathological myopia and simple myopia. According to the dioptric power needed to correct myopia, simple myopia has also been divided into mild, moderate, and high categories.<sup>16</sup>

Myopia is classified as Mild from 0.50 to 3.00 DS, Moderate from 3.25 to 6.00 DS, and Severe  $> 6.00$  DS in at least one eye, according to American optometric Clinical practise guidelines. Pathological myopia causes the eye's macula, in particular, to undergo persistent structural alterations, which permanently reduce visual acuity.<sup>17</sup>

Although myopia cannot be completely avoided, it can be treated with the appropriate minus power eyeglasses, contacts, or refractive surgery. If early and proper correction has been done, almost all myopic patients can have good vision. Untreated myopia has major consequences, particularly for kids. Myopia can negatively impact a student's ability to participate in school, extracurricular activities, and other social activities since it causes poor vision and makes it difficult to read writing on the chalkboard.

Additionally, they are barred from productive working life until they reach adulthood, which has negative economic and societal effects.<sup>14</sup>

## **RESEARCH QUESTION:**

Are there any risk factors associated with myopia in medical students?

## **STATISTICAL HYPOTHESIS**

### **NULL HYPOTHESIS (H<sub>0</sub>):**

There is no significant risk factor associated with myopia in medical students.

### **ALTERNATIVE HYPOTHESIS (H<sub>1</sub>):**

There is significant risk factor associated with myopia in medical students.

## **AIM AND OBJECTIVES**



**AIM:** The aim of the present study is to Study of myopia and its associated risk factors in medical students.

**OBJECTIVES:**

To determine the "Gender Difference" in the frequency of Myopia.

To determine the type of myopia/power of lens.

To identify myopia risk factors (computer use, reading distance, time spent on electronic devices, and family history of myopia).

## **MATERIALS AND METHODS**

**TYPE OF STUDY:** A Cross sectional study based on questionnaire.

**PLACE OF STUDY:** Department of Physiology, Integral Institute of Medical Science & Research, Lucknow (U.P.)

**STUDY PERIOD:** 4 months

**SUBJECT SELECTION:** All first- and second-year medical students who visit the physiology department respect to the inclusion and exclusion criteria.

**1.INCLUSION CRITERIA:**

1.Age group between 17–30.

2.1<sup>st</sup> year and 2<sup>nd</sup> year medical students are included in the study.

3.non-myopic are included in the study.

**2.EXCLUSION**

Students with glaucoma, hypermetropia, history of refractive correction surgery, Diabetes mellitus, history of trauma to eye, history of retinopathy of prematurity are excluded from the study.

## **COLLECTION OF DATA**

In the Physiology lab, visual acuity will be assessed using Snellen's chart following standard procedure.

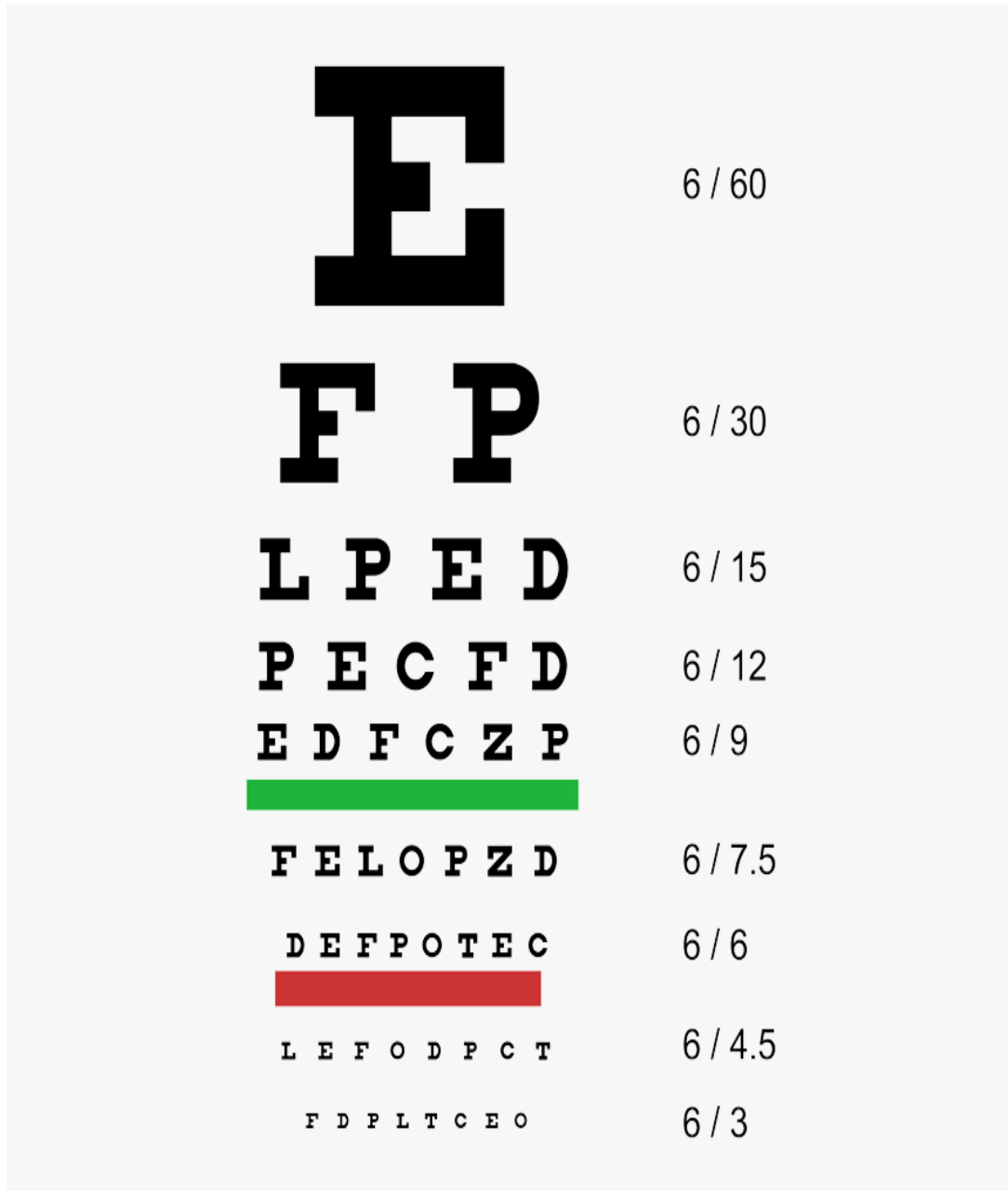
In the well-lit physiology lab, the student will have a comfortable seat 6 metres from the Snellen chart. If the student wears contact lenses, their visual acuity will be tested with or without glasses. Each eye will test separately by asking the individual to cover the other eye with one hand.

Visual acuity of the weaker eye will be recorded. Below 6/6 is considered low visual acuity, whereas 6/6 is regarded normal.

Students whose vision is less than 6/6 will be referred to the IIMS&R eye OPD for additional computerised eye examination and evaluation.

After that, the students will fill out a questionnaire after asking for the myopia test results and assessing any underlying risk factors.

**DIAGRAM OF SNELLEN'S CHART:**



## **SAMPLE SIZE ESTIMATION**

The sample size will be calculated by using this formula-<sup>18</sup>

$$n = z^2 p(1-q) / d^2$$

Where, n=sample size

$$P = 47\% \quad ^{12}$$

$$q = (100 - p) = 53\%$$

95% confidence level, Z score of 1.96, and

10% margin of error (d)

Calculated sample size = 96

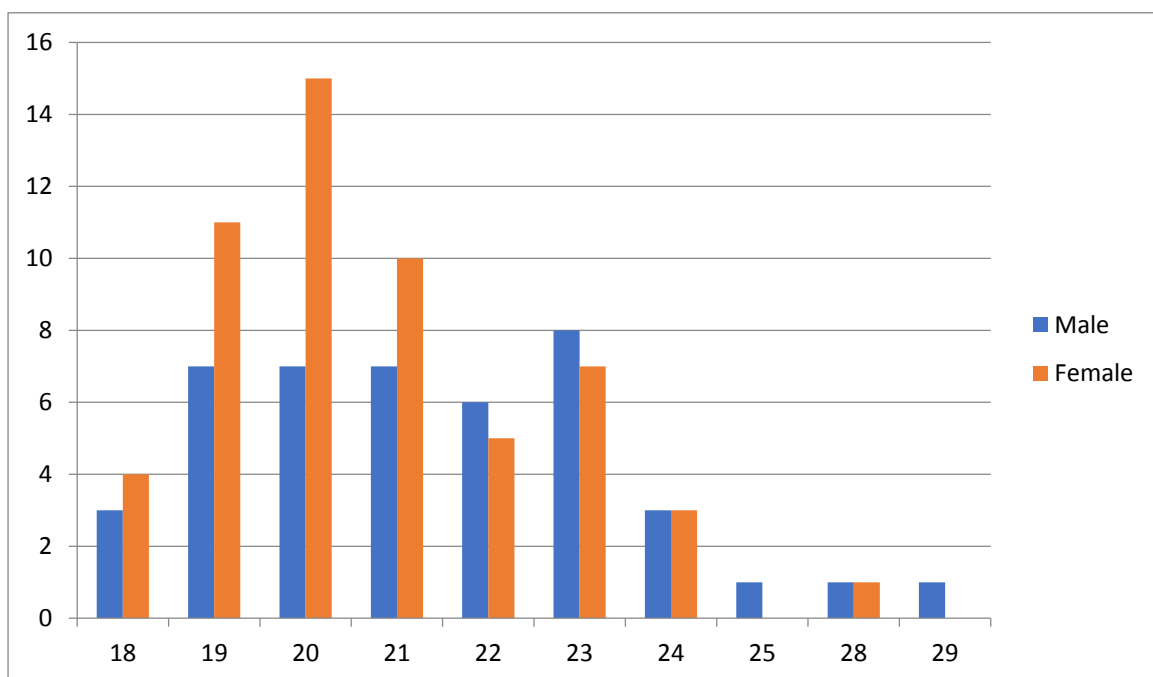
**Final sample size = 100**

So, 100 cases will be included in study

## **RESULTS AND OBSERVATIONS**

## Distribution according to their age

Age (in Years)	Male	Female
18	3	4
19	7	11
20	7	15
21	7	10
22	6	5
23	8	7
24	3	3
25	1	0
28	1	1
29	1	0

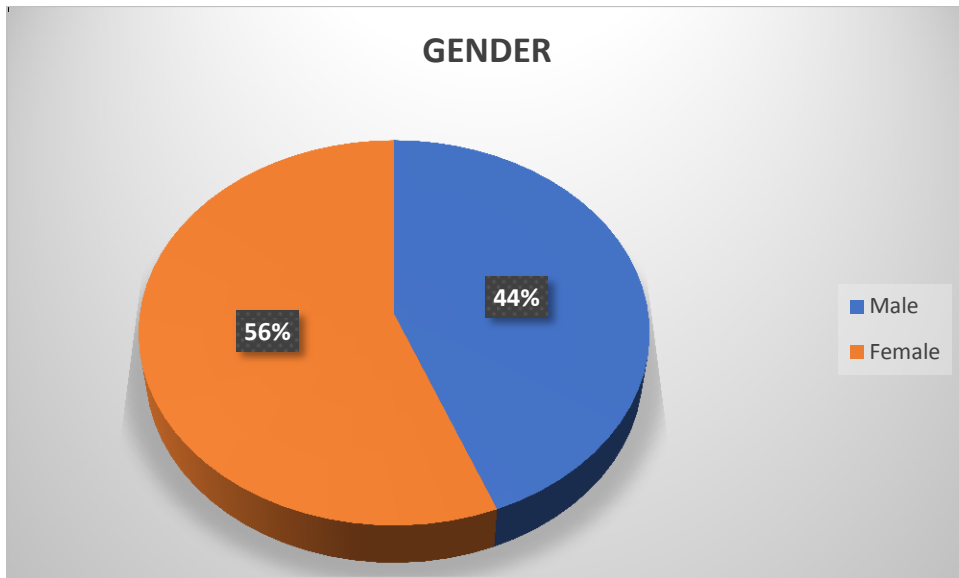




This table provides a summary of the distribution of individuals based on their age. It shows the frequency or count of individuals in each age category, and can be used to analyze the age distribution of the group under consideration, identify patterns or trends, and compare different age groups if needed. There are 7 individuals who are 18 years old, 18 individuals who are 19 years old, 22 individuals who are 20 years old, 17 individuals who are 21 years old, 11 individuals who are 22 years old, 15 individuals who are 23 years old, 6 individuals who are 24 years old, and 4 individuals who are 25 years old.

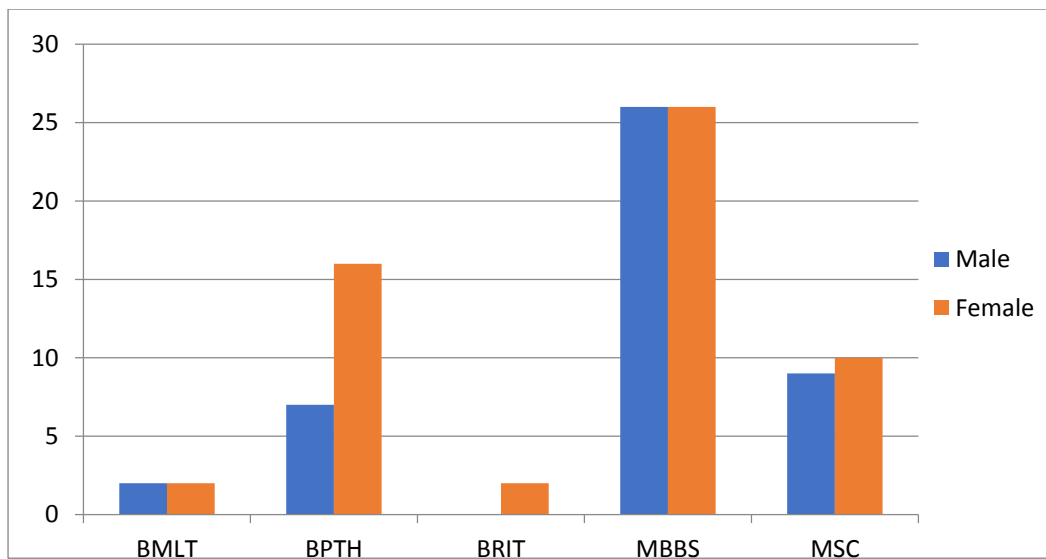
### Distribution according to their gender

Gender	Frequency
Male	44
Female	56



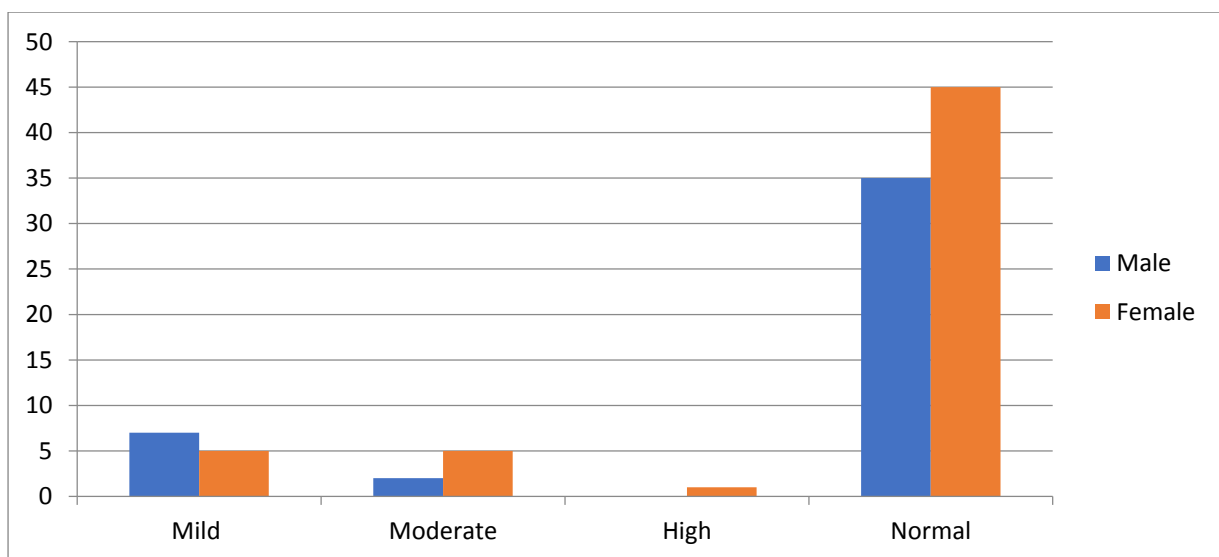
## Distribution according to their department

Department	Male	Female
BMLT	2	2
BPTH	7	16
BRIT	0	2
MBBS	26	26
MSC	9	10



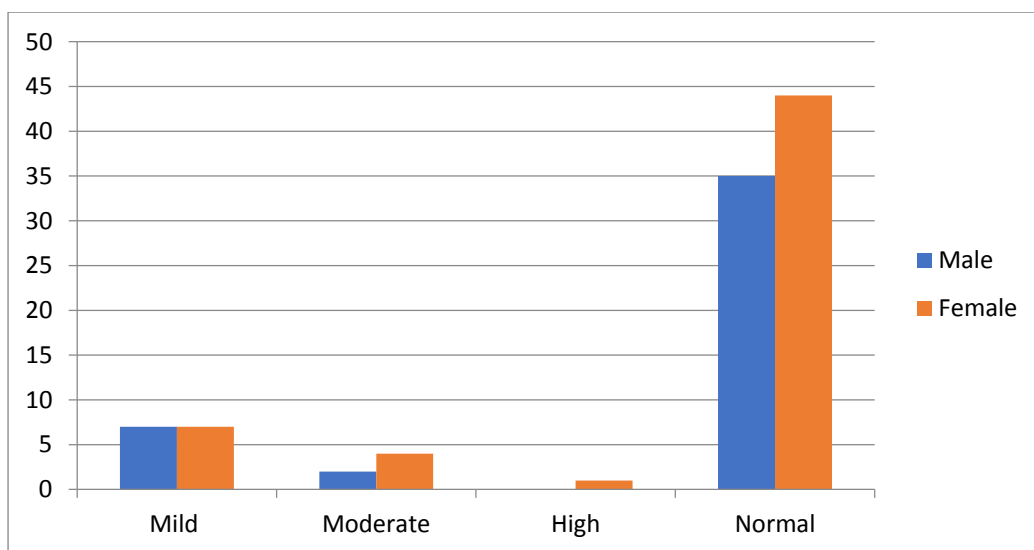
## POWER OF LENS IN MYOPIC RIGHT EYE POWER

Department	Male (%)	Female (%)
Mild	7(77.7%)	5(45%)
Moderate	2(22.2%)	5(45%)
High	0(0%)	1(9%)
Normal	35	45



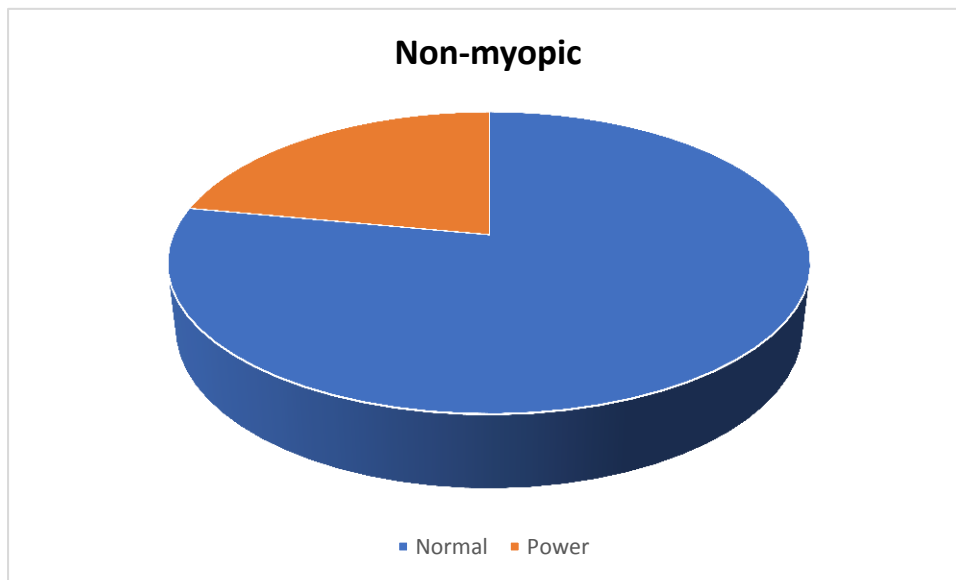
## POWER OF LENS IN MYOPIC LEFT EYE POWER

Department	Male	Female
Mild	7(77.7%)	6(54%)
Moderate	2(22.2%)	4(36%)
High	0(0%)	1(9%)
Normal	35	44



## NON-MYOPIC

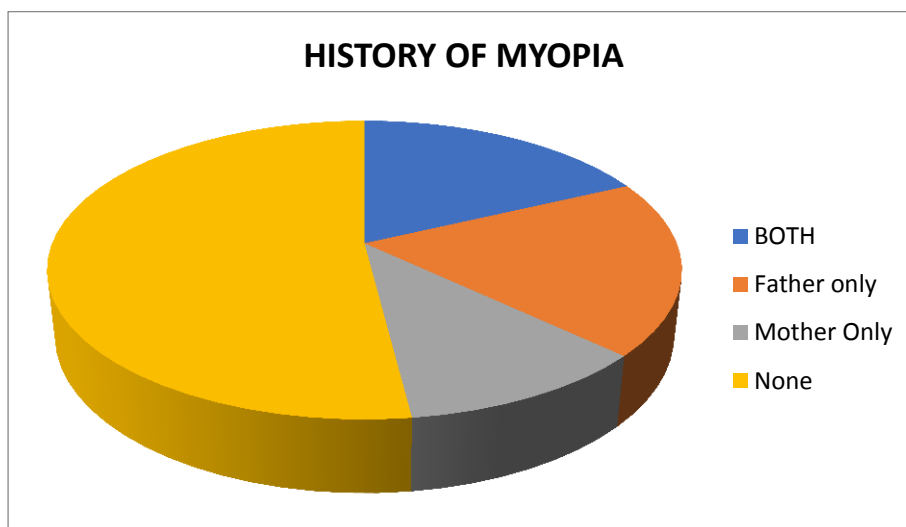
NON-MYOPIC	Frequency
Normal	78
Power	22



This table provides a summary of the distribution of non-myopic individuals. 22% of students have myopia whereas 78% of students are non-myopic.

## HISTORY OF MYOPIA EITHER/BOTH PARENTS

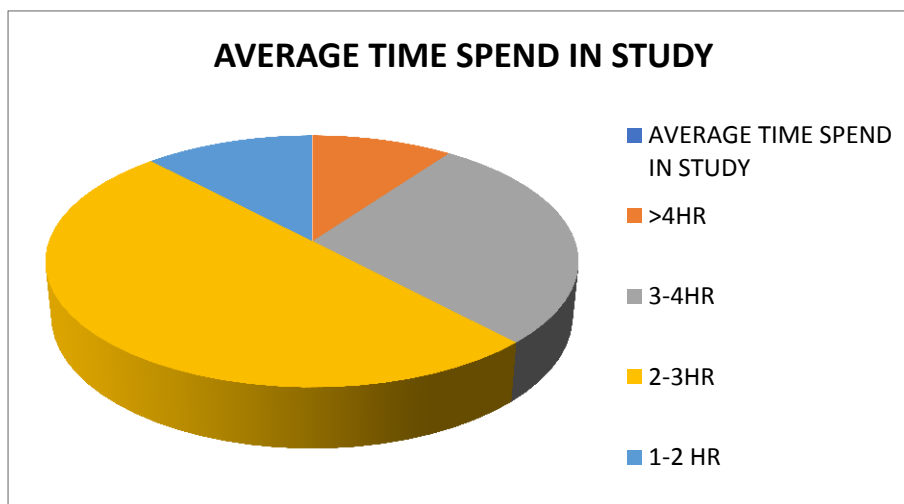
HISTORY OF MYOPIA EITHER/BOTH PARENTS	Frequency
BOTH	18
Father only	19
Mother Only	11
None	52



This table provides a summary of the distribution of individuals based on history of myopia in parents. There are 18 % of students, in which both the parents have myopia,19%of students in which only father have myopia,11% of students, in which only mother have myopia and 52% of students are there in which parents does not have myopia.

## AVERAGE TIME SPEND IN STUDY

AVERAGE TIME SPEND IN STUDY	Frequency
>4HR	10
3-4HR	28
2-3HR	50
1-2 HR	12

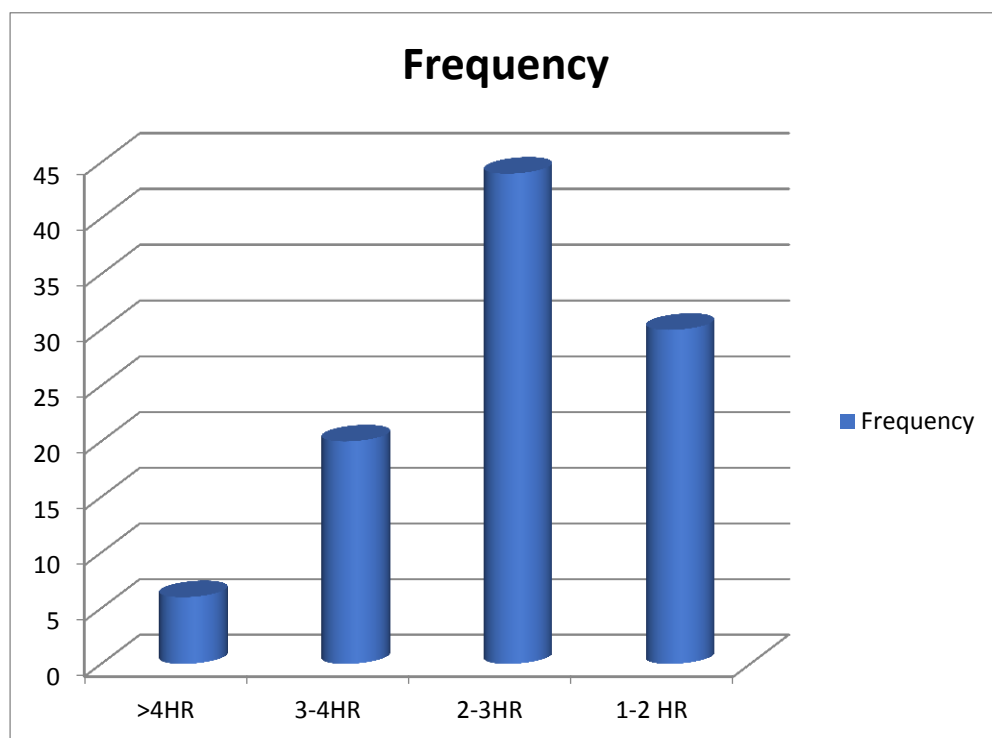


This table provides a summary of the distribution of individuals based on average time spend in study. 10% of students spends >4hr in study, 28% of students spend 3-4hr in study, 50% of students spend 2-3hr in study and 12% of students spend only 1-2hr in study.



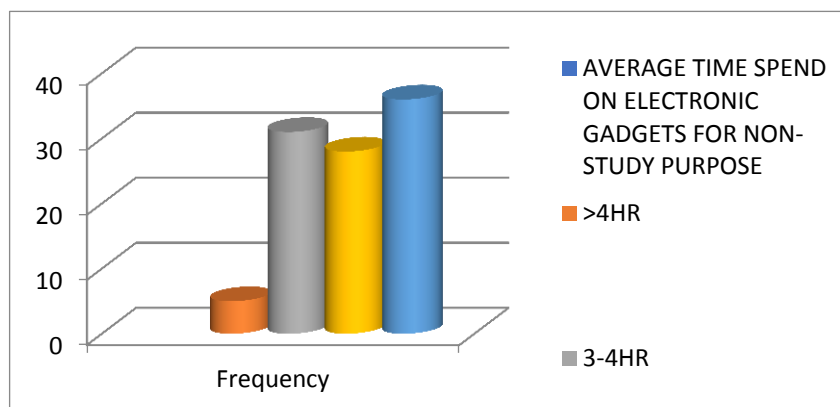
## AVERAGE TIME SPEND ON ELECTRONIC GADGETS FOR STUDY PURPOSE

AVERAGE TIME SPEND ON ELECTRONIC GADGETS FOR STUDY PURPOSE	Frequency
>4HR	6
3-4HR	20
2-3HR	44
1-2 HR	30



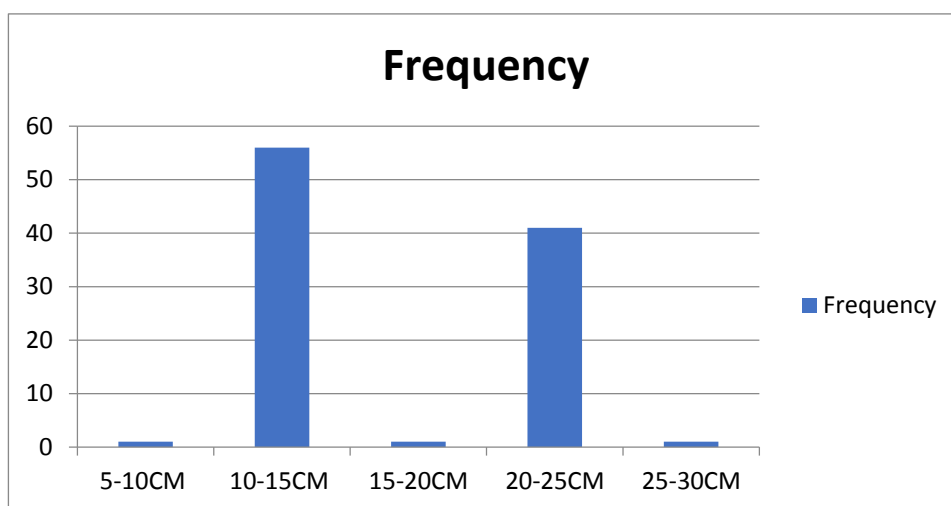
## AVERAGE TIME SPEND ON ELECTRONIC GADGETS FOR NON- STUDY PURPOSE

AVERAGE TIME SPEND ON ELECTRONIC GADGETS FOR NON- STUDY PURPOSE	Frequency
>4HR	5
3-4HR	31
2-3HR	28
1-2 HR	36



## AVERAGE READING DISTANCE

AVERAGE READING DISTANCE	Frequency
5-10CM	1
10-15CM	56
15-20CM	1
20-25CM	41
25-30CM	1



## GENDER \* MYOPIC

### Cross tabulation

Count

		MYOPIC		Total
		YES	NO	
GENDER	F	12	44	56
	M	10	34	44
Total		22	78	100

The table is divided into two rows: "F" and "M," indicating the genders of the individuals. The numbers in the cells represent the count of individuals falling into each combination of gender and myopia status. The "Total" row shows the sum of individuals within each category. Out of the 100 individuals in the study, 56 are females, 44 are males. Among the females, 12 have myopia & 44 do not have myopia.

Among the males, 34 do not have myopia, while 10 have myopia. This table provides a summary of the distribution of individuals based on their gender and myopia status, allowing for comparisons and analysis of these factors.

### Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)	Exact Sig. (2-sided)	Exact Sig. (1- sided)
Pearson Chi-Square	.024 <sup>a</sup>	1	.876		
Continuity Correction <sup>b</sup>	.000	1	1.000		
Likelihood Ratio	.024	1	.876		
Fisher's Exact Test				1.000	.533
N of Valid Cases	100				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.68.

b. Computed only for a 2x2 table

The above table presents the results of chi-square tests conducted on the data in the crosstabulation table. The Pearson chi-square statistic is 0.024, and the p-value associated with it is 0.876 (two-sided). The continuity correction statistic is 0.000, and the likelihood ratio statistic is 0.024.

Fisher's Exact Test is a non-parametric test used when the expected cell counts in a contingency table are small. The results indicate that there is no significant association between gender and myopia status in the given data.

## BRANCH \* MYOPIC Cross tabulation

Count

		MYOPIC		Total
		YES	NO	
BRANCH	BMLT	4	0	4
	BPTH	6	17	23
	BRIT	0	2	2
	MBBS	8	44	52
	MSC	4	15	19
Total		22	78	100

Out of the 100 individuals in the study, 4 belong to the BMLT branch, 23 belong to the BPTH branch, 2 belong to the BRIT branch, 52 belong to the MBBS branch, and 19 belong to the MSC branch. Among the BMLT branch, all 4 individuals have myopia. Among the BPTH branch, 6 have myopia, while 17 do not have myopia. Among the BRIT branch, 2 do not have myopia.

Among the MBBS branch, 8 have myopia, while 44 do not have myopia. Among the MSC branch, 4 have myopia, while 15 do not have myopia. This table provides a summary of the distribution of individuals based on their branch and myopia status, allowing for comparisons and analysis of these factors.

### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.306 <sup>a</sup>	4	.003
Likelihood Ratio	14.773	4	.005
N of Valid Cases	100		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is .44.

The above table presents the results of chi-square tests conducted on the data in the crosstabulation table for branch and non-myopic (no myopia) individuals. There are two statistics presented in the table along with their corresponding degrees of freedom and p-values: Pearson Chi-Square (1.6306) and Likelihood Ratio (1.473). Pearson Chi-Square has 4 degrees of freedom and the p-value is 0.003 (two-sided). Likelihood Ratio has 4 degrees of freedom and the p-value is 0.005 (two-sided). Both the Pearson chi-square and likelihood ratio tests indicate that there is a significant relationship between the branch variable and the presence or absence of myopia among the individuals in the study, suggesting that the branch variable may be related to the likelihood of having myopia.



# **DISCUSSION**

Myopia, commonly known as nearsightedness, is a refractive error characterized by blurred distance vision. It is a global public health concern due to its increasing prevalence, particularly among young individuals. Medical students are a unique population to study regarding myopia as they often undergo intense academic demands and prolonged near-work activities, which are considered potential risk factors. This discussion chapter aims to explore the findings and implications of a study conducted on myopia and its associated risk factors in medical students.

#### Study Design and Methods:

The study employed a cross-sectional design and recruited a sample of students from multiple institutions. A comprehensive questionnaire was developed to gather information on various potential risk factors associated with myopia, including demographic factors, lifestyle factors, family history, and academic factors. Visual acuity assessments and comprehensive eye examinations were conducted to determine the presence and severity of myopia in the participants. Statistical analyses, including chi-square tests and correlation analyses, were performed to identify significant associations and potential risk factors.

#### Prevalence and Severity of Myopia:

The study revealed a high prevalence of myopia among medical students. Out of the total sample, a significant percentage of students were diagnosed with myopia, highlighting the importance of addressing this issue in this specific population. Additionally, the severity of myopia

varied, with a considerable proportion of students falling into the moderate to high myopia range, which can significantly impact visual function and quality of life.

#### Association with Risk Factors:

The study explored various potential risk factors associated with myopia in medical students. The findings indicated that prolonged near-work activities, such as studying for long hours and excessive use of digital devices, were strongly associated with myopia development. Other lifestyle factors, such as limited outdoor time and lack of physical activity, were also identified as potential risk factors. Furthermore, a positive family history of myopia emerged as a significant risk factor, suggesting a genetic predisposition.

#### Academic Factors and Myopia:

Medical students face unique academic pressures, including long hours of studying, frequent reading, and intensive use of electronic devices. The study findings revealed a significant association between these academic factors and myopia development. Students with higher academic loads, increased study hours, and higher reading durations exhibited a higher prevalence of myopia. These findings highlight the importance of considering academic workload and study habits when addressing myopia prevention strategies in this population.

### Implications and Recommendations:

The study's findings have important implications for myopia prevention and management among medical students. Interventions targeting lifestyle modifications, such as increasing outdoor activities, implementing regular eye breaks during study sessions, and promoting physical activity, may help mitigate the risk of myopia development. Additionally, raising awareness among students, faculty, and parents about the impact of prolonged near-work activities and the importance of regular eye examinations can contribute to early detection and timely intervention.

Furthermore, incorporating myopia prevention strategies into the curriculum of medical schools, including promoting healthy study habits and providing ergonomic study environments, can contribute to the overall well-being of medical students and potentially reduce the burden of myopia.

# **CONCLUSION**

The study shed light on the prevalence of myopia and its associated risk factors among medical students. Prolonged near-work activities, lifestyle factors, family history, and academic factors were identified as significant contributors to myopia development. These findings highlight the need for comprehensive myopia prevention programs tailored to the unique needs of medical students. Further longitudinal studies and interventions are warranted to effectively address myopia and its impact on the visual health and academic performance of this population.

## **RIVIEW OF LITRATURE**

A cross-sectional study on the "**Prevalence and risk factors associated with myopia among medical students of private medical college in Central Kerala**" was conducted by **DR. Nirmala et al.** in 2016. The study attracted 100 participants.<sup>1</sup>

The findings indicated that women (45.33%) had a higher prevalence of myopia than men (32%). 42 individuals had myopia, but 58 did not, based on the amount of time they spent each day reading. According to the amount of time spent using electronic devices like mobile phones, etc., 42 students had myopia whereas 58 did not. 42 students were myopic and 58 were not when the average reading distance of students was analysed. Of those students, 42 had myopia and 58 did not but had a family history of the condition.

A cross-sectional study on the "**Prevalence of myopia and its associated risk factors in local medical students in Karachi**" was conducted in 2015 by **DR. Nailla Parveen et al.** The study recruited 427 students.<sup>12</sup>

In comparison to men (26.5%), the results showed that women (73.4%) had a higher prevalence of myopia. Lens power analysis revealed that >-5.00D was present in 18.1%, -3 to -3.5D in 16.2%, -2 to 2.75D in 20.4%, and -0.5 to -1.75D in 43.7% of cases. 64.2% of individuals who spent more than an hour using electronic devices had myopia. 60.9% of students had myopia when reading at a distance of 15 cm. While 19.1% of students reported no family history of myopia, 80.9% of students reported a favourable history of myopia.



Sidra Fatima Naqvi et al., perform cross sectional study in 2014 on **“Myopia in Medical Students and its Association with Parental History, Gender and Use of Electronic Screens in Rawalpindi”**. 334 were the sample size.<sup>15</sup>

The result showed that 147(44%) students were myopic and 187(56%) students were non-myopic. Among myopic students, 102 students show positive history of myopia whereas 107 students had no history of myopia. There were 124 students overall who used glasses or contact lenses, whereas 210 others did not. However, the majority of myopic students spent 2-4 hours reading, and the outcome was inconsequential with a prevalence of 0.2. Time spent on electronic devices and time spent reading were not consistent with the prevalence rate of myopia.

Hussain Gadelkarim Ahmed et al., perform cross sectional study in the year 2017 on **“Prevalence of myopia and its associated related risk factors among medical students in Saudi Arabia”**. 504 was the sample size.<sup>5</sup>

Out of 504 participants, the results showed that 454 had their myopia or hypermetropia checked. Of the 454 students that were evaluated, 243 (53.5%) had myopia, of which 84 (34.6%) were female and 159 (65.4%) were male. 75% of students were using glasses, 10.8% of students were using contact lenses and 13.9% of students without vision aids. Time spent on electronic gadgets, 43% of students using these devices for <5 hrs, 43.3% of students for 6- 10 hrs and 13.7 % of students for >10 hrs.

A cross-sectional study on the **“prevalence of myopia and its risk factors among schoolchildren in Kollam, Kerala”** was conducted in 2016 by **Jeffy Binu et al.** The sample size was 300.<sup>11</sup>

Findings indicated that 44% of people had myopia. Out of 300 kids, 132 were found to have myopia. Myopia was discovered to be more common in females i.e.,47%, than in boys i.e.,41%. Students who spend >3hrs in reading 20 students were myopic and 56 students were non myopic. In >30 cm of reading distance, 61 students were myopic and 79 students were non myopia. Time spent on electronic gadget 2-3 hrs, 58 were myopic and 74 were non myopic.

A cross-sectional study on **"Prevalence of myopia and associated risk factors among primary students"** will be conducted in 2020 by **Zhihao Xie et al.** The sample size was 997.<sup>10</sup>

The outcome indicated that 33.9% of people had myopia. Compared to men (30%), women had a higher prevalence rate (38.2%). Myopia risk was higher in children with myopic parents than in children without myopic parents. Myopia risk was higher in children who played video games or watched television for more than three hours each day.

A cross-sectional study on "**Parental myopia, near work, hours of sleep, and myopia in Chinese children**" was conducted in 2014 by **Yanhong Gong et al.** The total sample size was 15316.<sup>19</sup>

The outcome revealed a 53.40% prevalence rate for myopia (8178/15316).

Compared to men (47.3%), females had a higher prevalence rate (54.88%).

Among those students, 2597(53.03%) students show positive history of myopia whereas 4647 (46.97%) students show no history of myopia.

Students who spent 1-2hrs in TV, 51.09% students were myopic and who spent >2hrs in TV,49.91% students were myopic.

## **REFERENCES**

1.Nirmala, Krishnan G, Antharjanam D, Harsha C.H, Mary Ann, Londhe Set al. Prevalence and risk factors associated with Myopia among MBBS students of a private Medical College in Central Kerala. Int J Med Res Rev 2016;4(9):1596-1601.

2.Khurana I, Medical Physiology,2, 896-897

3.G Elias, M Kidus; Prevalence and Factors Associated with Myopia Among High School Students in Hawassa City, South Ethiopia, 2022; 14: 35–43.

4.Luoming H, Hiromi K, Yiqun L, Zhongliang W; The prevalence of myopia and the factors associated with it; MD journal, 2019;10:1-15.

5.Algorinees R, Alqahtni N, Alijarbou M, Alsammari B, Alrashidi A, Alshammari B et. al; Prevalence of myopia and its related risk factors among medical student in Saudi Arabia; Advances in ophthalmology and visual system,2017;6(1):16-22.

6.A. Khundmeer, D. Vinay, K. Rajashekar; Myopia among Medical Students – A Cross Sectional Study at Belagavi Institute of Medical Sciences, Belagavi; International Journal of Physiology.2018;6(3):76-80.

- 7.Rohit S., Praveen V., Vimala M., Is Myopia a public Health Problem in India, Indian Journal of Community Medicine, 2013; 38(2) ;83-85.
- 8.Lyu Y, Zhang H, Gong Y, Wang D.,Chen T et al. Prevalence of and factors associated with myopia in primary school students in the Chaoyang District of Beijing, China: Japanese journal of oph,2015:59, 421-429.
- 9.Khader YS, Batayha WQ, Abdul-Aziz SMI, Al-Shiekh-Khalil MI. Prevalence and risk indicators of myopia among schoolchildren in Amman, Jordan. 2006;2(3):217-20.
- 10.Xie, Z., Long, Y., Wang, J. *et al.* Prevalence of myopia and associated risk factors among primary students in Chongqing: multilevel modeling. BMC Ophthalmol 20, 146 (2020).
- 11.Benu J, Rose R, Simon C et al., Prevalence of Myopia and Its Associated Risk Factors among School Children in Kollam- Kerala: Int J health science,2016:6(6),30-38.
- 12.Parveen N, Syed H, Javeria R, Usman S. Prevalence of myopia and its associated risk factors in local medical students, Karachi; Quarterly medical channel,2015;21(4): 47-50.

- 13.Paudel P, Ramson P, Naduvilath T, et al. Prevalence of vision impairment and refractive error in school children in Ba Ria–Vung Tau province, Vietnam. *Clin Experiment Ophthalmol*. 2014;42(3):217–226.
- 14.Zhao, X., Lu, X., Yu, L. *et al*. Prevalence of myopia and associated risk factors among key schools in Xi’an, China. *BMC Ophthalmol*, 519 (2022).
- 15.Naqvi S, Hanif S, Inam-ul-Haque, Naeem M; Myopia in medical students and its association with parental history, gender, and use of electronic screens; Journal of Rawalpindi Medical College student supplement,2016:20(1):13-16.
- 16.Mehta R, Bedi N, Punjabi S. Prevalence of myopia in medical students. *Indian J Clin Exp Ophthalmol* 2019;5(3):322-5.
- 17.Saw S., A synopsis of the prevalence rates and environmental risk factors for myopia in Singapore: *Clin Exp Optom* 2003;5: 289-294.
- 18.Daniel WW, Editor. *Biostatistics: a foundation for analysis in the health sciences*. 7<sup>th</sup> ed. New York: John Wiley& Sons; 1999.
- 19.Gong Y,Zhang X et.al., Parental myopia, near work, hours of sleep, and myopia in Chinese children: *Health* 6 (2014) 64-70

# **ANNEXURE**



**ANNEXURE I(A)**

**INFORMED CONSENT FORM (FOR CASE)**

1. I **ARPITA SHUKLA** MSC third year student medical physiology IIMS&R Lucknow.
2. I am not associated with your treating doctor panel.
3. There will be no charges /fees/any consideration given or taken for the study.
4. Your identity will be confidential and information and result of your history examination will not be revealed to any other except you if u desire.
5. The study has nothing to do with your treatment and is not going to hamper if you refuse to participate.
6. The study has nothing to do with your current treatment but may improve the knowledge and understanding of disease process and that knowledge may or not be helpful in future.
7. After knowing the all above detail would you like to participate in our study? Yes/ No

Name of the patient  
Scholar

Signature of the Research

Signature:

**CONSENT FORM**

I.....aged.....W/O,D/O,S/O.....  
....R/O.....here with state that I have been  
duly informed about the study titled **“A STUDY OF MYOPIA AND ITS  
ASSOCIATED RISK FACTORS IN MEDICAL STUDENTS.”** , its  
prospects and consequences. I have known the details of the research work  
very well and I give my consent for the same.

Signature/thumb impression of the patient:

Signature/thumb impression of the witness:  
research scholar:

Signature of

## अनुलग्नक I (ए)

### सूचित सहमति फॉर्म (मामले के लिए)

1. मैं अर्पिता शुक्ला एमएससी थर्ड ईयर स्टूडेंट मेडिकल फिजियोलॉजी आईआईएमएस आर लखनऊ।
2. मैं आपके ट्रीटिंग डॉक्टर पैनल से जुड़ा नहीं हूँ।
3. अध्ययन के लिए कोई शुल्क /शुल्क /दिया गया या दिया गया कोई विचार नहीं होगा।
4. आपकी पहचान गोपनीय होगी और जानकारी और आपके इतिहास की परीक्षा का परिणाम किसी अन्य के अलावा आपके लिए नहीं होगा यदि आप चाहते हैं।
5. अध्ययन का आपके उपचार से कोई लेना -देना नहीं है और यदि आप भाग लेने से इनकार करते हैं तो आप बाधा नहीं डालेंगे।
6. अध्ययन का आपके वर्तमान उपचार से कोई लेना -देना नहीं है, लेकिन रोग प्रक्रिया के ज्ञान और समझ में सुधार हो सकता है और यह ज्ञान भविष्य में सहायक हो सकता है या नहीं।
7. उपरोक्त सभी विस्तार को जानने के बाद क्या आप हमारे अध्ययन में भाग लेना चाहेंगे? हां नहीं

रोगी का नाम:

हस्ताक्षर

अनुसंधान विद्वान का

हस्ताक्षर:

## सहमति पत्र

मैं..... आयु

.....

पुत्री/पुत्र/पत्नी.....पता.....

.....। यहाँ राज्य के साथ कि मुझे "ए स्टडी

ऑफ मायोपिया और मेडिकल छात्रों में इसके संबद्ध जोखिम कारक" शीर्षक से

अध्ययन के बारे में विधिवत जानकारी दी गई है। , इसकी संभावनाएं और

परिणाम। मैंने अनुसंधान कार्य के विवरण को बहुत अच्छी तरह से जाना है और मैं

उसी के लिए अपनी सहमति देता हूँ।

रोगी के हस्ताक्षर/अंगूठे की छाप:

गवाह के हस्ताक्षर/अंगूठे की छाप:

अनुसंधान

विद्वान के हस्ताक्षर:

# QUESTIONNAIRE

## DEMOGRAPHIC DATA

1. NAME: ..... 2. AGE: .....  
.....  
3. GENDER, M/F ..... 4. BRANCH: .....  
.....  
5. ADDRESS: ..... 6. CITY: .....  
.....  
7. DATE: .....

## POWER OF LENS

1. Right eye power: ..... D 2. Left eye power: .....D  
3. Non-myopic: .....

## HISTORY OF MYOPIA IN EITHER/BOTH PARENTS

1. Father Only:  2. Mother Only:  3. BOTH:  4. None:

## AVERAGE TIME SPEND IN STUDY

1. 1-2hr:  2. 2-3hr:  3. 3-4hr:  4. >4hr:

## AVERAGE TIME SPEND ON ELECTRONIC GADGETS

### FOR STUDY PURPOSE:

1. 1-2hr:  2. 2-3hr:  3. 3-4hr:  4. >4hr:

### NON- STUDY PURPOSE:

1. 1-2hr:  2. 2-3hr:  3. 3-4hr:  4. >4hr:

## AVERAGE READING DISTANCE:

1. 5-10cm:  2. 10-15cm:  3. 25-30cm:

**Signature of student**

.....

# INSTITUTIONAL ETHICS COMMITTEE (IEC)


IIMS&R INTEGRAL UNIVERSITY, LUCKNOW

IEC/IIMS&R/2023/10



## CERTIFICATE

This is to certify that research work entitled “**Study of Myopia And its Associated Risk Factors in Medical Students**” submitted by **Arpita Shukla** for ethical approval before the Institutional Ethics Committee IIMS&R. The above mentioned research work has been approved by Institutional Ethics Committee, IIMS&R with consensus in the meeting held on **30<sup>th</sup> December 2022**.

  
**Dr. Q.S. Ahmed**  
(Member Secretary)  
IRC/IEC  
IIMS &R

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