

Impact Of Playing Video Games On The Social Behavior And Academic Performance Of Medical Student In Taif City

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Abstract

Background: videogames addiction is considered the main entertainment today for both children and adults. Prolonged use of video games resulted in addiction that had an adverse impact on the social behavior and academic performance. **Objective:** The current study aimed to assess the impact of video games on the social behavior and academic performance among females' medical students at Taif university, Saudi Arabia.

Methods: A cross-sectional questionnaire-based study was carried out using an online questionnaire. A sample random technique was used to select the participants. Data was analyzed using (SPSS program, version 22.0.). For the qualitative data, frequency and percentages were presented in tables. *P*-value <0.05 was considered significant.

Results: Out of 267 participants, 66.29% addicted video games and most of them were at the 3rd year of study (26.3%), while 93.94% who addicted video games were at the 1st year of study. Age, year of study, parents' education, income, living alone were considered the most prevalent factors significantly associated with video games addiction. Both social behavior and academic performance are negatively affected.

Conclusion: Age, family education, income, and living alone are associated with increasing spent time for playing, which in turn adversely impacted the social behavior and academic performance. More educational programs are required to increase people' awareness of the risks of video games addiction.

Keywords – Medical students, Taif, learning achievement, Video games addiction.

I. INTRODUCTION

Video games are considered as an important part of the modern technology and has become for many people an integral part of their lives [1]. Video games are games that are played through different electronic sources, such as; smart phone, console, or a computer, and it became as a popular source of entertainments and well-being, and leisure activity among individuals with different ages, especially children and adolescents worldwide [2, 3]. Fighting, adventures, puzzles, strategy games, and sports are considered the most common kinds of video games [4], which attracted the youth' interest through several motivators, such as; discovery, filling leisure, curiosity, intelligence and talent developments, winning, and challenge [2]. Additionally, most individuals play games for relaxation, social interaction, stress relief, mentally escaping from the real work, and enjoyment [5].

Approximately, a billion individual around the world play video games and the number has grown dramatically since 1958 by initiation of tennis development [6]. This increment might be attributed to the rapid growing portable devices, such as; iOS and android-powered devices, and social media (Facebook) [7]. It was reported that high percentage of adolescents (from 59 to 73%) play video games on any given days [8]. In Saudi Arabia, almost 73% of the general population, who aged from 12 to 65 years used computer devices [9]. In USA nearly, 81% of American adolescent aged from 18 to 29% play video games once/month and 9% among those who aged from 8 to 18 years old are considered pathological users [10]. In another study, 97% of American youth play video games [1], and another study reported more than half of American adults play video games [11]. In 2000, video games consumed more than \$5.6 billion that reached up to \$30.4 billion in 2016 [12].

Most people thought that video games are made only for entertainment, but recently, several elements were embedded, such as; compelling storylines, sophisticated gameplay systems, simulation of social interactivity, and realistic imagery, which play a vital role in promoting the autonomy of learning and acquiring different kinds of knowledge [13]. While, an excessive use of video games for prolonged time may resulted in video games addiction [14], that negatively disturb the person's sleep pattern, more interruption during sleep, which in turn could impair academic performance/achievements [15]. Additionally, video games addiction might cause anxiety, depression, cognitive, and neurological disorders. Also, a significant change was showed in the brain area that responsible for decision making and impulse control regulation. Therefore, addicted video games are more likely to have poor social skills and self-control and exhibit aggressive attitude and behaviors (hostility and anger) [16].

Additionally, a previous study reported that violent video games reduced the educational level among boys, who had an aggressive behavior [17]. Several studies that were conducted in different countries among adolescents who frequently use video games for long-term and showed a high risk of negative psychosocial outcomes, such as; musculoskeletal pain, obesity, decreased levels of physical activity, stress, and headaches [18]. Despite the widespread use of electronic games among children and adults in Saudi Arabis for several hours which decrease the studying hours, few studies investigated its impact on the social behavior and academic performance among university students, especially in Taif city. Therefore, the present study aimed to assess the impact of playing video games on the social behavior and academic performance of females medical students in Taif university.

II. LITERATURE REVIEW

Saquib et al. [16] carried out a cross-sectional study in Buraidah, Al-Qassim region, Saudi Arabia, using a self-administrated questionnaire to assess the prevalence of video games addiction and its impact on high school students' mental health. The study results showed that there was no significant difference regarding participants' gender, who were with a mean age of 15.3 ± 1.3 (years). Approximately, 32% of the participants were obese, while 45% were physically active, and 20% slept less than five hours per night. Out of 276 respondents, 15.8% reported their video games addiction, more than half of them 54% had physiological distress, and 75% had screen time more than two hours per day. A significant association was found between video games addiction and physiological distress (OR= 4.1, 95% CI= 1.80, 9.47). Other demographic data, such as; female gender, shorter sleep hours, and higher screen time were significantly correlated with video games addiction and physiological distress.

Awadalla et al. [19] conducted a cross-sectional study in Abha city, Saudi Arabia to describe video game pattern and the most associated risk factors among secondary school adolescents. The prevalence of video games was very high, 80% of the participants played video games and they started at the age of ten years old. More than two-third (76%) played video games, 93.7% played it for fun and excitation, and 92.3% played to get rid of leisure and boredom. The majority of the participants showed that video games negatively affected on their sleep time (69%), physical activity (64%), and 59% showed disturbance mealtime. A significant lower academic performance was reported among students who played video games ($P=0.001$). The prevalence of some risky behaviors (violence, significant RTA, traffic rule violations) and smoking were highly associated with video games ($P<0.05$).

Another previous study [2] was carried out in Makkah, Saudi Arabia, to investigate the experiences of middle school students with video games using online questionnaire. A significant association was reported between the hours spent playing video games and the academic performance of students (GPAs). Knowledge, discover, and competition were the most motivators for playing video games. Males showed a higher positive attitude than females regarding video games. Aliefendic

[20] carried out a study among 156 students who were at the fifth year of study to assess the effect of math educational video games on students' academic performance. A positive correlation was reported between the time they spent playing these educational games and their final score at the exam. It was reported that by increasing playing time, students achieved high scores, which means that their learning performance improved by increasing the time spent in playing and earn more points.

Eskasasnanda, [21] conducted a study to assess the effect and causes of video game addiction among Junior-Senior High School Students. This study revealed that most students play video games due to several causes, such as; escape from pressure, video games are modern, varied, and realistic. Additionally, they played to decrease and relieve their fatigue that arise from studying, but after a prolonged playing they addicted video games and couldn't give away and stop playing. Which in turn adversely impacted their academic achievement. Al-Hadlaq [22] reported that almost 73% of the study participants showed that playing video games negatively affected their academic achievements, while higher percentage of the participants (80%) reported a positive effect of playing video games on their learning achievements.

Alharbi [23] carried out a study in Saudi Arabia to assess the effect of educational video games on the learning achievement among male students in mathematics subject. The study results showed significant differences between using these educational video games among students or not using it regarding the academic achievements. Therefore, it was recommended that integration/implementation of the educational games into teaching process in the classrooms as a modern technique of teaching procedure to improve the students' performance. Hsu and Chion's [24] showed that most students who are enrolled in science program, played video games more than four hours/week (76%) exhibited a positive attitude.

Clark and Ernst [25] reported that majority of the students (77%) indicated that agreement on integration of video games in teaching process to increase the academic performance of the students in several subjects, such as; mathematics, science, and technology. Additionally, 72 % of students agreed that using video games or computer to perform classroom assignments could improve student learning.

Sadiq [26] reported that implementation of online video games as a teaching procedure in classrooms had a significant effect on the students' learning. Additionally, Lee and Kwon [27] recorded a higher academic achievement among students who played video games in classroom, compared to those in a traditional classroom condition without video games. Rajab et al. [5] carried out a cross-sectional study in Al-Qassim, Saudi Arabia to assess the relationship between video games addiction and the degree of stress among undergraduate students from grade 7 to grade 12. The study results showed that only 5% of the participants addicted video games and 11.4% showed a high level of stress. There is a positive correlation between stress degree among the students and their video games addiction. Those who are in a higher grades and female gender, inactive lifestyle, poor grades are considered the most common factors related to stress that in turn increase their desire to play for a prolonged time.

Shirley et al. [11] conducted a cross sectional study in Chennai among medical students of tertiary care hospital using pretested questionnaire for collecting data. Approximately 46% of the participants play video games during night hours and the most common games was adventure and racing games (54.1%). Video games addiction are associated with several problems, such as; sleep disorder, betting, risky stunts, using bad words. Also, other health problems are observed among 46% of the participants, such as; eye, wrist, neck, and finger pain due to prolonged use of video games. Other study agreed with these findings and reported higher aggressive among persons who play violent video games [28]. Additionally, Mikki et al [29] reported that 84.92% of the study participants play more violent video games.

Granic et al. [30] reported that video games addiction had a positive effect on motivational, social, cognitive, and emotional well-being. Other effects of video games addiction (outcome and the mental health) are studied by several studies [31].

Mei et al. [32] conducted a cross-sectional study to compare between students with disorders due to video games addiction and those are without disorder. It was reported that sleep disturbance, poor grades, skipped school, endorsed feeling are the most common disorders due to prolonged use of video games. Other studies agreed with these results [33-35].

Wright [36] carried out a study to determine the impact of playing video games on the academic performance regarding GPA. The study was conducted using a survey that was distributed among 198 participants. After filling out a Gaming Habits Survey, data was collected and analyzed using a series of one-way ANOVAs. The study results found that there was a significant effect of videogames player' GPA ($p\text{-value} < 0.01$) for the two conditions of player versus non- player [$F(1, 169)$]

= 7.08, $p = .009$]. Comparisons using descriptive statistics indicated that the mean GPA score for the player condition ($M = 3.2$, $SD = .51$) was significantly different than the non-player condition ($M = 3.4$, $SD = .47$). These results showed that participants who played video games had a significantly lower GPAs than participants who didn't play video games.

Jaruratanasirikul Wongwaitawee Wong, and Sangsupawanich [37] found that the excessive playing of video games (five hours or more per session) resulted in school grades that were below a 3.00 average, and that time spent playing was a predictor of academic performance. They also suggested that video games indirectly lead to decreased performance through promoting violence. Finally, they noted that playing video games took time away from school activities, homework, social interaction, etc. Smyth [38] studied the difference between playing massively multiplayer online role-playing games (MMORPG) and playing other types of video games and found that even though the MMORPG group reported greater interference in academic work (such as skipping homework, missing a class, etc) as opposed to the other groups, overall the groups did not differ in academic performance. Smyth [38] suggested that complex games may lead to academic success by engaging players in problem solving, critical thinking, and creativity. Hart et al. [39] used the Problem Video Game Playing survey to measure four different areas of life, including academic behavior, impacted by the playing of video games and suggested that there was not a significant correlation in any area. Skoric et al [40] found that while game addiction leads to negative academic performance, moderate engagement in gaming can lead to improved performance in an academic setting. They found a positive correlation between game play and English test scores, which suggests that gaming can lead to better test scores.

A study done by Din & Calao [41] showed that students who played educational video games on the Sony Lightspan, which is a game system similar to the Sony Playstation One, made significant increases over the control group in the learning of spelling and reading; however, no significant gain was made over the control group in math. This suggests a facilitative role of playing video games in developing verbal skills (2001).

III. MATERIALS AND METHODS

A cross-sectional questionnaire-based study was carried out among female medical students in Taif University, Saudi Arabia, to assess the impact of playing video games on their social behavior and academic performance. Also, to assess the association between students' demographic characteristics and video games addiction and explore the most common factors behind video games addiction. A systematic random sampling technique was used to select the participants of the study. The study included all Saudi' medical students in Taif city, while participants who were younger than 18 years old and non-Saudi, and non-medical students were excluded. A self-administrated modified questionnaire was developed (the questionnaire is used before in previous studies, but the author modified it), face and content validity, and a pilot study were done.

An online self-administrated questionnaire was disseminated and self-administered by each participant. The questionnaire included questions about socio-demographic criteria, age, current academic year, faculty of specialty, and academic performance. The questionnaire also included questions about participants' family (educational level, occupational level, and economic state). Additionally, the questionnaire included questions regarding the effect of video games on their academic level, such as; does your academic level was affected by video games addiction? Where do you usually play video games, computer or cell phone? How much time did you spend last week playing video and/or computer games? What kinds of games do you play (fighting, adventure, or street fighting games? Why did you play these games, mention 3 causes? Did you still find time to play when you are busy; for example, during mid-time? Do you think these games are educational? What do you dislike about playing video games, choose at most 3? Do you find time for yourself and your family and for family visits?

After obtaining permission from the participant and assuring their confidentiality, the participants were asked to fill out the questionnaire. At the end of the questionnaire, an email was provided for any inquiries about any unclear questions. All participants were asked to sign the consent at the first paper of the questionnaire before the commencement of data collection on Jan 2019.

A total of 267 persons were responded, and filled questionnaires were reviewed for completeness and accuracy before data entry. The data were analyzed using STATA 12 software (SPSS program, version 22.0. using descriptive statistics). For the qualitative data, frequency and percentages were presented in tables. P -value <0.05 was considered significant. All participants were informed that participation was entirely voluntary. Additionally, no name of them was recorded on the questionnaires, and all the personal information of participants was confidential reserved and kept safe. All necessary official

permissions were obtained from the ethical committee and director of family Medicine' program at Taif University before data collection.

IV. RESULTS

Table 1 represents the demographic data of the female medical students, Taif University. All of 267 female students participated in the study in the ages between 18 to 22 years old with a mean age of (Mean $\pm$ SD) 21.1 $\pm$ 3.1. Most participated students in the study were at the third year of study (26.3%), followed by the fifth year (23.8%), the fourth year (21.8%), the second year (13.4%), and the lowest percentage of students participated in the study was from the first year (11.24%). The majority of participants were belonging to Medicine college (33.84%), followed by 26.22% from college of Pharmacy, 23.2% from faculty of Nursing, and 18.73% were from other faculties.

Table 1: Demographic data of the participants

	Description (267)
Age Range Mean $\pm$ SD	 18-22 21.1 $\pm$ 3.1
Current academic level 1 st year 2 nd year 3 rd year 4 th year 5 th year	 30 (11.24%) 74 (13.4) 145 (26.3) 120 (21.8) 131 (23.8)
Faculty of Specialty Medicine Pharmacy Nursing Others	 85 (31.84%) 70 (26.22%) 62(23.2%) 50(18.73%)

Table 2 shows the demographic data of the participants' families. More than half of the participants their parents married (53.18%), 33.33% divorced, and 13.48% widow. Regarding father's education, 38.57% of the participants, their fathers had a university degree or higher, while 32.21% of fathers are illiterate (read and write), 20.22% of students their fathers completed their secondary school, and few numbers had only basic education (8.98%). On contrast to fathers, majority of mothers were illiterate (34.08%), followed by 32.95% completed the basic education, almost quarter of them got a university degree (25.09%), and 7.68% completed secondary school. Regarding the economic state of the participants' families, the highest percentage (34.83%) had a monthly income ranged between 5000 to 10,000 RS, 28.84% had more than 15,000 RS, 23.22% had a salary from 10,000 to 15,000 RS, and only 13.11% of the families had income less than 5000 RS. Most students (92.13%) living with their families, while 7.8% live at the university housing.

Table 2: Demographic data of female students' families, Taif University.

	Description (267)	Percentage %
Social status		
Married	142	53.18%
Divorced	89	33.33%
Widow	36	13.48%
Father education		
Illiterate/read and write	86	32.21%
Basic education	24	8.98%
Secondary	54	20.22%
University or more	103	38.57%
Mother education		
Illiterate/read and write	91	34.08%
Basic education	88	32.95
Secondary	21	7.86%
University or more	67	25.09%
Family income		
< 5000 RS	35	13.11%
5000–10,000 RS	93	34.83%
10,001–15,000 RS	62	23.22%
> 15,000 RS	77	28.84%
Living arrangement		
Living with family	246	92.13%
University housing	21	7.8%

Table 3 represents the pattern of video games addiction among female medical students. Out of 267 participants, 69.66% showed that their academic performance adversely influenced by video games addiction. Most students (66.29%) usually play video games using smartphone, 40.07% spent some hours for playing video games, and 32.95% played all day. Concerning the type of video games, approximately similar percentages of the participants played most of video games, such as; street fighting games (36.33%), fighting games (32.21%), and adventure games (31.46%). In term of the reason behind playing video games, 24.72% played when feel boring, 22.85% showed that they like the relaxation and recreation, and 19.85% of the participants reported that it's a great feeling to master or finish a game. Additionally, 17.97% wanted to challenge their mind, 9.36% though that playing video game improve their hand-eye coordination, and 4.49% stated that they like the escapism. Whereas the students were asked if they still find time to play when they are busy (e.g., during midterms), 51.31% answered "Yes" they can't stay away, while the other (48.68%) answered "No" university comes first. Approximately half of the participants (50.56%) reported that the video games didn't educational games and they should read books all those years. On the other hand, 49.44% thought these games are educational or else all their years of playing have gone to waste. Concerning what the participants didn't like about playing video games, most of them (38.20%) stated that it waste/take up too much

money, 29.21% due to its costs, and 17.6% reported that it requires to learn too much rules. Other students reported other reasons for dislike video games, such as; due to boring, frustrating, and their friend don't play (6.36%, 4.86%, and 3.37%, respectively). majority of the participants (67.79%) didn't find time for their life, family and relatives' visits, while 32.21% found time between playing.

Table 3: Pattern of video games addiction of female students, Taif University

	Description (267)	
	Frequency	Percentage
Did your academic performance was influenced by videogames addiction?		
Yes	186	69.66%
No	72	26.96%
Sometimes	9	3.37%
Where do you usually play videogames?		
On a computer	69	25.84%
Smartphone	177	66.29%
Others	21	7.86%
How much time did you spend last week playing video and/or computer games?		
Full day	88	32.95%
Hours	107	40.07
Little time	44	16.48%
No times	28	10.48%
What types of games do you play?		
Fighting	86	32.21%
Street fighter	97	36.33%
Adventure	84	31.46%
Why do you play the games you checked above? (Choose at most 3)		

I like the relaxation and recreation	61	22.85%
I like the escapism	12	4.49%
It improves my hand-eye coordination	25	9.36%
It challenges my mind	48	17.97%
It's such a great feeling to master or finish a game	53	19.85%
I'll play anything when I'm bored	66	24.72%
Other:	2	0.75
Do you still find time to play when you're busy (e.g., during midterms)?		
Yes (can't stay away)	137	51.31%
No (University comes first!)	49	48.68%
Do you think video games are educational?		
Yes (or else all my years of playing have gone to waste)	132	49.44%
No (I should have been reading books all those years)	135	50.56
What don't you like about video game playing?		
Choose at most 3		
It takes up too much time	102	38.20%
It costs too much	78	29.21%
It's frustrating	13	4.86%
It's boring	17	6.36%
My friends don't play	9	3.37%
Too many rules to learn	47	17.60%
Other	1	0.374
Do you find still find time for yourself, family, and relative' visits?		
Yes (I find time for them between play)	86	32.21%

No (Play but I can't find time for my life)	181	67.79%
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Table 4 shows the relation between socio-demographic data and video games addiction. A significant association was reported between the age and video games addiction (p -value=0.001) and 66.29% among the participants addicted playing video games. Also, there are a highly significant association between the study year and video games addiction (p -value=0.000) and most students who addicted video games were at the 1st year of study (93.33%), while the lowest percentage of addiction was observed among the fourth year of study (53.33%). Parents' education was significantly associated with addiction (p -value=0.000), higher percentage of the participants who addicted video games their parents (father and mother) illiterate (90.69% and 92.31%, respectively). while the lowest addiction percentage were reported among students who their father and mother got a university degree (21.36% and 25.37%, respectively). Additionally, a significant correlation was found between family income and video games addiction (p -value=0.000), the highest percentage of addiction (89.61%) were reported among students whose family income more than 15,000 RS. Also, there are a significant association between living arrangement and video games addiction (p -value=0.000), 90.74% of the students who addicted video games are live in the university housing.

Table 4: Relation between video games' addiction and some socio-demographic features of female students at Taif University.

Degree of video games addiction			
	Number	Percentage %	<i>P</i> -value *
Age			
18-22	177	66.29%	0.001
Current academic year			
1 st	28	93.33%	0.000*
2 nd	66	89.18%	
3 rd	81	55.86%	
4 th	64	53.33%	
5 th	72	54.96%	
Father education			
Illiterate/read and write	78	90.69%	0.0042
Basic education	18	75%	
Secondary	18	33.33%	
University or more	22	21.36%	
Mother education			
Illiterate/read and write	84	92.31%	0.000*
Basic education	79	89.77%	
Secondary	9	42.86%	
University or more	17	25.37%	
Family income			
< 5000 RS	11	31.42%	0.000*
5000–10,000 RS	48	51.61%	
10,001–15,000 RS	51	82.26%	
> 15,000 RS	69	89.61%	

Living arrangement

Living with family	56	22.76%	0.000*
University housing	19	90.47%	

p value was calculated using the chi-square test

*Significant at $p < 0.05$

Table 5 represents the relation between pattern of video games addiction and its effect on their social behavior and academic performance. Video games addiction significantly affected the academic performance ($p=0.001$) and a significant association was found between video games addiction and the time spent for playing ($p=0.002$). Video games addiction are significantly correlated with the students' thinking that these games are educational ($p=0.0043$). A highly significant association was found between video games addiction and the social behavior of students ($p=0.001$), personal life of 67.79% students negatively affected by video games addiction regarding their relations with their family and their relatives.

Table 5: The relation between pattern of video games addiction and its effect on their social behavior and academic performance

	Degree of video games addiction		
	Frequency	Percentage	P value
Did your academic performance was influenced by videogames addiction?			
Yes	186	69.66%	0.001
How much time did you spend last week playing video and/or computer games?			
Full day	88	32.95%	0.002
Hours	107	40.07	
Do you think video games are educational?			
Yes (or else all my years of playing have gone to waste)	132	49.44%	0.0043
No (I should have been reading books all those years)	135	50.56	
Do you find still find time for yourself, family, and relative' visits?			
Yes (I find time for them between play)	86	32.21%	0.001
No (Play but I can't find time for my life)	181	67.79%	

V. DISCUSSION

Nowadays, video games are considered as the most popular games used among children and adolescents for entertainment. Prolonged playing video games are associated with some neurological, emotional, and psychological problems and the scope of the problem increased by introducing of online components. Additionally, video games addiction adversely impacted students' academic performance and their social behaviors. Therefore, the current study aimed to assess the impact of playing video games on the social behavior and academic performance of females' medical students in Taif university. The study results showed a higher prevalence of video games addiction among female medical students at Taif university (66.29%). Another previous study conducted in Abha, Saudi Arabia among girls and reported a higher prevalence of video games addiction (53%) which agreed with our results [42].

The study results showed that the participants age ranged between 18 to 22 years and there was a positive correlation between age and addiction ($p=0.001$). Most of the participants were at the 3rd year of study (26.3%), and majority of them were from college of Medicine (31.84%). Majority of students who addicted video games were at the 1st year of study (93.33%) with a significant association ($p=0.000$). These results are disagreed with another previous study in Taif university, Saudi Arabia [43] who reported that most students who addicted smart phones for playing video games and/or educational purpose were at the sixth year of study, which in line with another study in Saudi Arabia [44]. In the present study, video games addiction commonly observed among the students at the 1st year of study, while the addiction dramatically decreased by increasing their academic year which might explained the positive association between students' age and video games addiction. Alsalameh et al. [45] found that a significant association was reported between smartphone addiction and age and the academic year level. Regarding the family demographic data, there was a significant association between video games addiction and family features. Majority of female students who addicted video games are belonging to families at which most fathers and mothers are illiterate, had high income salary ($> 15,000$ RS), most of parents are divorced (broken families), and high percentage of students live in the university housing (90.47%). Therefore, parents' education, family income, marital status of the parents, and living arrangement are considered the most common factors strongly associated with video games addiction. These results are in line with several studies, it was reported that gamed addiction is more likely to be more common among individuals of broken families, compared to intact families [5]. Additionally, the same study reported that living alone is a major factor increased the stress among the adolescents that in turn increase their desire to play video games [5]. It was reported that internet addiction in play games or entertainment might be related to the desire to alleviate the sense of loneliness [46,47]. These results are supported with another previous study which reported that a higher prevalence of video games addiction was reported among students whose families had a higher income level [48].

The present study showed that 69.66% of the participants showed the adverse impact of video games addiction on their academic performance. Also, 49.44% believed that video gamed are educational, while 50.56% didn't believe and admitted that they it's better to read books rather than playing video games. Additionally, 66.29% of the participants used smartphones for playing video games and spent prolonged time for playing (hours or all day). These results are in line with a previous study that reported a poor academic performance among patients who addicted video games and spent more hours for playing [2]. Also, another study reported similar results and found that that video games adversely affected the learning achievements among 73% of the students [24]. Other studies agreed with our results and showed poor academic achievement and low GPA among students who addicted playing video games [11, 49]. On contrast to our results, other studies reported a positive association between addiction video games and good academic performance [50]. These studies reported that students who play video games more than 20 hours/week, had a higher GPA (A). This might be returned to that playing video games might stimulate students' brain that increase their mental abilities and could achieved good GPA [50]. Another study reported that playing video games increase students' intelligence quotients (IQ), improve the logical thinking, collaboration, and decrease stress [2].

Most students preferred playing street fighter, fighting, and adventure games. In addition, majority of them play video games due to feeling of boring, like relaxation, escapism, like to challenge their mind, had a desire to finish a game, and to alleviate stress. A previous study reported similar results and stated that most video games player are distressed, compared to who non-addicted video games [16]. The participants of the present study couldn't find time to themselves, to visit their families or their relatives, therefore video games addiction not only negatively impacted the academic performance, but also had an adverse impact on their social behavior. A negative correlation was reported in several studies between video games

addiction and social interactions/relationships. It was reported that most individuals who addicted videogames showed lower social skills [51]. This might be interpreted with most persons had a fear of real social contact/interaction and couldn't face social situations, so they prefer to contact with other persons virtually through playing video games, according to [52]. Additionally, it was indicated that spending a prolonged time on the internet/playing games had a negative impact on the ability of person to communicate with other persons face-to-face, such as; their friends, parents, and their family members, so affected their social interaction [53]. Other studies reported violent/aggression behavior among individuals who addicted video games [54].

VI. CONCLUSION

In the present study, the prevalence of video games addiction was high among female medical participants, who spent more hours for playing. Video games addiction decreased by increasing the age which was observed by increasing the academic year of study, the participants' addiction decreased at the fifth year compared to the first year of study. The prevalence of video games addiction is highly associated with age, parents' education hence the highest number of players had illiterate parents, especially the mothers. Also, family income and living alone away from the family increased video games addiction. Video games addiction adversely impacted the academic performance of most students and negatively affected their social behavior. Most of them didn't have time for themselves, families, and their relatives. More educational programs/ training courses are essential to increase the awareness of the population about the risk of video games' addiction and how to manage its use. Also, more studies are required to explore the best management for using these video games and convert it to be educational.

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