The relationship between playing computer or video games with mental health and social relationships among students in guidance schools, Kermanshah

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العلاقة بين ممارسة ألعاب الكمبيوتر أو الفيديو والصحة النفسية والعلاقات الاجتماعية بين طلاب التوجيه في كرمان شاه، جمهورية إيران الإسلامية

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الخلاصة: تعد ألعاب الكمبيوتر والفيديو من الأنشطة الترفيهية الشائعة بين كثير من الناس، وممارستها قد تستغرق قدراً كبيراً من أوقاتهم، وقد هدفت هذه الدراسة للمقطع العرضي إلى تقييم العلاقة بين لعب هذه الألعاب والصحة النفسية والعلاقات الاجتماعية بين طلاب التوجيه في كرمان شاه، بجمهورية إيران الإسلامية خلال عام 2012. وقد بلغ إجمالي عينة الدراسة 573 طالباً، واستخدم الباحثون فيها استبيان الصحة العام (GHQ-28) واستبيانات العلاقات الاجتماعية. وقد أفاد المجيبون عن الاستبيانات بإنهم يُمضون في المتوسط 71.07 دقيقة/ يوم (بانحراف معياري 72.1)، وأظهرت النتائج أن العلاقة بين الوقت المستغرق في اللعب والصحة النفسية العامة ($P < 0.04$) والاكتئاب ($P < 0.03$) ذات أهمية يعتد بها إحصائياً. وكان هناك أيضاً اختلاف كبير بين لعب ألعاب الكمبيوتر والفيديو وعدم لعبها وبين العلاقات الاجتماعية ودرجاتها الفرعية، ومنها عبر المناطق المحلية ($P < 0.0001$) وعلاقات الترابط ($P < 0.01$) بين جميع المشاركين. كما كان هناك ترابط يعتد به إحصائياً بين العلاقات الاجتماعية وبين الوقت المستغرق في لعب الألعاب في المجموعة المستهدفة ($P < 0.02$) وأبعادها المختلفة، فيما عدا العلاقات الأسرية.

ABSTRACT Computer or video games are a popular recreational activity and playing them may constitute a large part of leisure time. This cross-sectional study aimed to evaluate the relationship between playing computer or video games with mental health and social relationships among students in guidance schools in Kermanshah, Islamic Republic of Iran, in 2012. Our total sample was 573 students and our tool was the General Health Questionnaire (GHQ-28) and social relationships questionnaires. Survey respondents reported spending an average of 71.07 (SD 72.1) min/day on computer or video games. There was a significant relationship between time spent playing games and general mental health ($P < 0.04$) and depression ($P < 0.03$). There was also a significant difference between playing and not playing computer or video games with social relationships and their subscales, including trans-local relationships ($P < 0.0001$) and association relationships ($P < 0.01$) among all participants. There was also a significant relationship between social relationships and time spent playing games ($P < 0.02$) and its dimensions, except for family relationships.

Lien entre pratique des jeux vidéo sur ordinateur ou sur console, santé mentale et relations sociales chez des collégiens de Kermanshah

RÉSUMÉ La pratique des jeux vidéo sur ordinateur ou sur console est une activité de loisir populaire, à laquelle les utilisateurs consacrent une grande partie de leur temps libre. La présente étude transversale visait à évaluer le lien entre la pratique des jeux vidéo sur ordinateur ou sur console, la santé mentale et les relations sociales chez des collégiens à Kermanshah (République islamique d'Iran) en 2012. Notre échantillon total était composé de 573 collégiens. Nous avons utilisé le questionnaire de santé générale (GHQ-28) et des questionnaires sur les relations sociales. Les participants à l'enquête ont affirmé passer en moyenne 71,07 minutes par jour (ET 72,1) à jouer à des jeux vidéo sur ordinateur ou sur console. Il y avait une relation significative entre le temps de jeu et la santé mentale générale ($p < 0,04$) et la dépression ($p < 0,03$). Il existait également une différence importante entre le fait de jouer à des jeux vidéo sur ordinateur ou sur console et celui de ne pas y jouer avec les relations sociales et leurs sous-échelles, comme les relations translocales ($p < 0,0001$) et les relations de type associatif ($P < 0,01$), sur l'ensemble des participants. On a aussi constaté une corrélation significative entre le temps consacré au jeu dans notre échantillon ($p < 0,02$) et les relations sociales ainsi que leurs différentes dimensions, à l'exception des relations familiales.

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Introduction

Computer games are a popular leisure activity for many people of various ages in modern communities [1,2]. This has become a worldwide concern in the past three decades [3,4] because of their effects on physical and mental health of children and adolescents [2] and the part they play in young people's development [5]. One study showed that 97% of American adolescents aged between 12 and 17 years played a computer or video game, and 31% of teenagers played them every day [6]. The Islamic Republic of Iran is no different in this respect [7]. Studies show that young people play computer games more than 6 hours per week in the Islamic Republic of Iran [2]. There are various reasons that these games are popular in this country, including easy access, lack of copyright laws and lack of suitable sports facilities [7].

Playing computer or video games for long periods of time causes various physical, mental, social and even physiological problems, including aggression, obesity, social solitude [2,8], computer addiction, depression, isolation, anxiety [1,5] and aggressive behaviour [9–11]. These problems have also been found by researchers in the Islamic Republic of Iran [1,2,12].

However, other studies have shown that playing these games may also have benefits, such as enriching educational environments [8,13,14] and providing therapy [1,14,15], as they place young people in the role of decision-makers facing ever-increasing challenges. They also provide instant feedback, allowing them to experiment with different ways of problem-solving and learning.

The effects of these games vary, depending on factors such as age, the duration of the game, the level of violence and the ability of the player to distinguish between the fantasy world of the game and the real world [16]. There have been studies linking time spent apart from the family playing computer or video games and time spent alone on the Internet with negative effects on social relationships among users, such as feelings of sadness, loneliness and depression [4,17,18]. However, other researchers did not find any such negative effects [8,19].

Based on the increasing use of computer or video games among teenagers in the Islamic Republic of Iran and worldwide [2,7] and the results of the studies discussed above, we aimed to investigate the relation between using computer or video games with mental health and social relationships among female and male students in guidance schools in Kermanshah, Islamic Republic of Iran in 2012.

Methods

This was a cross-sectional research study from May 2012 to June 2012. The target community was male and female students aged between 11 and 16 years in guidance schools in Kermanshah, in the west of the Islamic Republic of Iran. According to the latest statistics from 2009, the population of Kermanshah city was 967 196 [20] and the number of students of both sexes was 34 711.

We selected a convenience sample of students (573) randomly and clustered by statistically estimating a formula (Cochrane's formula) concerning the design effect (1.5). Our target community was selected students from 13 schools in three different parts of Kermanshah.

Permission was obtained to collect data from the selected students and their parents. The researchers explained the purpose of the research to the managers of the selected schools to insure their cooperation and proper communication. Each student was questioned individually.

The students were given a questionnaire, which consisted of three parts. The first part was concerned with sociodemographic data such as:

- the student's age and sex;
- their parents' education;
- whether they had their own personal room, computers and consuls;
- the time they dedicated to playing computer or video games [2];
- the type of computer or video games played [21];
- the reaction of their parents to them playing computer or video games.

Time spent playing games was divided into four groups: "not played", 1–30 min/day, 31–90 min/day and 91–480 min/day; these were defined as "not played", "low", "moderate" and "much", respectively. The games were classified into three types: violent; exciting; and comic and sports.

The second part of the questionnaire was concerned with psychological data. Our tool for this part was the standard General Health Questionnaire (GHQ-28). The Goldberg test (GHQ-28) was used for screening psychological pathologies. This 28-item questionnaire consisted of four subtests, each including seven questions answered in Likert scale. The scoring was 0, 1, 2, 3 and the total score of the person ranged from 0 to 84. A low score showed better mental health. The reliability of this test, investigated in the Islamic Republic of Iran by three methods of test (retest, split-half and Cronbach's alpha), was 70%, 93% and 90%, respectively [22].

The third part of the questionnaire was concerned with social relationships and consisted of three subtests on student relationships:

- the first subtest was concerned with family relationships [23] and included five questions;
- the second subtest addressed translocal relationships [23] and included seven questions regarding face-to-

face relationships, such as relationships with friends and relatives, and mediator relationships using telephone and new technologies;

- the third subtest included five questions concerned with association relationships [23], including being a member of a sport's group, a Red Crescent group or attending religious or humanitarian gatherings.

The reliability of this researcher-built questionnaire was estimated via 58 students (10% of the total sample). They were not including in the study. The questionnaire's Cronbach's alpha was 81.3. The content validity of this tool was approved by five academic researchers who were experts in sociology, social relationships and social welfare. Factor analysis of the questionnaire of social relationships via statistical tests showed the validity of the applied instrument (Cayzer-Mayer test: 0.778; Bartlett's test: 163.57; 21 degrees of freedom; significance level $P < 0.0001$; collective variance 51.14; and Eigen value 3.58). The scores for family relationships and trans-local relationships ranged from 0 to 4. The association relationships score was scored as Yes (1) / No (0). The maximum score showed high relationship levels. All items were summed together to form a score as follows: the total family relationships, trans-local relationships and association relationships score was 20, 28 and 5, respectively. Data were analysed using *SPSS*, version 18 software and some tests such as one-way variance analysis (ANOVA), Fisher's least significant difference (LSD) test, *t*-test and Pearson correlation were used. Results were expressed as means with standard deviation (SD). Differences were considered to be statistically significant when $P < 0.05$).

Results

A total of 573 students (295 boys and 278 girls) participated in the study. As shown in Table 1, the average age of the respondents was 13.27 (SD 0.99) years. Of those parents who were educated, only 27% of fathers and 19% of mothers were educated above diploma level. The total mean time for playing computer or video games was 71 (SD 72.1) min/day, or 8.2 hours per week. The mean playing time was about 40 minutes more for boys than girls. In total, 47% of parents disagreed with their children playing computer or video games.

A total of 71% of our target community played computer or video games. The mean age when they started playing games was 8.96 (SD 2.47) years. The most popular (30.9%) type of game was comic and sport (Table1).

The mean score for general mental health status of all participants was 26.08 (SD 12.97) (Table 2); 41% of cases were healthy and only 12% had a mental health disorder. Based on Pearson correlation and *t*-test, there was a significant relationship between mental health and some demographic factors, including age ($r = 0.133$; $P \leq 0.003$) and sex ($P \leq 0.0001$); however, there was no significant relationship for the other variables listed in Table 1.

Based on the ANOVA test, there was a significant relationship between general mental health and depression and time spent playing games (P = 0.046 and P ≤ 0.03, respectively) (Table 2).

Regarding general mental health and its subscales, there was no significant relationship between those who played computer or video games and the control group. Also depression was lower in the group that played for a moderate time (31–90 min/day) at 4.11 (SD 4.83) in comparison with the other groups (Table 2).

The mean score for social relationship status among all participants was 23.74 (SD 7.52). The relationship between time spent playing games and social relationships and its subscales was significant ($P \leq 0.05$), except for family relationships ($P = 0.929$) (Table 3).

Based on Pearson correlation coefficient, there was a significant relationship between social relationships and the age of participants ($P = 0.021$; $r = 0.106$).

There was also a significant relationship between age and social relationship subscales, including family relationships ($P = 0.001$; $r = 0.148$), face-to-face relationships ($P \leq 0.02$; $r = 0.100$) and intermediary relationships ($P \leq 0.006$; $r = -0.124$), using Pearson correlation coefficient. There was a significant relationship between social relationships and both groups (played and not played games) ($P \leq 0.002$), so that social relationships were worse in the group who played.

There was also a significant relation between social relationships and some demographic factors, including sex ($P \leq 0.003$), father's education ($P \leq 0.017$) and mother's education ($P \leq 0.001$).

The difference in general mental health status in both groups (i.e. "played" and "not played" games) based on sex was significant ($P < 0.0001$ and $P < 0.02$, respectively). There was also, a significant difference based on sex in both "played" and "not played" groups regarding anxiety and insomnia ($P < 0.0001$ and $P = 0.019$, respectively); however, with regard to severe depression the difference based on sex was significant only for the group who played games ($P < 0.0001$) (Table 4).

There was no significant relationship between general social relationship status in both "played" and "not played" groups based on sex, but there was a significant relationship with regard to trans-local relationships in both the "played" and "not played" groups ($P < 0.0001$ and $P < 0.0001$) respectively.

Regarding the relation between "played" and "not played" computer or video games and social relationships, there was a significant relation with all subscales, except for family relationships ($P > 0.631$). Regarding family relationships and association relationships, the

Table 1 Demographic characteristics of participants and information about computer or video games

Variable	Girls (278) No. (%)	Boys (295) No. (%)	Total No. (%)
Age groups (years)			
11–12	71 (25.5)	45 (15.6)	116 (20.5)
13–14	185 (66.5)	213 (74.0)	398 (70.3)
15–16	22 (7.9)	30 (10.4)	52 (9.2)
Mean age (SD)	13.16 (0.95)	13.38 (0.92)	13.27 (0.99)
Educational level			
First, guidance	90 (32.4)	89 (30.3)	179 (31.3)
Two, guidance	92 (33.1)	117 (39.8)	209 (36.5)
Three, guidance	96 (34.5)	88 (29.9)	184 (32.2)
Having a private room			
Yes	166 (59.9)	165 (56.1)	331 (58.0)
No	111 (40.1)	129 (43.9)	240 (42.0)
Educational level of father			
High-school graduates	99 (36.3)	139 (48.3)	238 (42.4)
Diploma	96 (35.2)	69 (24.0)	165 (29.4)
Higher diploma	78 (28.6)	80 (27.8)	158 (28.2)
Educational level of mother			
High-school graduates	143 (51.4)	163 (55.4)	306 (53.5)
Diploma	81 (29.1)	76 (25.9)	157 (27.4)
Higher diploma	54 (19.4)	55 (18.7)	109 (19.1)
Having a personal computer			
Yes	137 (49.3)	170 (58.0)	307 (53.8)
No	141 (50.7)	123 (42.0)	264 (46.2)
Xbox and Play Station 3			
Yes	51 (18.4)	40 (14.0)	91 (15.9)
No	226 (81.6)	246 (86.0)	472 (82. 4)
Playing of computer or video game			
Yes (Played)	166 (59.7)	241 (81.7)	407 (71.0)
No (Not played)	112 (40.3)	54 (18.3)	166 (29.0)
Game type			
Violence	29 (10.4	52 (17.6)	81 (14.1)
Excitement	18 (6.5)	15 (5.1)	33 (5.8
Comic and sport	100 (36.0)	77 (26.1)	177 (30.9
Game time (minutes) [Mean [(SD)]	51 (54.8)	91.03 (81.01)	71.07 (72.1)
Age started to play games [Mean [(SD)]	9.07 (2.41)	8.91 (2.44)	8.96 (2.47)
Parental reactions to games			
Totally oppose	71 (25.7)	43 (14.6)	114 (19.1)
Oppose	63 (22.8)	97 (32.9)	160 (27.9)
Indifferent	84 (30.4)	49 (16.6)	133 (23.2)
Agree	42 (15.2)	60 (20.3)	102 (17.8)
Totally agree	16 (5.8)	14 (4.7)	30 (5.2)

SD = standard deviation.

average scores of teenagers who played games were higher than those who did not play ($P \geq 0.631$ and $P \leq 0.014$, respectively). However, the opposite was found for trans-local relationships ($P < 0.0001$) (Table 4).

The association relationship score was low (mean 1.89, SD 1.47), indicating that willingness to take part in

Table 2 ANOVA test results between game playing time and dimensions of mental health

Scale/subscale	Game playing time				Total	*P*-value
	Not played (*n* = 166)	1–30 min/day (*n* = 50)	31–90 min/day (*n* = 184)	91–480 min/day (*n* = 173)		
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
General mental health status	25.45 (12.54)	27.88 (14.53)	24.22 (11.38)	28.17 (14.21)	26.08 (12.97)	0.046
Somatic	4.86 (3.61)	5.24 (3.43)	4.84 (3.22)	4.88 (3.68)	4.90 (3.49)	0.90
Anxiety and insomnia	4.97 (4.23)	5.92 (4.98)	4.53 (3.96)	5.42 (4.78)	5.05 (4.40)	0.13
Social dysfunction	11.62 (3.72)	11.46 (4.52)	11.06 (3.98)	11.67 (4.21)	11.44 (4.03)	0.51
Severe depression	4.19 (5.09)	5.39 (5.96)	4.11 (4.83)	5.60 (6.05)	4.68 (5.42)	0.03

SD = standard deviation.

voluntarily activities was low among all participants. Boys had higher association relationship scores than girls.

The general mental health mean score in the "played" group was higher than in the "not played" group, indicating a lower level of mental health in the "played" group. The social relationships mean score in the "played" group was lower than in the "not played" group (Figure 1).

Discussion

In this study, 69% of the respondents had personal computers or consoles. This finding was similar to that of Valadez and Ferguson, who showed that 67% of American families had personal computers and played computer games [24].

Our study showed that the mean time teenagers spent playing computer or video games was 71 (SD 72.1) min/day. Valadez and Ferguson's study showed a mean playing time of 73 min/day [24]. The results of our study showed that the average time spent playing computer games was 8.2 hours/week, which is 1.9 hours/week more than that reported by Allahverdipour et al. [2].

The results of the present study showed a difference between girls and boys with respect to the amount of time spent playing computer games. Boys spent longer playing computer game (on average 90 min/day) compared with girls (on average 51 min/day). This reflected the results of Chou and Tsai [21] and Griffiths [25].

The results of this study showed that there was no significant relationship between the groups "played" and "not played" and general mental health and its dimensions. These results were not in line with those of Allahverdipour et al. [2]. However, there was a significant association between the number of hours spent playing computer and video games and general mental health and depression. This result is similar to the findings of Allahverdipour et al. regarding general mental health but is opposite regarding depression [2]. With regard to time spent playing, our results are in line with those of similar studies [12,26,27]. In a study in the Islamic Republic of Iran, Zamani and Hedayati [1] showed that there was a significant relationship between addiction to computer games and physical health, anxiety, insomnia and depression. However, the results of our study agreed with their data only with regards to depression, but did not agree with regards to the other dimensions of mental health, such as anxiety and insomnia, and somatic and social dysfunction.

Table 3 ANOVA test results between game time and social relationships levels

Scale/subscale	Game playing time				Total	*P*-value
	Not played (*n* = 166)	1–30 min/day (*n* = 50)	31–90 min/day (*n* = 184)	91-480 min/day (*n* = 173)		
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Social relationships	25.27 (6.58)	23.88 (7.97)	23.17 (7.32)	22.67 (8.22)	23.74 (7.52)	0.021
Family relationships	6.73 (5.51)	6.85 (6.71)	6.88 (6.08)	7.17 (6.21)	6.92 (6.0)	0.929
Trans-local relationships	16.73 (4.5)	14.93 (4.97)	14.51 (5.07)	13.2 (5.13)	14.84 (5.09)	0.0001
Face-to-face relationships	4.25 (2.2)	4.0 (1.88)	3.83 (1.98)	3.60 (2.24)	3.90 (2.12)	0.048
Intermediary relationships	12.38 (3.67)	10.89 (4.17)	10.6 (4.28)	9.54 (4.58)	10.88 (4.33)	0.0001
Association relationships	1.67 (1.32)	2.0 (1.08)	1.82 (1.24)	2.14 (1.76)	1.89 (1.47)	0.020

SD = standard deviation.

Table 4 **Mental health status and social relationships among "played"/"not played" participants, based on the sex**

Scale/subscale	Played				Not played				*P*-value
	Girls (n = 166)	Boys (n = 241)	Sum	*P*-value	Girls (n = 112)	Boys (n = 54)	Sum		
	Mean (SD)	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	Mean (SD)		
General mental health status	29.07 (14.20)	23.93 (11.69)	26.35 (13.17)	< 0.0001	26.67 (13.15)	21.89 (9.92)	25.45 (12.54)		0.022
Somatic	5.08 (3.34)	4.79 (3.52)	4.91 (3.44)	0.408	4.98 (3.54)	4.60 (3.81)	4.86 (3.61)		0.538
Anxiety and insomnia	6.07 (4.77)	4.33 (4.09)	5.09 (4.47)	< 0.0001	5.49 (4.49)	3.80 (3.29)	4.98 (4.23)		0.019
Social dysfunction	11.62 (3.96)	11.17 (4.29)	11.37 (4.15)	0.308	11.62 (3.81)	11.64 (3.55)	11.62 (3.72)		0.966
Severe depression	6.26 (6.25)	3.87 (4.71)	4.89 (5.54)	< 0.0001	4.57 (5.49)	3.28 (3.89)	4.19 (5.09)		0.144
Social relationships	28.47 (6.98)	27.64 (8.51)	28.5 (7.79)	0.332	30.66 (6.43)	28.94 (6.96)	30.25 (6.58)		0.172
Family relationships	6.55 (5.46)	7.34 (6.71)	7 (6.20)	0.214	6.46 (5.12)	7.35 (6.35)	6.73 (5.51)		0.347
Trans-local relationships	15.08 (4.81)	13.01 (5.20)	14.01 (50.11)	< 0.0001	17.63 (3.93)	14.03 (5.08)	16.73 (4.50)		< 0.0001
Face-to-face relationship	3.90 (2.10)	3.65 (2.06)	3.76 (2.08)	0.244	4.64 (2.12)	3.36 (2.12)	4.25 (2.20)		0.001
Intermediary relationship	11.18 (4.12)	9.34 (4.53)	10.22 (4.43)	< 0.0001	12.98 (3.24)	10.61 (4.30)	12.38 (3.67)		< 0.0001
Association relationships	6.86 (1.15)	7.06 (1.65)	6.97 (1.45)	0.198	6.59 (1.26)	6.78 (1.28)	6.65 (1.26)		0.378

SD, standard deviation.

In our study, general mental health was better in the group that played for a moderate time each day (31–90 min/day) compared with the other groups. This finding was in line with the result of Allahverdipour et al. [2].

Our research showed that emotional relationships, including empathy and conversation, among our participants with regard to family members was 7 and, based on the scale 0–20, was lower than average. Taking into account the average age of our study population, this issue is of concern.

Our data showed that based on sex, anxiety and insomnia in both "not played" and "played" groups was significant. There was more severe depression in girls than boys who played computer and video games and this difference was statistically significant. This result agrees with the findings of Zamani et al. [1] but opposes those of Allahverdipour et al. [2].

Our results showed that there was a significant relationship between the time spent playing computer and video games and community relationships. The highest significance level was observed in trans-local relationships and the lowest significance level was observed in family relationships, meaning that playing computer or video games reduced trans-local relationships but had less effect on family relationships.

Our findings showed that students who played computer or video games had more average scores with respect to family relationships. This might be because of the participation of other family members (e.g. siblings and parents) in computer games, resulting in more interaction between family members and thus better family relationships. This subject was mentioned by Kraut et al. in their study of the association between higher use of the Internet and reduced family relationships [27]. In our study, teenagers who played games scored lower in trans-local relationships compared with those who did not. This result was close to those of Kraut et al. [27].

Our results showed that general social relationship status was different in both groups "not played" and "played". Based on sex, there was a significant relationship between both "played" and "not played" groups with trans-local relationships ($P < 0.0001$) and its intermediary relationship dimensions ($P < 0.0001$). Moreover, it was significant for the "face-to-face relationships" dimension only for those participants who did not play such games.

With regard to the increasing time spent playing, the mean scores for the social relationships between

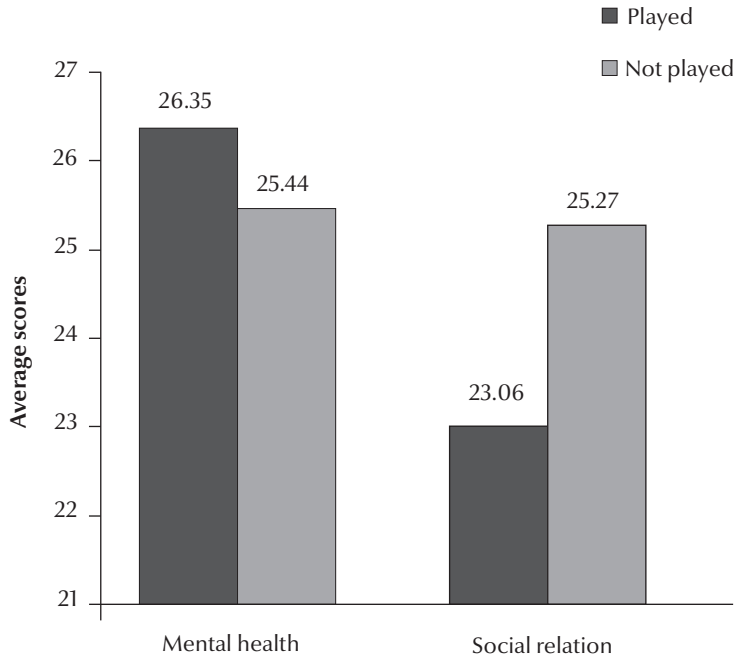

Figure 1 Mean scores of social relationships and mental health in "played" and "not played" groups

participants reduced. This finding was similar to that of the Affonoso study [17].

The results of our study showed that students who played computer or video games had higher scores for association relationships compared with those who did not play. The longer students played, the higher their scores in association activities. This has been found in previous studies [14]. In our study, students who spent longer playing games joined more sports clubs and human societies compared with those who did not play games. This agrees with the results of Smith et al., which showed that students who played computer games develop better social skills [19].

Conclusions

Playing computer and video games may not be a threat to the mental health status of students but playing them for a long time may lead to severe depression.

With the exception of family relationships, there was a significant relationship between social relationships and time spent playing games.

Playing computer or video games under parental control may have some positive effects on behaviour (e.g. the body awareness resources network (BARN); increasing awareness of health issues such as HIV/AIDS or diet; or improvements in educational areas such as maths and language) and this needs more study.

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