

## The Impact of Computer- Based Video-games Devices on the Children's Health

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### Abstract

**Background:** Computer video games require great attention and focus, the more exposure to interactive media, the more exposure to challenges that will recommend players to play better and gain more intelligence.

**Objective:** To identify the health effects on children under five years using computer –based video games by electronic devices including mobile phone, computer and ipad.

**Patients and Methods:** A cross-sectional study was conducted in Al-Batul teaching hospital, for the period from the first of September /2016 to the 15th January \2017. The study sample included (100) of children aged 1-5 years, attending the hospital for the purpose of treatment, or accompanying their mothers. The Data collected through a questionnaire designed by the researchers.

**Results:** Revealed that there was statistical significance relationship between electronic devices and mother's educational level which is more in mother with college educational level. There is no significant relationship between children using electronic devices and there residence. High significant statistical relation -ship between children using electronic device and health problems (p -value equal to <0.001), mainly shown for children using electronic device and decrease appetite, hyperactivity, lack of sleep and with attention defect.

**Conclusion:** Computer-based video games associated with behavioral changes like hyperactivity, attention deficit, lack of sleep and loss of appetite.

**Keywords:** Computer –based video games, Electronic devices, Mobile phone, Computer, ipad Behavioural changes, Hyper-activity, loss of appetite.

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### Introduction

Different devices for Multimedia was used in education lead to changes in individual's ways for learning. many researchs and studies concluded that a well-designed multimedia elevates students' learning achievement in different branches of science [1]. Other studies indicated that computer-

assisted instruction (CAI) programs have vital role in motivating students , and enhance fantasy among children [2].

In fact that the computer and video games have the similar multimedia capability as CAI programs, their potential learning effect is often under estimated by parents and

educators. Nowadays the presence of computer-based video games' and its popularity have been ever-growing. In addition to that the game developers and researchers have plans and projects to investigate video games' impact on students' cognitive learning [3, 4]. According to their results and findings , today's children are starting to be exposed to technologies and media at a much younger age than previously thought. Therefore, educators' investigations become critical concerning the impact of technologies and media on children's development [5]. Many researches involved with computer-based video games emphasis on the studying of psychological characteristics and child behavior [6,7]. Evidences indicated that violent video games may raise children's aggressive play and violent behaviors [5,8]. Surveys of parents suggest that they buy home computers and subscribe to Internet access to provide educational opportunities for their children, and to prepare them for the "information-age" ,Although they are increasingly concerned about the influence of the Web on their children and express disappointment over their children using the computer for activities such as playing games and browsing the Internet to download lyrics of popular songs and pictures of rock stars, they generally consider time wasted on the computer preferable to time wasted on TV, and even consider children without computers to be at a disadvantage [6,9].Parents in the Annenberg survey report that children (between 2 and 17 years) in

homes with computers spend approximately 1 h and 37 min a day on computers, including video games [7,10].Another potential problem of too much screen time (from computers, e-readers, video games and smartphones) for children's eyes is overexposure to harmful blue light. All digital devices with viewing screens emit significant amounts of blue light (also called "high-energy visible light" or "HEV light") which might increase a child's risk of macular degeneration later in life [8,11,13]. This study was conducted to identify health effects of electronic devices (including mobile, computer and ipad) on children under (5) years of age.

### **Patients and Methods**

A cross-sectional study was conducted in Al-Batul teaching hospital, for the period from the first of September /2016 to the 15th January \2017. The study sample included (100) of children aged 1-5 years, attending the hospital for the purpose of treatment, or accompanying their mothers whom consulting Gynecological or obstetrical clinics. A questionnaire was designed by the researchers to collect data about areas of family residence, (rural or urban areas of residence), educational level of the mother, the duration of child' use of the electronic device, in addition to information about child's health problem and effects including the eyesight as well as hyperactivity and attention deficit, loss of appetite, and sleep disturbances.

### Statistical analysis

Statistical analysis was done by using SPSS program . Chi-squared test method used to test theories on the differences between the percentages, a level of significance of  $\alpha=0.05$  was applied to test, the statistics software used to process the data analysis were the

Microsoft Excel 2010 and Stata M13 program.

NS= non-significant.  $P.>0.05$

\*= significant different  $p\leq 0.05$

\*\*= high significant different  $p\leq 0.01$

\*\*\*= very high significant different  $p\leq 0.0$

### Results

**Table (1):** Relationship between using electronic device by the children and the educational level of their mothers.

		Child using Electronic device				Total	
		Yes		No			
Maternal Educationa l Level	Illetrant	1	1.00%	0	0.00%	1	1.00%
	Reading writing	8	8.00%	0	0.00%	8	8.00%
	Primary	26	26.00%	4	4.00%	30	30.00%
	Secondary	16	16.00%	0	0.00%	16	16.00%
	College &>	44	44.00%	1	1.00%	44	44.00%
Total		95	95%	5	5%	100	100%
$X^2$	43.37						
P value	0.005**						

**Table (2):** Relationship between using electronic device by the children and the family' residence.

		Child using electronic device			
		Yes		No	
Family' residence	Urban	42	97.70%	1	2.30%
	Rural	58	93.00%	4	7.00%
	Total	100	95.00%	5	5.00%
$X^2$	1.136				
P value	0.287 <sup>NS</sup>				

**Table (3):** Relationships between using electronic device by the children with their health problems (Hyperactivity, attention deficit eye effect, loss of appetite& sleep disturbances).

		Health problems (Hyperactivity, attention deficit, eye effect loss of appetite& sleep disturbances).					
		Yes		No		Total	
Child' using mobile	yes	83	87.40%	12	12.60%	95	100.00%
	no	0	0.00%	5	100.00%	5	100.00%
X <sup>2</sup>		25.69					
P value		<0.001***					

**Table (4):** Relationships between children using electronic devices and symptoms with children.

		Child' using Electronic device				Total	
		Yes		No		N	%
Health effects	Not found	14	14.00%	5	5.00%	19	19.00%
	Hyperactivity	13	13.00%	0	0.00%	13	13.00%
	Eating refusal	41	41.00%	0	0.00%	41	41.00%
	Lack of sleep	14	14.00%	0	0.00%	14	14.00%
	Attention deficit	13	13.00%	0	0.00%	13	13.00%
	Total	95	95.00%	5	5.00%	100	100.00%

## Discussion

The time that children spend using digital devices is increasing rapidly with the development of new portable and instantly accessible technology, such as smartphones and digital tablets. Recently mobile phones have become a widespread phenomenon. The pocket-sized tools are no less than a mini computer. They can do anything from a standard phone call to internet connection. Not just the adults, this technology is

affecting the kids as well. In the recent years, there has been a lot of emphasis in regard the impact of cell phone radiation on our body. Mobile or cell phones are now a days an integral part of modern telecommunications in every individual life. In many countries, over half of the population use mobile phones and the mobile phone market is growing rapidly. Saudi Arabia rank first among the countries of the gulf region with

highest proportion of mobile users, a study conducted by United Nations Conference on Trade and Development (UNCTAD). In gulf countries, Oman ranked second, followed by Kuwait and the UAE. As billions of people use mobile phones globally, a small increase in the incidence of adverse effects on health could have major public health implications on long term basis. Besides the number of cell phone calls per day, the length of each call and the amount of time people use cell phones are important factors which enhance the health related risk.

A relationship between children using mobile and educational level of the mother, 95 of the cases using electronic devices and 5 of them don't use the study show P value 0.005\*\* that's mean there is statistical significance relationship which is higher among mother with educational level of university and higher Table(1).

In regard to the relationship between children using electronic device and their residence the study reveal no significant relation -ship between using electronic devices and there residence Table(2).

Concerning the relation-ship between children using electronic device and health problems and the study show a strongly significant association between them (P-value equal to <0.001\*\*\*) this is displayed in table-3. This is in agreement with a study by The Journal of the American Medical Association when discussed the bad effect of the mobile phones on the brain activity (10). It also describes the ways for parents how they can monitor their children by limiting

their time of gadget uses. As the gadgets are increasing day by day, it is leading to the technology addiction among children. The paper concludes with recommendations for further study of better understanding of more problems in children by growing impact of computers [1].

Children using electronic device complain mostly from decrease appetite , hyperactivity , lack pf sleep ,and attention defect. the most prominent problem was decreasing appetite (table -4). These results were in agreement with a team of researchers from Department of Rehabilitation Sciences of The Hong Kong Polytechnic University and the Hong Kong Physiotherapy Association whom had jointly conducted a study on the health effects of using smartphones and portable electronic devices among Hong Kong people. Results showed that, out of the 1,049 people surveyed, 70% of adults and 30% of children and adolescents have reported musculoskeletal symptoms in different parts of the body in relation to the use of electronic devices [8, 12].

In her study Rikuya Hosokawa compute odds ratios for emotional / behavioral problems according to mobile device use. Among the participants, 230 (14.0%) were regular users (60 minutes or more on a typical day) and 1,412 (86.0%) non-regular users (under 60 minutes on a typical day). Relative to non-regular use, regular use of mobile devices was significantly linked to conduct problems [3, 13].

It is worth to mention that some studies indicated that the risk of brain tumors associated with mobile phones use is not established, due to the lack of data for mobile phone use over time periods longer than 15 years. Although World Health Organization (WHO) encourage doing such researches particularly with recent common use of mobile phone use among younger people, and therefore a longer lifetime of exposure [14].

### Conclusion

This study concluded that there is relation between electronics use and health problems among children. In addition to that children used electronics mostly for mothers with high educational level.

### Recommendations

Emphasis to the parent to monitor and limit the use of electronics for their children or to determine certain time for use of electronic, and to use sport or certain programs to draw their attention from electronics. More scientific work in this field to assess the health impact of radiation mobile phone users.

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