



Prevalence and Negative impact of Videogames among children and adolescents in Albaha city, KSA

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General Note



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ABSTRACT

Introduction: Video games (VGs) have become widely spread nowadays occupying most of the leisure time of the children, this may affect their schooling, sleeping, and behavior adversely. *Methodology:* This cross-sectional prospective study was carried out to assess the prevalence and negative impact of VGs on children and adolescents. A questionnaire was designed and filled by the parents together with their child to assess the rate of VGs playing and whether it has left any negative effects on the child. *Results:* VGs prevalence among the participants was about 99.3%. VGs Playing was found to predispose to the following negative effects among the studied group: violence and aggressive behavior (25%), excessive eating (37%), behavioral problems as lack of attention (23%) and hyperactivity (19%), decreased school performance (32%), sleep disturbances as staying awake for a late time at night (45%), and semi-addictive effect (5.9%). *Conclusion:* The vast majority of the participants reported playing VGs. VGs playing was demonstrated to have a lot of negative effects on the studied group such as violence and aggressive behavior, excessive eating, behavioral problems as inattention, decreased school performance, sleep disturbances, and semi-addictive effect.

Keywords: Video games, Prevalence, school, sleep, Impact.

1. INTRODUCTION

Videogames are interactive computerized games that target to entertain players by permitting them to access virtual environments, which may be two or three dimensions, under special terms and conditions that differ according to the game played (Quwaider et al., 2019).

Nowadays we live in the century of technology and information. Video games technologies have become widely spread used not only by the new generations but also by older ones. The industry of VGs has shown a very rapid increase over the last decade (Kefalis et al., 2020). Regarding the prevalence of video games, a study done in Bagdad reported that it was almost about 94.6% among primary school children, regarding gender distribution it was found to be 97.4% and 88.7% in boys and girls respectively, hence the vast majority of children used to play video games and only 5.4% not playing video games at all (Dhiaa and Tawfeeq, 2016).

There are many types of video games that are used to play by children such as adventure, action, fighting, platform, racing/driving, role-playing, puzzle, shooter, sports, simulation, and strategy (Lee et al., 2014).

There is a strong statistical relationship between children using electronic devices and health problems mainly decreased appetite, hyperactivity, decreased sleep, and inattention (Jamel et al., 2019). A qualitative study reviewing students and teachers published in turkey 2018 revealed that heavy gamers tend to have poor school achievement, despite this fact can be attributed to many reasons such as hyperactivity, inattention during the lessons, and lack of motivation, participants reported excessive VGs playing to be the major reason for heavy gamers' poor-school achievement (Yilmaz et al., 2018). Another study concluded that playing and exercising video game of recreative nature does not help in learning specific academic subjects as math, or knowledge in specialized studies (i.e., physics, history) (Lieury et al., 2019).

Playing videogames too much may be accompanied by sleep deprivation leading to poor performance in work and behavioral problems affecting individual mode. The quality of sleep was positively affected by good mental health and adversely by the intensity rather than the duration of playing the video game. Therefore It is very important to ask about a history of online VG playing in patients presenting with insomnia, depression, and poor work performance (Eickhoff et al., 2015; Altintas et al., 2019). Another study carried out in the US found that there was a direct relationship between the time spent in mature-rated VGs playing and the risk of somatic symptoms, aggressive behavior, and decreased duration of sleep (Guerrero et al., 2019). Children exposed to cyber victimization have deterioration in physical and mental health, are more susceptible to develop psychosomatic disorders, social anxiety, and aggression (Makarova and Makarova, 2019). Another study demonstrated that competition and loss of competitive matches cause aggressive effects, whereas violence in video games itself does not (Dowsett and Jackson, 2019).

Video games also thought to have a link with ADHD, a study carried out at the University of Southern California in 2018 has shown that teenagers exposed to a greater amount of digital media were increasingly susceptible to develop ADHD symptoms later on (Downey and Maureen, 2018), another study also supports this fact by concluding that the manifestations of inattention or ADHD are increasingly intense in adolescents who play console or internet video games for more than one hour compared to those who do not (Chan and Rabinowitz, 2006).

Video games may be associated with addiction as a study done in Singapore targeting elementary school students found that boys consumed more time playing video games than girls, furthermore, they showed a higher tendency for addiction and engagement compared to their female analogs (Skoric et al., 2009).

This study aimed to estimate the prevalence and negative impact of video games in children and adolescents in Albaha city.

2. MATERIALS AND METHODS

This prospective cross-sectional, community-based study was performed during the period from August 2019 to December 2019 to estimate the prevalence and the negative impact of video games in children and adolescents in Albaha city, which is the capital city of Albaha area located in the southwest of Saudi Arabia. Part of the data was obtained from a child health educational campaign performed under the supervision of the department of pediatrics faculty of medicine University of Albaha, the rest of the data was collected from six schools of different levels which were chosen randomly. Collection of the data was achieved through a pre-structured questionnaire fulfilling the following points:

1. Sociodemographic data.
2. Frequency (per week) and duration (per day) of VG playing.
3. Type of VG and type of the device used and the most preferred VG.
4. The behavior of playing: playing alone or with friends, online or offline, etc...
5. The appearance of any behavioral problems e.g. (attention deficit).
6. Development of violence or aggressive behavior.
7. Influence on the child's sleep.
8. Effect of playing VG on school performance.
9. Excessive eating during VG (appetite change).
10. Feelings while playing VG or if prevented from playing it.

The questionnaires that were filled during the child health campaign were interviewer-introduced being filled by trained medical students through direct interview with the parents and their children using hard Arabic copies of the questionnaire after getting informed consent to participate in the study. While those which were filled in the schools were self-introduced being distributed to the students who were instructed to pass it to their parents to fill it together with them, then to bring it back thereafter. The study sample size was 303 children. The filled questionnaires were collected and retranslated back to the English language.

Analytical Methods

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) program, version 25, data were considered to be statistically significant when P-value ≤ 0.05 .

Ethical considerations

1. Informed consent was taken from the participants.
2. Ensure the privacy of the participants and using the data only for research legally and ethically.

3. RESULTS

303 children participated in the study, their sociodemographic data were shown in Table 1.

Table 1: Demographic data, n= 303

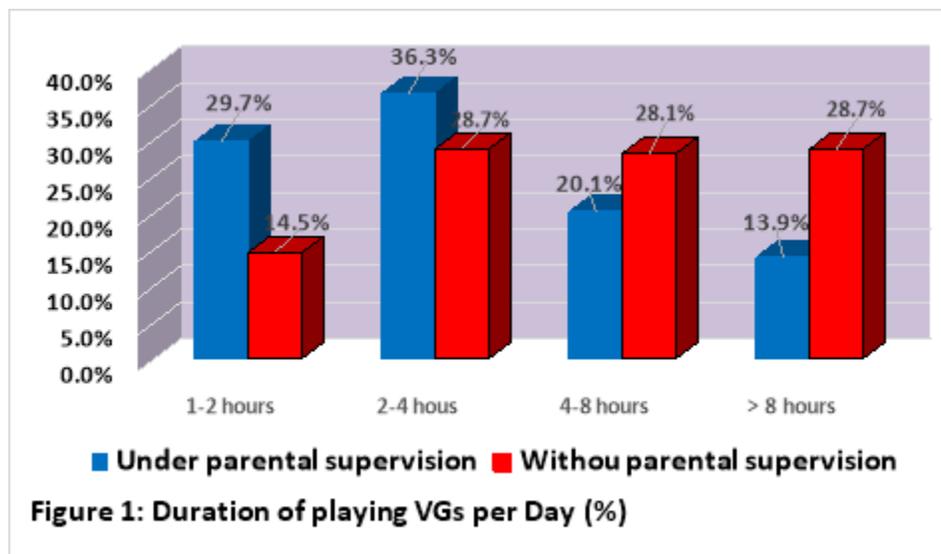
Pattern	Frequency / Percentage (No/%)
1. Gender:	
Male	230(75.9)
Female	73(24.1)
2. Age group:	
4-5	5(1.7)
6-11	68(22.4)
12-14	91(30)
15-17	139(45.9)
3. Educational level	
Kindergarten	7(2.3)

Primary school	78(25.7)
Intermediate school	145(47.9)
High School	73(24.1)

The prevalence of video games was found to be 99.3% among the studied population. 99% of the participants reported owning a device for playing VGs while only 1% used to play with other family member device. The most commonly used device for playing VGs was PlayStation in (30%) of the cases followed by Smartphone and then I pad.

On assessing the frequency of playing VGs during the week almost 50% reported that they used to play VGs every day while 41% used to play it only at the weekend and the remaining 9% played VGs less frequently.

Concerning the period (in hours) of playing VGs during a whole day, it was found to differ based on whether they are observed by the parents or being left without parental supervision in which the duration is prolonged as shown in figure 1.



The most common played type of VGs among the participants was strategic war games, followed by the adventure games and then sport/racing games.

Regarding the favorite VG among the participants, Fortnite was found to be the most preferred game for about one-third of the participants followed by PUBG (both of them are strategic war game), and then FIFA (sport football game).

The attitude and practice of the participants towards playing video games were assessed by using five parameters: preferring to play alone or with friends, playing online or offline, studying and doing homework Vs playing VGs, playing outdoors with friends Vs playing VGs, and establishing a new friendship with others while playing online. The results were shown in Table 2.

Table 2: Attitude and practice towards VGs (n= 303)

No	Item	Response	
1.	Playing alone or with friends	Alone No.(%)	With friends No. (%)
		80 (26.4%)	223 (73.6%)
2.	Playing online or offline	Online No(%)	Offline No.(%)
		156 (51.5%)	147 (48.5%)
3.	Preferring studying and doing homework or playing VGs	Studying No.(%)	Playing VGs No.(%)
		122 (40.3%)	181 (59.7%)
4.	Playing outdoors with friends or playing VGs	Playing outdoors No (%)	playing VGs No.(%)

		164 (54.1%)	139 (45.9%)
5.	Making a new friendship with others while playing online	Yes	No
		No.(%)	No.(%)
		163 (53.8%)	140 (46.2%)

Concerning the negative effects that associate playing video games, it was found that video games have led to violence and aggressive behavior in 25 % of the participants (Of these 85.7% were males and 14.3% were female), whereas 42.6% reported that they feel pleasure as they are watching violence in VGs. While 113 participants (37%) of the participants reported that they used to eat a lot while playing VGs, on assessing their BMI about 22% of them (25 participants) were found to be overweight or obese. The most common type of food they consumed during VGs was reported to be fast foods, soda and snacks respectively (Table 3).

Table 3: Negative impact of VGs (n= 303)

No	Item	Response	
		Yes No.(%)	No No.(%)
1.	Violence and aggressive behavior associated with VGs	77 (25.4%)	226 (74.6%)
2.	Appetite and excessive eating during playing VGs	113 (37.3%)	190 (62.7%)

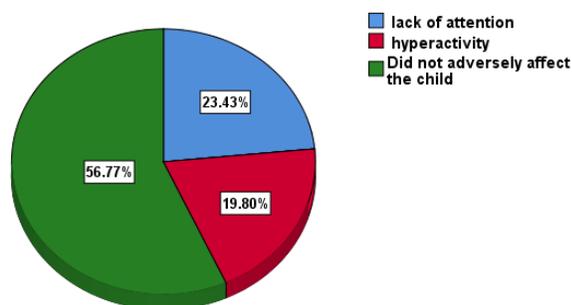


Figure 2: Behavioral and Psychological effect of videogames

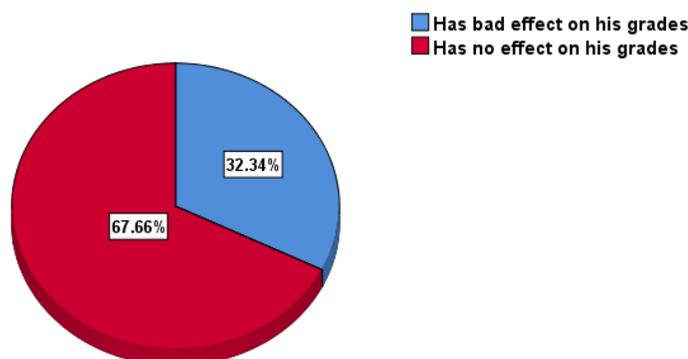


Figure 3: Effect of video games on School performance

About 23% of the video gamers were reported to suffer from lack of attention while 20 % of them developed hyperactivity and the remaining 57% exhibited no behavioral or psychological problem (figure 2).

Regarding the effects of VGs on school performance, 32% of the parents reported that VGs adversely affect the school performance of their children rendering them score low grades, while the remaining two-thirds reported that it hasn't affected their school grades (Figure 3).

Studying the effect of VGs on the child sleep yielded that in 45.5% of these children the sleep pattern was changed, and they become used to stay awake for a late time at night (insomnia) whereas the rest of them showed no change in their sleep (Figure 4).

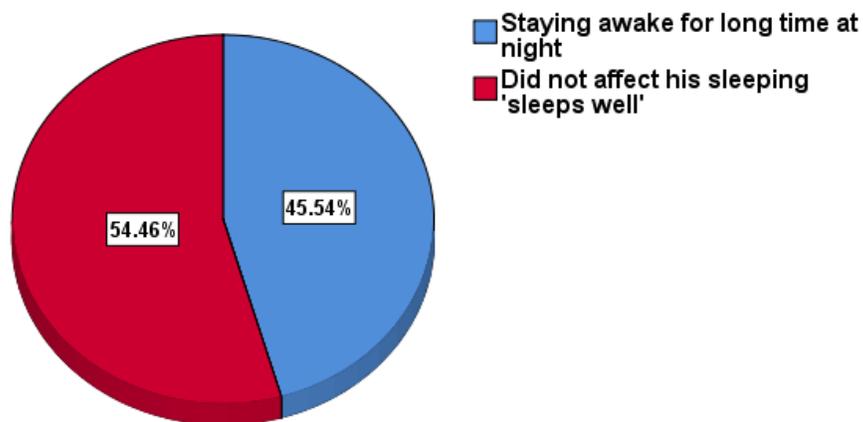


Figure 4: Effect of video games on the child sleeping

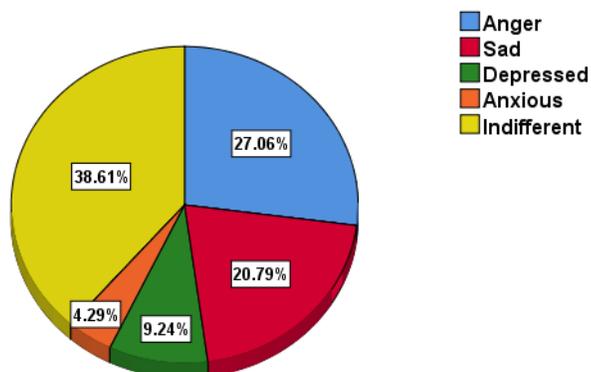


Figure 5: Participants' reaction to VGs withdrawal

Some children may experience addictive effect towards VGs this was assessed in this study using two criteria: the time that the player spends playing VGs (assessed by a four-point scale that measures the average played hours per day), and the post-withdrawal state of the player (when they were punished by their parents prohibiting them from playing VGs), (Figure 5). Regarding the time spent in playing, addiction usually occurs in heavy gamers as (Liu, 2014) demonstrated in his study that heavy gaming is a frequent symptom and a considerable indicator of game addiction. Heavy gamers definition is based on the time played per day in

some studies (Yilmaz et al., 2018) as well as in this study it was implied for those who used to play VGs four or more hours daily while other studies claimed that it is playing for 5 or more hours a day. Our study revealed that the rate of heavy gamers was 20.1% of which (75.4% were males and 24.6% were females) and about 29.5% of these heavy gamers may have addictive behavior representing 5.9% of the total participants (of these 60.1% were males and 39.9% were females) and 88.9% were adolescents and 11.1% were children. These results support the idea that VGs are possibly addictive, but because we did not use all the criteria for fulfilling addiction this should be addressed and applied in future studies.

4. DISCUSSION

The prevalence of VG playing was found to be high (99.3%) compared to prevalence in other countries as a study in Singapore (Choo et al., 2010) estimated the prevalence of VG to be 82.6%, and another study performed in India showed that 83.75% of the participants used to play VGs (Khalil et al., 2019). This variation may be attributed to the high socioeconomic status of the Saudi community as well as widespread and easy internet accessibility.

Our study showed that VGs playing adversely affected school performance in approximately one-third of the participants this is similar to other studies as (Chen et al., 2019) who showed that increased time of playing VGs is associated with decreased academic performance for young children and active gamers, while it contradicts the finding of (Hastings et al., 2009) who found that playing specific video games, such as educational games, may positively influence learning process outcomes, in form of good school achievements and fewer attention problems.

This negative effect on school performance in males was more marked among intermediate school students (45.1%) compared to primary school students (33.9%), secondary school students (17%), and kindergarten (20%) this difference was found to be statistically significant (P . value = 0.03).

Results also showed that playing video games affects the participants' sleep adversely especially males (49.6%) compared to females (32.9%) this difference was statically significant (P . value = 0.01). This finding was consistent with (Cain and Gradisar, 2010) study which reported that usage of different types of electronic media by children and adolescents *does* have adverse effects on their sleep, and so does having electronic media devices in their bedrooms, while (Wolfe et al., 2014) went to the degree that a single night VG play by an adolescent cast a negative shadow on his/her sleep and attention.

Excessive playing of video-games which have become a widespread entertainment among children and adolescents nowadays may lead to an increase in weight by occupying most of the free time of children leading to a significant decrease in outdoor physical activities of children hence sedentary life (Salih et al., 2020), or by enhancing the appetite as (Siervo et al., 2013) demonstrated that the effect of playing VGs on appetite perceptions was more markedly increased in violent VGs because the satiety values decreased rapidly to the baseline values, resulting in a tendency for sweet food. Our study results support this fact by finding that 37% of the participants have increased appetite and used to eat during playing VGs, of these 22.1% were either overweight or obese.

In this study, we found that one-quarter of the VGs player showed violence or aggressive behavior with a statistically significant difference between male and female students being more predominant among males 28.7% compared to females 15.1% (P . value = 0.02). This was similar to (Dill and Dill, 1998) who reported that there was increasing data from high-quality experimental studies as well as nonexperimental evidence which proposed that there was an increase in aggressive behavior, affect, and cognition in response to short-term exposure to VGs and virtual media violence.

The prevalence of addictive effects of VGs in the studied group was low (5.9%) in comparison to (Miezah et al., 2020) who estimated the prevalence of video game addiction in Ghana according to the approach used ranging between 12.2% and 31.2%.

5. CONCLUSION

The prevalence of VG playing between children and adolescents in Albaha city is almost approaching 100%. VGs playing was found to predispose to the following negative impact in the studied group violence and aggressive behavior (25%), increase appetite and excessive eating (37%), behavioral problems as lack of attention (23%), and hyperactivity (19%), decreased school performance (32%), sleep disturbances as staying awake for a late time at night (45%), and semi-addictive effect (5.9%).

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Authors' contribution to the research

Elfatih Mirghani Mohammed Salih: (The principal author) preparation and finalization of the proposal and questionnaire, Analysis of the data using SPSS, Writing the final article, Finalization of the manuscript.

Ahmed Hassan Saeed Alghamdi: Idea of the paper, Analysis of the data using SPSS, contribute to writing the article.

Ali Yahya Barakat Alzahrani: Participate in writing the proposal, collection of the data, entering the data to the SPSS program, assisted in writing the article.

Hamid A.H. Alghamdi: Participate in writing the proposal, collection of the data, and entering the data to the SPSS program.

Fahad A. Saad Alghamdi: Participate in writing the proposal, collection of the data.

Al Aziz M. S. Alzubaidi: Participate in writing the proposal, collection of the data.

All authors read and approved the final manuscript.

Conflict of interests

The authors declare that there are no conflicts of interest.

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Ethical Approval code

This study was approved by the ethical committee faculty of medicine Albaha University under the approval code No. : REC/PEA/BU-FM/2019/0084.

Data and materials availability

All data associated with this study are available upon request to the corresponding author.

Peer-review

External peer-review was done through double-blind method.

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