FREQUENCY AND RISK FACTORS FOR MYOPIA AMONG CHILDREN VISITING OPHTHALMOLOGY OUTPATIENT DEPARTMENT OF BAHAWAL VICTORIA HOSPITAL, BAHAWALPUR

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ABSTRACT

Background: Myopia is one of the preventable cause of visual impairment. **Objective:** Objective of this study was to determine the frequency and risk factors for myopia among children (6-12 years) visiting Ophthalmology outpatient department of Bahawal Victoria Hospital, Bahawalpur. **Patients and Methods:** It was cross sectional study conducted in Ophthalmology outpatient department of Bahawal Victoria Hospital, Bahawalpur from 1st July, 2012 to 30th June, 2013. After taking ethical approval from hospital ethical committee, all the children aged 6-12 years visiting Ophthalmology outpatient department, whose parents had endorsed informed written consent, were included in the study. After collecting personal detail of each participant, and noting risk factors from their parents by using questionnaire, the visual acuity of each child was checked by using Snellen's chart. The children having visual acuity less than 6/6 in at least one eye underwent refraction by using retinoscopy after 1% cyclopentolate eye drops had been instilled at least half an hour previously. Data was entered and analyzed by using SPSS version 17. Spherical equivalents equal to or more than -0.50 D in either eye was taken as myopic. Chi square test was applied to see any statistical difference if existed and p value ≤0.05 was taken as significant. **Results:** Out of total 2936 children, 57.93% were myopic. 32.86% children were in the age group of 6-8 years, 54.67% in 9-11 years and 12.47% were ≥ 12 years of age. 67.37% children were females. Family history of myopia was positive in 65.8% children. The reading hours of 17.3% children were ≤ 1 hour, 2-8 hours in 76.22% and > 8 hours per day in 6.48%. The duration of TV watching was ≤1 hour per day in 62.39% children, 2-4 hours in 35.62% and > 4 hours in 2.02% children. 60.72% of the children were spending their time in playing video games or using computer for ≤1 hour, 35.66% for 2-4 hours and 3.62% for > 4 hours. **Conclusion:** There is strong association of myopia with near work and parental myopia.

Key Words: Myopia, Risk factors, Reading hours

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INTRODUCTION

A state in which the optical system of the non-accommodating eye fails to bring parallel rays of light to focus on the retina may be defined as refractive error and among these errors myopia has become a very common problem especially in parts of Asia in which eye fails to see distant objects properly.[1,2] According to world health organization uncorrected refractive error is a significant cause of visual impairment in children.[3] Myopia beyond the medical complications also incurs significant direct and indirect socioeconomic costs. Direct costs are related to correction of myopia including refractive eye wear and surgery while indirect costs relate to treatment of myopia complications such as retinal detachment and contact lens related corneal ulcers. The exact etiology of myopia despite of several decades of research is still unknown. The relative contribution of genetic predisposition and environmental factors has been related to its etiology. The documented environmental risk factors of myopia among children include higher educational attainment, higher socioeconomic status and increased amount of near work activities.[4,5]

In Pakistan the third leading cause of preventable/ curable blindness is the refractive errors.[6] In the Global initiative of 2020 for the elimination of avoidable causes of blindness, refractive errors have been emphasized together with other ocular disorders such as cataracts, trachoma and onchocerciasis.[7] Management of the patients with refractive errors until now is correction with eyeglasses, contact lenses, refractive surgery and laser. The purpose of management of these disorders is the best visual acuity with best correction. This study aims to determine the frequency and risk factors of myopia among school children (6-12 years old) visiting Ophthalmology outpatient department of Bahawal Victoria Hospital Bahawalpur.

PATIENTS AND METHODS

It was cross sectional study conducted in

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ophthalmology outpatient department of Bahawal Victoria hospital Bahawalpur, from 1st July, 2012 to 30th June, 2013. The ethical approval involving human subjects was taken from hospital ethical committee. All the children aged 6-12 years, visiting ophthalmology outpatient department whose parents had endorsed informed written consent were included in the study. Children who were not willing to undergo the examination due to fear even though the parents has authorized the examination, sick child or on medication for some other ailment, children with retinal or optic nerve problems, corneal problems, cataract, pseudophakia, glaucoma and hyperopia were excluded from the study. After collecting personal detail of each participant, and assessing risk factors from their parents by using preformed questionnaire, the visual acuity of each child was checked by using Snellen's chart. The children having visual acuity less than 6/6 in at least one eye underwent refraction by using retinoscopy after 1% cyclopentolate eye drops had been instilled at least half an hour previously. Data was entered and analyzed by using SPSS version 17. Chi square test was applied to see any statistical difference if existed and p value ≤ 0.05 was taken as significant.

Operationalization

Myopia: Spherical equivalents equal to or more then 0.50 D in either eye.

Hyperopia: Spherical equivalents equal to or greater than +2.0 D in either eye.

Emmetropia: The children with neither eye myopic or hyperopic in both eyes.

RESULTS

There were a total of 2936 children in the study. Frequency of myopia was 57.93% and 42.07% were emmetropes. 32.86% children were in the age group of 6-8 years, 54.67% in 9-11 years and 12.47% were ≥ 12 years age. (Table I). 67.37% children were females and 32.63% were male. Family history of myopia was positive in 65.8% children. The reading hours of 17.3% children were ≤ 1 hour, 2-8 hours in 76.22% and > 8 hours per day in 6.48%. The duration of TV watching was ≤1 hour per day in 62.39% children, 2-4 hours in 35.62% and > 4 hours in 2.02% children. 60.72% of the children were spending their time in playing video games or using computer for ≤1 hour, 35.66% for 2-4 hours and 3.62% for > 4 hours per day. (Table II)

Table I: Frequency of Myopia with age and gender distribution of the children.

Age of children	Number of children with myopia		Emmetropes		Total	
	Frequency	% age	Frequency	% age	Frequency	Percentage
6-8 years	673	39.57	292	23.64	965	32.86
9-11 years	820	48.20	785	63.56	1605	54.67
≥12 years	208	12.23	158	12.80	366	12.47
Total	1701	100	1235	100	2936	100
Gender						
Female	1193	70.13	785	63.56	1978	67.37
Male	508	29.87	450	36.44	958	32.63
Total	1701	100	1235	100	2936	100

Table II: Risk factors of myopia

Variables	Number of children with myopia		Emmetropes		Total		
Family history of myopia	Frequency	%age	Frequency	%age	Frequency	%age	P values
Yes	1380	81.12	552	44.69	1932	65.80	0.0000
No	321	18.88	683	55.31	1004	34.20	
Total	1701	100	1235	100	2936	100	
Reading hours per day							0.0001
≤1 hour	321	18.87	187	15.14	508	17.30	
2-8 hours	1293	76.01	945	76.51	2238	76.22	
>8 hours	87	5.12	103	8.35	190	6.48	
Total	1701	100	1235	100	2936	100	
Television watching hours per day							0.0080
≤1 hour	1076	63.25	756	61.21	1832	62.39	
2-4 hours	581	34.15	465	37.65	1046	35.62	
>4 hours	44	2.60	14	1.14	58	2.02	
Total	1701	100	1235	100	2936	100	
Videogames or computer use hours per day							0.0004
≤1 hour	1022	60.08	761	61.61	1783	60.72	
2-4 hours	598	35.15	449	36.35	1047	35.66	
>4 hours	81	4.77	25	2.04	106	3.62	
Total	1701	100	1235	100	2936	100	

DISCUSSION

In our study, out of 2936 children the frequency of myopia was 57.93% and 42.07% were emmetropes. Majority of children were in the age group of 9-11 years i.e. 54.67% and only 12.47% were ≥ 12 years age. Frequency of myopia in our study was similar to the study conducted by Chaudhary et al, in which it was 57.6%.[8] About two third of the children in our study were females while only 32.63% were male and frequency of myopia among females was higher as compared to male, which is consistent to the study conducted by Mavracanas TA et al, which reported that the prevalence of myopia was higher in female students as compared to male.[9]

Our study results revealed significant association of myopia with family history (p=0.0000). Similarly in the study conducted by Yingyong P, it was observed that parents with myopia tend to have children with myopia.[10] Significant association has been observed between myopia and reading hours per day (0.0001), televisions watching time per day and myopia (p=0.0080) and time spent on computer or playing videogames per day and myopia (p=0.0004). These

results are also consistent with the study conducted by Khader YS et al, in which direct association of myopia was seen with daily hours spent on reading, watching television and computer use.[11] These results are also similar to many other studies.

There is need to screen young children for refractive errors regularly or at least first attending school. This will enable identification of those with visual disability so that corrective measures may be recommended at the earliest time possible.

CONCLUSION

There is strong association of myopia with near work and parental myopia.

limitations of the study

As our study was limited to data obtained from Ophthalmology outpatient department, it may not be possible to generalize the results to the whole population. Prospective longitudinal studies are needed to establish causal relationship between near work and myopia in this age group.

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