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MYOPIA AND ITS ASSOCIATED RISK FACTORS IN YOUNG ADULTS

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Manuscript received on: 15-07-2019**Manuscript accepted on:** 10-12-2019**Results:** Among total one hundred and nineteen study participants (n=119), 63 (52.9%) were the diagnosed cases of myopia and were using the glasses for myopia. To determine the association with risk factors fifty-six (47.1%)**ABSTRACT****Objective:** To determine the risk factors associated with myopia among young adults.**Methodology:**

This cross-sectional comparative study was conducted by Physiology and Medicine Departments of Indus Medical College, TMK from October 2018 to March 2019 by non-probability purposive sampling. For this research, medical students of IMC TMK, already suffering from myopia enrolled after informed and written consent and all these students provided with self-structured proforma to determine the associated risk factors. This study was conducted on total 119 medical students (n=119), and divided in two groups according to presence of myopia, i.e., sixty-three (n=63) with myopia and fifty-six with no myopia (n=56) for comparison of associated risk factors. Students suffering from astigmatism, hypermetropia, hypertension, diabetes mellitus and refractive dysfunction other than myopia were excluded for this research study. Ethical approval was taken from the institutional ethics committee. All the data entered and analyzed by IBM SPSS version 20.0.

students with no myopia were selected for comparison to those with myopia (n=63). Out of sixty-three myopic participants, 37.0% were in the age group of 21-23 years. While 32.8% study participants who were in age group

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of 18-20 years, were not sufferers of myopia. Among sixty three cases of myopia (n=63), 43(36.1%) were females while 20 (16.8%) were males; while out of 56 non-myopic individuals (n=56), 38 were males and 18 were females. (p-value <0.01). Among sixty-three myopia patients, 57(47.9%) were reading >3 hours and out of 56 non myopic participants, 30 (25.2%) were reading/ writing for <3 hours. Reading or writing in hours compared between having myopia and having not myopia (p-value <0.01). Likewise, duration of watching television from near distance also compared between two groups, myopia (n=63) and no myopia (n=56) by Chi-square test. P-value was revealed (<0.01). Similarly, smart phone use time in hours compared between having myopia and having not myopia (p-value <0.01). Among sixty-three myopia patients, 56(47.1%) were using android/smart phone for >2 hours and out of 56 non myopic participants, 36 (30.3%) were using smart phone for <2 hours. When myopia related to family history there was close to significant association with positive family history.

Conclusion: This has been concluded that age, gender, reading/writing with near distance, android smart phone use for longer duration, watching television from short distance and longer duration as well as positive family history are the risk factors significantly associated with myopia.

Key words: Myopia, risk factors, young adults, near distance reading/writing, mobile use

INTRODUCTION

Myopia, also called as short sightedness is increasing globally and this may disrupt the psycho-social development as well as the way of life. The causes of upsurged prevalence are not still entirely clear, even though genetic as well as the environmental aspects are supposed to show a part.⁽¹⁾ Prevalence of myopia in a research

study was appraised as 37 % among Pakistani populace.⁽²⁾ One of the research studies has confirmed an advanced prevalence of myopia among younger age group as compared to the older individuals, and the risk factors that were found to be significantly linked were significant education and socioeconomic aspects.⁽³⁾ Elder age individuals, advanced education, parental myopia, extra-close work, reduced outdoor, and the raised trend of urbanization are suspected to be self-determining predictors of myopia.⁽⁴⁻⁵⁾ Investigating such risk factor associations might be helpful in guiding anticipatory community health programs and plans.⁽⁶⁾ Myopia is one of the rising problems affecting large percentage of earlier age population and resultant sight deficit can only be corrected by spectacle.⁽⁷⁾ Visual dysfunction is the recent global challenge to be controlled timely for the socioeconomic as well as the authorities dealing with public health of community/country. According to the recent Global Burden of Disease Study 2015, visual and hearing impairments are graded second afterward low backache and neck pain among the all-age causes for years lived with disability worldwide.⁽⁸⁾ Good vision is vital for healthy life style whereas blurry indistinct vision might prime to grievances, difficulties in driving, injuries as well as way towards depression.⁽⁹⁾ In the year 2016, Holden et al.⁽¹⁰⁾ assessed about worldwide status of myopia that was 1.406 billion individuals i.e., 22.9% of the world populace found to be suffering from myopia with 163 million individuals of high myopia. It was further estimated for year 2050, there will be chances of 4.758 billion people with myopia (49.8% of the total world's population), and 938 million will be of high myopia. Understanding the various factors linked to myopia might help to clarify the mechanism of myopia formation and also to formulate reasonable preventive and control measures of myopia to protect

people's quality of life due to vision. This study has been designed to determine the risk factors associated with myopia among young adults.

PATIENTS AND METHODS

This was a cross-sectional comparative study conducted by Physiology and Medicine Departments of Indus Medical College, TMK from October 2018 to March 2019 by non-probability purposive sampling. For this research, medical students of IMC, TMK, already suffering from myopia enrolled after informed and written consent and all these students provided with self-structured proforma to determine the associated risk factors. For comparison of risk factors, non-myopic students with good vision also included. Myopia is actually refractive disorder of the non-accommodated eye with a spherical equivalent of -0.5 dioptre (D) or lower.⁽¹¹⁾ This study conducted on total 119 medical students ($n=119$), and divided in two groups according to presence of myopia, i.e., sixty-three ($n=63$) with myopia and fifty-six with no myopia ($n=56$) for comparison of associated risk factors. Students suffering from astigmatism, hypermetropia, hypertension, diabetes mellitus and refractive dysfunction other than myopia were excluded for this research study. Ethical approval was taken from the institutional ethics committee. All the data entered and analyzed by IBM SPSS version 20.0.

RESULTS

Among total one hundred and nineteen study participants ($n=119$), 63 (52.9%) were the diagnosed cases of myopia and were using the glasses for correction of refractive disorder. Fifty-six (47.1%) students with no other refractive disorder and no myopia ($n=56$) were selected for comparison to those with myopia ($n=63$). Out of 63 myopic participants, 37.0% were

in the age group of 21-23 years. While 32.8% study participants who were in age group of 18-20 years, were not sufferers of myopia (Table 1). Among sixty three cases of myopia ($n=63$), 43 (36.1%) were females while 20 (16.8 %) were males; while out of 56 non-myopic individuals ($n=56$), 38 were males and 18 were females (p value <0.01) (Table 2). Among sixty-three myopia patients, 57(47.9%) were reading >3 hours and out of 56 non myopic participants, 30 (25.2%) were reading/ writing for <3 hours. Reading or writing in hours compared between having myopia and having not myopia (p -value <0.01) (Table 3). Similarly, smart phone use time in hours compared between having myopia and having not myopia (p -value <0.01). Among sixty-three myopia patients, 56(47.1%) were using smart phones for >2 hours and out of 56 non myopic participants, 36 (30.3%) were using smart phone for <2 hours (Table 4).

Likewise, duration of watching television from near distance also compared between two groups, myopia ($n=63$) and no myopia ($n=56$) by Chi-square test. P-value was revealed (<0.01) (Table 5). In assessing myopia related to family history, there was close to significant association with positive family history (p -value $=0.05$) (Table 6).

Table 1: Association of myopia with age groups (n=119)

			Age			Total
			18 -20 years	21-23 years	>23 years	
Myopia	Yes	Count	10	44	9	63
		% of Total	8.4%	37.0%	7.6%	52.9%
	No	Count	39	16	1	56
		% of Total	32.8%	13.4%	.8%	47.1%
Total	Count	49	60	10	119	
	% of Total	41.2%	50.4%	8.4%	100.0%	

Pearson chi square value=36.34 with df=2 p value <0.01

Table 2: Association of myopia with gender(n=119)

			Gender		Total
			Male	Female	
Myopia	Yes	Count	20	43	63
		% of Total	16.8%	36.1%	52.9%
	No	Count	38	18	56
		% of Total	31.9%	15.1%	47.1%
Total	Count	58	61	119	
	% of Total	48.7%	51.3%	100.0%	

Pearson chi square value: 15.47, df=1 and p value <0.01

Table 3: Association of myopia with near distance reading/writing time (n=119)

			Near distance reading or writing			Total
			3 hours	<3 hours	>3 hours	
Myopia	Yes	Count	5	1	57	63
		% of Total	4.2%	.8%	47.9%	52.9%
	No	Count	4	30	22	56
		% of Total	3.4%	25.2%	18.5%	47.1%
Total	Count	9	31	79	119	
	% of Total	7.6%	26.1%	66.4%	100.0%	

Pearson chi square value: 16.19, df=2 and p value <0.01

Table No. 4: Association of myopia with duration of smart phone use (n=119)

			Smart phoneuse			Total
			2 hours	<2 hours	> 2 hours	
Myopia	Yes	Count	6	1	56	63
		% of Total	5.0%	.8%	47.1%	52.9%
	No	Count	6	36	14	56
		% of Total	5.0%	30.3%	11.8%	47.1%
Total		Count	12	37	70	119
		% of Total	10.1%	31.1%	58.8%	100.0%

Pearson chi square value=36.34 with df=2 p value <0.01

Table 5: Association of myopia with near distance watching television time (n=119)

			Near distance watchingtelevision			Total
			3 hours	<3 hours	>3 hours	
Myopia	Yes	Count	12	5	46	63
		% of Total	10.1%	4.2%	38.7%	52.9%
	No	Count	46	0	10	56
		% of Total	38.7%	.0%	8.4%	47.1%
Total		Count	58	5	56	119
		% of Total	48.7%	4.2%	47.1%	100.0%

Pearson chi square value =47.82, df=2 and p value <0.01

Table No. 6: Association of myopia with family history (n=119)

			Family History		Total
			Yes	No	
Myopia	Yes	Count	24	39	63
		% of Total	20.2%	32.8%	52.9%
	No	Count	31	25	56
		% of Total	26.1%	21.0%	47.1%
Total		Count	55	64	119
		% of Total	46.2%	53.8%	100.0%

Pearson chi square value 3.54, df=1 and p value=0.05

DISCUSSION

Myopia is demarcated as near sightedness instigated by inaptness between power of the optical parts of eye and the axial length. In this condition, image of the object projects in front of the retina, that's why corrective glasses or lenses are acquired for displacing the image somewhat backward on retina for clear retinal image. The causes of myopia are still unclear, instead some are suspected to be involved are genetical as well as modifiable life style/environmental factors.⁽¹²⁾ This has been fore told that, by year 2060, there will be 26% chances of visual disability, which will have undesirable and damaging effects on their academic performance as well as psychosocial expansion.⁽¹³⁾ In summary, myopia not only affects the physical and mental health of individuals but also puts a great burden on society. Myopic adolescents are more likely to be anxious than those without myopia.⁽¹⁴⁾ This research project is designed to determine the risk factors linked to myopia among young medical students. This study revealed significant association of risk factors like age, gender, near distance reading/writing, duration of using mobile phone, watching television from near distance, and family history with myopia. Consistently revealed by Alvarez-Peregrina et al.⁽¹⁵⁾ that there is impact of near distance things i.e., reading, writing as well as viewing television, in the expansion to myopia. Life style bears linear impact on advance to myopia. One of the Saudi study revealed the prevalence of refractive dysfunctions as 45.8% and the maximum one was discovered as myopia i.e., 24.4%, next were hypermetropia (11.9%) as well as astigmatism (9.5%).⁽¹⁶⁾ Sherwin et al.⁽¹⁷⁾ similar to this study, established that those who were at work from a distance of < 30 cm bear almost twice chance of myopia when compared to those working from extensive distances. They also further

discovered positive association of myopia with duration of reading. Some of the studies have also found linear association of myopia with higher levels of education.⁽¹⁸⁻¹⁹⁾ In this research study, in assessing myopia related to family history, there was close to significant association with positive family history. This is similar to a Chinese study that revealed about seeming ancestral accretion of myopia; might be made known by raised ratio of maternal as well as paternal myopia. This Chinese study found twice to thrice risk of developing myopia among those having positive family history for myopia.⁽²¹⁾ Further more, similar to this study, duration of spending time on digital screen has also been quoted as the most likely modifiable ecological risk factor that can upsurge risk of myopia.⁽²¹⁾ Myopia may disturb the quality of life and forth coming academic future of young adults. This further may progress to sight threatening complications like retinal detachment, cataract, open angle glaucoma and others. So, identifying these risk factors timely and then controlling these modifiable risk factors early may prevent from future burden of visual dysfunction and so this way next future of young adults towards bright future.

CONCLUSION

This has been concluded that age, gender, reading/writing with near distance, android smart phone use for longer duration, watching television from short distance and longer duration as well as positive family history are the risk factors significantly associated with myopia.

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