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Prevalence of Visual Acuity Disorders among Intermediate School Students in Riyadh, Saudi Arabia

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Abstract

Our objectives in this study are to determine the prevalence of visual acuity disorders and to identify the important risk factors that associated with visual acuity disorders among Intermediate school students in Riyadh, 2012.Design.a cross sectional study was preformed the prevalence of visual acuity has been measured in Riyadh schools district. A sample size of 580 students throw a Multi-stage random sampling technic was conducted. The tools that have been used to collect data in this study are self administered questioner and the Snellen chart through placing it on 6 meter distance from the student, it contains C-letter-like shapes in different direction and sizes, which should be identified by the student.

Study Sample: All Male intermediate school students in governmental schools in Riyadh city, 2012. Which included a total of 580 students?

Results: The prevalence of visual acuity impairment in our study was 14.3%, with a mean age of 14.14 ± 5.497 years old. 44.58 % of the students who are visually impaired didn't wear glasses. Mean hours spent on watching TV of visually impaired students is 4.02± 2.437 and mean hours spent on reading 1.76 ± 1.061. Mean number of students who feel tired after time watching TV is 15.70%. There is increase in visual impairment among students as age increased. We observed that 60% of visually impaired students don't follow up with ophthalmologists.

Conclusion: We found that there is a significant relationship between visual acuity impairment and inheritance. Also one of the risk factors among students who suffer from visual acuity impairment is that they don't regularly follow up with an ophthalmologist, and 44.58 % of the students who are visually impaired didn't wear glasses.

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Visual disorders are prominent health problem. There was an estimation of 161 million people around the world with visual disorder, during 2002. Most of them are in developing countries, for instance Saudi Arabia. Visual acuity disorders are still considered a major setback that has a negative effect on the community [2]. Furthermore, visual acuity disorders are commonly found with difficulties in handling daily life issues, as it is considered the main sense of communication .the world health organization concluded that community-derived data on the incidence of visual acuity disorders are instantly desired as they are being important for detecting requirements for therapy and rehabilitation, development, and conducting screening programs, and assessing main concerns for different communities [4]. Data regarding visual acuity disorders in Saudi Arabia are uncommon. Only minorities of researches were implemented in the last twenty years. Yet, the urge for additional researches to assess the requirements for implementing, evaluating and screening interventional programs are needed. We are implementing this research for the purpose of assessing the magnitude of visual acuity disorders among school students in Riyadh (capital of Saudi Arabia). Our objectives were to determine the prevalence of visual acuity disorders and to identify the significant risk factors that associated with visual acuity disorders among Intermediate school students.

Materials and Methods

Study area Riyadh city, Saudi Arabia. Study population. All school students in governmental schools in Riyadh city in 2012. A cross-sectional study with a sample size of 580 students throw a Multi-stage random sampling technic was done. Riyadh has been divided to five regions and one school was chosen from each region by using simple random sampling technique. Using stratified random sampling with proportional allocation one class from each school year was chosen. All students present at the time of the study in the chosen classes were included in the study.

Data Collection Technique

Upon visiting the selected schools we randomly chose one class from each grade, the randomly selected students were then gathered in the study room and a self administered questionnaire with standard sequence and pre-coded answers (Structured Technique) was distributed to the students targeted for gathering of statistics (nationality, level of education, age) Additional significant information associated with visual disorders and its risk factors, like diabetes, hypertension or family history of similar diseases , time spent on reading or in front of TV, frequency of visiting an ophthalmologist, then history of eye disorders were documented. The visual acuity of the students was tested by using a Snellen chart (which developed by the Dutch ophthalmologist Herman Snellen), through placing it on 6 meter distance from the student, and contain E-letter-like shapes in different directions and sizes, which should be identified by the student. World health organization defined visual impairment as a visual acuity of less than 6/18 in the better. A scale was used to measure weight and height. Then filled questionnaires were collected.

Statistical Analysis

Mean + SD was used to describe each quantitative variable: (Age, Age start using glasses, Family member who wears glasses, Times a year visiting the ophthalmologist (number). Time spent watching TV (hours)

Frequency (percentage): It was used to describe each qualitative variable (Nationality, Family hypertension, Diabetes, Wear glasses)

T- Test: It was used to find if there is any difference between quantitative variables and one qualitative variable with only two categories. ANOVA will be used to find if there is any difference between quantitative variables and one qualitative variable with more than two categories.

Chi-Square Test: It was used to find any association between two qualitative variables.

Multivariate Analysis: Regression analysis was used to predict visual acuity impairment (dependent variable) from one or more risk factor(s) (independent variables). P- Value was set to be less than 0.05 throughout the study.

Ethical Considerations

Permission from school health Director was obtained prior to collecting data.

Results

Mean age of 580 students how participated in the study (SD) was 14.14± (5.497). Total number of students in each phase of the selected schools are Grade one 190 (32.8%). Grade two 202 (34.8%). Grade three 188 (32.4%). The Prevalence of Visual acuity disorders Among Intermediate School Students was (14.3%). Total of students whom visually impaired are 83 students .we can see the number of students increases gradually with grade (age). And the percentages are grade 1 (13.15%), grade 2 (14.36%), and grade 3 (16.48%). Mean and (SD) of the Hours Spent on Reading 1.43± (1.226), and Hours Spent on TV 4.02 ± (2.402). Most of the students (85.7%) had visual acuity that consider normal according to world health organization. Distribution of both eyes Visual Acuity Value among Intermediate School Students in Riyadh 2012: -as we see there is no big difference between right and left eye visual acuity according to WHO (ICD 10) worse than 18/6 in the better eye is visually impaired (Table 1, 2, 3).

Table 1: Difference between right and left eye visual acuity

Visual Acuity	R Eye		L Eye	
	N	%	N	%
6	196	33.8	223	38.4
9	207	35.7	198	34.1
12	64	11.0	57	9.8
18	**43**	**7.4**	**28**	**4.8**
24	**29**	**5.0**	**25**	**4.3**
36	**25**	**4.3**	**34**	**5.9**
60	**16**	**2.8**	**15**	**2.6**
Total	**580**	**100.0**	**580**	**100.0**

Table 2: In this table we can see that 60.24% of visually impaired students did not visit an ophthalmologist regularly.

Visual impairment	Times visiting an Ophthalmologist per Year								Total
	0		1		2		3		
	N	%	N	%	N	%	N	%	
Yes	50	60.24	15	18.07	14	16.86	4	4.81	83
Total	498	85.86	44	7.58	25	4.31	13	2.24	580

In table 3 we can see that there is a significant relation between visual impairment and family history.

Table 3: Relationship between Wearing Glasses and Family Member who Wears Glasses.

	Wearing glasses				Total		P
	Yes		No				
Family members who wear glasses	N.	%	N.	%	N.	%	
Yes	66	17.27	316	82.73	382	65.86	<.001
No	13	6.56	185	93.44	198	34.14	
Total	79	13.62	501	86.38	580	100	

Discussion

The study aimed to determine the prevalence of visual acuity disorders and associated risk factors among intermediate school students in Riyadh in 2012. The prevalence of visual acuity disorders was 14.3%, which agrees with a study done by Al-Shaaln in al jouf that found the prevalence of visual acuity disorders was 13.9% (1). A much lower prevalence was reported in another study done by Khalid F. Tabbara in Saudi Arabia In 2011 and on contrast disagrees with findings that stated the prevalence of visual acuity disorders was 7.8% (3). This disagreement could be explained by the difference of the participant's age groups in both studies and place. Our study revealed that refractive error is the primary cause of visual acuity disorders and its increases with the age. This finding was coherent with other researches that indicated that older persons tended to have lower rates of myopia than younger persons.(5) This remarkable decline could be explained by the fact that the estimated occurrences for causes of visual impairments in our study were based on the proportion of each cause in relation to all other causes, we found that there is a significant relationship between visual acuity disorder and inheritance. 17.27% of the students who wear glasses and suffer from visual acuity disorder, found to have a family members how wear glasses, which may suggest genetic predisposition among patients suffering from visual acuity disorders.

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