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Original Article

Visual status of children who play video games for prolonged period

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Porpose: Refractive errors are considered a public health problem in many countries as well as by the WHO. This study compares refractive errors in video game players (VGP) and non video game player (NVGP).

Objective: To compare visual status of children who play video game for long periods and who do not play.

Patients and Methods: Refraction of 100 patients (200 eyes) was done of those who play video games (50) and those who do not (50), visiting Mayo Hospital Lahore and College Of Ophthalmology and Allied Vision Sciences (COAVS) Lahore. The parameters compared are spherical, cylindrical and axis value of VGPs and NVGPs, in age group 12 years and above were included in the study. Retinoscopy and subjective refraction were done in the individuals having visual acuity less than 6/9 in one or both eyes. Individuals having refractive errors were prescribed glasses.

Results: The mean spherical, cylindrical and axis values are -0.9286 ± 1.59251 D (SE. 0.16087) and -1.2108 ± 2.05787 D (SE. 0.20376), -0.9107 ± 0.70001 D (SE. 0.07071) and -1.2500 ± 0.70798 D (SE. 0.7010), 90.510 ± 53.4312 (5.3974) and 97.539 ± 53.2764 (SE. 5.2751), respectively, of those who play video game and those who do not. Mann Whitney-U test showed no statistically significant difference of sphere (p= 0.055) and axis (p= 0.299),but shows marked difference in cylindrical value (p= 0.000) between those who play video game and those who do not.

Conclusion: Video game playing or close work may induce/ cause a change in astigmatism but not in overall spherical refractive status of the eye.

Introduction

Technological advances have created a marked effect in nearly every aspect of our daily routine following the advent and use of computers. A private laptop may be a common instrument used on daily basis in offices, educational institute and residences. Its frequent use has increased our ease in obtaining data, writing articles and chatting with others. Most of the people, elders as well as youngsters, are using computers and mobile phones for hours. In fact, people taking breaks from routine and tiring chores have included new methods of relaxation, such as social media and playing games on mobiles or computers, to the already present list of hobbies. These may, in addition to providing relaxation, help in preparing people for task performance in the future as well.

Video games are prevalent and more and more communicatory medium inside modern society. Video games are frowned upon by oldsters as time wasters or worse. Some education consultants suppose that these games corrupt the brain. However, several scientists and psychologists find that video games might have several advantages. Nowadays ninety-seven percent of teens in U.S. play video games. The domestic game business brings in nearly $ twelve billion a year. This widespread style of media has positive as well as negative effect on youngsters. The foremost wide admitted positive impact is that video games could facilitate youngsters to enhance their facility and laptop skill. In line with 2014 study by Douglas Gentile 'when a video game is pro-social and rewards players for building a city or serving to others, children tend to indicate additional empathy and helpfulness in their daily lives'. But studies additionally show that video games could also insert negative impacts on body posture, brain and eyes. Video games with violent content are connected to aggressive behavior in teens. This is often a priority as results of most of the popular video games contain violence. Research has also found that dominant for previous aggression, children who play more violent video games through the beginning of the college year showed more aggression than other children later within the academic year.

Most video games need lengthy involvement while playing the game, forcing the player to remain focused on screen throughout playtime. This can lead to typical symptoms like headaches, blurred vision and even myopia if frequents breaks do not seem to be taken to relax your eyes. Prolonged use of video games cause symptoms that can mimic Computer vision syndrome that causes, headache, dry eyes, and neck pain, eye irritation and light sensitivity.

It is reassuring, however, that all these perils to vision can be easily addressed. First of all, assume a proper body posture. Take frequent breaks while using electronic media. Micronutrients such as Vitamin A, Lutein, selenium etc. also helps retina functions properly.

A study was conducted, which revealed that playing action video games increase many other aspects of visual activities; however there is lack of knowledge of underlying mechanism. We have a tendency to show that taking part in action video games will change basic qualities of the sensory process, like the spatial resolution of sensory process across the field of regard. The spatial resolution of visual process can be determined by measuring the minimum distance between a distractor and the target without affecting target identification. This phenomenon is called crowding and it occurs because there is a hindrance in visual process as a distractor is brought near the target. Compared with non-players, AVGPs may tolerate smaller target-distracter distances. Thus, the spatial resolution of visual process is increased in them. Similar effects were also discovered in NVGPs who were trained on action VG.

Patients and Methods

This Comparative cross-sectional study was conducted at College of Ophthalmology and Allied Vision Sciences (COAVS) Lahore from September to December 2015. Patients were selected from College of Ophthalmology and Allied Vision Science and Mayo Hospital Lahore. Subjects in age group 16 years and above were included in the study. Individuals below 12 years and those who could not give history or unable to perform examination were excluded from the study.

Before the start of research, the objectives and the process of research were explained to them in detail. Informed consent was obtained from all the participants. Ethical Review Board of COAVS gave permission for the study.

Vision of all the subjects was checked using a distance log MAR visual acuity chart. Retinoscopy and subjective refraction were done in the individuals having visual acuity less than 6/9 in one or both eyes. Individuals having refractive errors were prescribed glasses. The data was recorded on the Performa, fed on the computer using the SPSS Statistics 21.0 software. The results were analyzed and tabulated using the same software.

Results

The data was arranged in tabulated form as well as graphical and diagrammatic form for the analysis of variables. We selected the individuals of age above 12 years of both genders.

	Sphere		Cylinder		Axis	
	VGP	NVGP	VGP	NVGP	VGP	NVGP
N	100	100	100	100	98	102
Minimum (diopters)	-5	-6.5	-5	-3.5	5	10
Maximum (diopters)	3.25	5.5	0.75	1	190	190
Mean	-0.9286	-1.2108	-0.9107	-1.25	90.51	97.539
Std. Error	0.1609	0.2038	0.0707	0.0701	5.3974	5.2751
Std. Deviation	1.5925	2.0579	0.7	0.708	53.431	53.276
Mann Whitney-U Test	**p=0.055**		**p<0.001**		**p=0.299**	

VGP= Video game player NVGP = Non video game player

The spherical value was compared between the patients who play video game and those who do not. Mann-Whitney U test was applied. The results showed that there is no statistical significant difference between them (p= 0.055).

The mean spherical value is -0.9286 ± 1.59251 D (SE. 0.16087) and -1.2108 ± 2.05787 D (SE. 0.20376) of patients who play video game and those who do not, respectively. However, those who play have less spherical correction as compared to those who do not.

The cylindrical correction was compared between the patients who play video game regularly and those who do not. The independent sample Mann-Whitney U test was applied. The results showed that there is marked statistical difference between them (p= 0).

The mean cylindrical value is -1.2500 ± 0.70798 D (SE. 0.7010) and -0.9107 ± 0.70001 D (SE. 0.07071) of those who do not play video games and those who play, respectively. However, patients who play video game appeared less astigmatic.

The axis values are compared between those who play video game and those do not. Independent sample Mann-Whitney U test was applied. The results showed that there is no statistical significant difference between them (p= 0.299).

The mean axis values are 97.539 ± 53.2764 (SE. 5.2751) and 90.510 ± 53.4312 (5.3974) of those who do not play video games and those who play, respectively. However, majority of those who play video game have cylinder less than 90 angles.

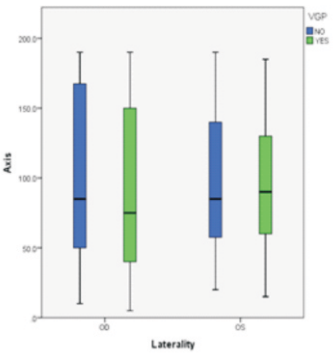

Figure 1

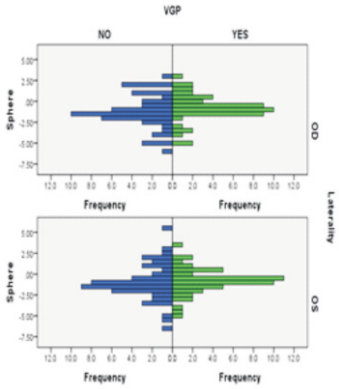

Figure 2

Conclusion

The mean spherical, cylindrical and axis values are -0.9286 ± 1.59251 D (SE. 0.16087) and -1.2108 2.05787 D (SE. 0.20376), -0.9107 ± 0.70001 D (SE. 0.07071) and -1.2500 ± 0.70798 D (SE. 0.7010), 90.510 ± 53.4312 (5.3974) and 97.539 ± 53.2764 (SE. 5.2751), respectively, of those who play video game and those who do not. Mann Whitney-U test showed no statistically significant difference of sphere (p= 0.055) and axis (p= 0.299), but shows marked difference in cylindrical value (p= 0) between those who play video game and those who do not.

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