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Original Article

The Relationship Between Tendency to Computer Games and the Mental Health of Junior High School Students of Shahr-e Kord, Iran

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Abstract

Background and aims: Given that computer games have positive and negative functions and may affect the mental health of individuals, the present research aimed to study the relationship between the tendency to playing computer games and the mental health of junior high school students in Shahr-e Kord.

Methods: The current cross-sectional descriptive-analytical study was conducted on 245 boy and girl junior high school students of Shahr-e Kord in 2016. The participants were selected using a random cluster sampling method. The required data were collected using questionnaires of demographic variables, the standard 28-item General Health Questionnaire, and an author-made questionnaire on the tendency to computer games. Finally, the data were statistically analyzed using descriptive and analytic tests in SPSS-18. Participation in the study was voluntary.

Results: The results showed that 31.8% of the students aged 14 years old. In addition, the tendency to computer games was higher in girls (0.027) and their level of mental health was lower compared to boys ($P=0.032$). There was a significant relationship between the tendency to computer games and the age of the students ($P=0.023$). Eventually, age ($P=0.025$) and gender ($P=0.09$) represented a significant relationship with the mental health of the students.

Conclusion: Based on the low level of mental health in girls, it is necessary to pay special attention to the symptoms of depression and anxiety and social functions in adolescents, control the time spent on playing the computer games, plan carefully for their leisure time, direct adolescents toward reading books, and promote their health using educational patterns.

Keywords: Computer games, Students, Mental health

Introduction

The use of information and communication technology in the present era is expanding rapidly and has changed all dimensions of life, especially education in different ways.[1] Today, computers are one of the most important components of human life since they have a remarkable presence in all parts of the personal and occupational lives of people.[2] The general availability of this device makes it possible for children and adolescents to interact with this technology while unconsciously receive its negative or positive impacts. The execution of video games for leisure time and entertainment is considered as one of the capabilities of this modern technology.[1] Playing in adolescence is a kind of fun and entertainment that has many outcomes for adolescents. Similarly, recreation provides the chance for this age group to develop their social skills and interests through interaction with peers, achieve a sense of dependency and self-scrutiny, and enhance their individual identity.[2]

The role of play in the process of physical and psychological development of children is undeniable and experts believe that it can promote mental development and the mental health of children.[3] The first-ever computer-based media was computer games, which enormously became widespread in the last decades of the twenty-first century.[4] Computer games, as a social phenomenon, choose their audience from among children and adolescents and not only fill most of their leisure time but also occupy the time they should spend on doing their homework or socializing with the family.[5] Engaging in computer games, adolescents can experience the life of a great capitalist in the new century and seek to save the

world and fight like a pilot or soldier with a huge enemy in the form of fantasy heroes.[5] In addition, these types of games can have special negative or positive effects on the performance and functions of adolescents.[6] For example, they can weaken the spirit of collectivism and cause poor family relationships, as well as boredom, aggression, and restlessness in children and adolescents.[7] The main reasons for children and adolescents' tendency to computer games include attractiveness, easy accessibility, the lack of proper planning of parents for their children' leisure time, and the lack of access to appropriate sports and recreational facilities. Playing computer games for a long time culminates in multiple physical, psychological and social consequences in individuals.[1] In addition, it replaces social activities with parents and the family. In fact, playing computer games is used as a means of keeping children quiet.[1] A study conducted by Peng and Hsieh in the United States indicated that almost one in ten children or adolescents accustomed to computer games showed some symptoms of addiction in their behaviors.[8] Therefore, children and adolescents are the most important group who are exposed to the effects of computer games. The age of starting computer games is 7 and reaches its peak in the age of 12-13. It seems that psychological effects are the most important consequences of such games.[6] Kasiri Dolatabadi et al also reported that 55.3% of girls and 76.9% of boys played computer games.[9] Accordingly, measuring the psychological effects of computer games on children and adolescents and obtaining a clear outlook of these games can help the researchers in dealing with individuals affected by computer games, leading to correct and accurate planning in this field. Hence, the present research sought to study the relationship between the tendency to computer games and the mental health of junior high school students in Shahr-e Kord.

Method

The present research was a cross-sectional descriptive-analytical study conducted in 2016. The statistical population consisted of boy and girl junior high school students in Shahr-e Kord in 2016.

The sample size was determined to be 245 at a 95% confidence interval.

$$n=\frac{(Z1-\alpha/2)^2\times(s^2)}{(d)^2}=\frac{(1/96)^2\times(4^2)}{(\frac{1}{g}\times 4)^2}\frac{61/46}{1025}=245$$

The participants were selected using a random cluster sampling technique. Then, the researchers visited the General Directorate of Education in Chaharmahal and Bakhtiari province to make the necessary coordination with the health experts of that organization and brief them about the research objectives and procedure. Next, they referred to District 1 of Shahr-e Kord Education Department to obtain permission. Among the junior high schools for the girls and boys in this district, four high schools (two for boys and two for girls) were selected based on the sample size (131 girls and 114 boys). After making the necessary coordination with the principal and teachers of the selected schools, random sampling was conducted using the list of attendance and absence. The selected students entered the study after obtaining their oral consent. Furthermore, the inclusion criteria were the presentation of an informed written consent form, voluntary participation in all stages of the study, and being a junior high school student in public schools. The exclusion criteria included an unwillingness for participation, along with incomplete or incorrect filling out of the questionnaires. In addition, students with known psychological illness or those who were regularly taking medicine (based on the health records available at the school) were excluded from the study. It is noteworthy that the researchers attempted to set the study time in a way not to interfere with the times the students were exposed to stresses and tensions such as the exam time.

The required data were collected using three questionnaires. The general information of participants was obtained utilizing a demographic questionnaire (including data on age, gender, parent's job, and parent's educational attainment). Moreover, the tendency to computer games was measured using an author-made questionnaire.

Likewise, to evaluate the face validity, a full list of the items was set and given to a group of girls and boys with the demographic, economic, and social features parallel to the target population. Aiming at the qualitative estimation of the content validity, five experts were requested to check the amount of the coverage of the concept and subscales by the used statements. Additionally, the reliability of the form was assessed by content consistency method. Cronbach's alpha coefficient of this questionnaire was equal to 0.67.

This questionnaire contained 12 items (e.g., I think that life is not attractive without computer games) that were scored based on a 5-point Likert-type scale (from total agree to totally disagree). In addition, the standard 28-item General Health Questionnaire (GHQ) was used to measure the general health of the students. Cronbach alpha coefficient of this questionnaire was reported to be 0.85 by Noorbala et al.[10] The GHQ was first developed by Goldberg in 1972 and was widely used to diagnose mild psychological symptoms such as depression and anxiety, physical symptoms, and social functions in various situations.[10] Items 1-7 were related to somatic symptoms (e.g., Have you felt that you need a supplementary medicine during the past month?), items 8-14 dealt with anxiety (e.g., Have you experienced insomnia because of anxiety during the past month?), items 15-21 measured social dysfunction (e.g., Have you experienced the situation over the past month to spend more time on doing things?), and items 22-28 dealt with depression (e.g., Have you ever thought of committing suicide during the past month?).

These items were scored based on a 4-point Likert-type scale (ranging from at all, as usual, more than usual, to much more than usual). To summarize the scores, A, B, C, and D were assigned to scores 0, 1, 2, and 3. Further, scores over 6 on each scale and scores over 22, in general, indicated the symptoms of the disease. It should be noted that the higher the mental health score represented the lower level of mental health (Table 1).

The obtained data were analyzed in SPSS-18 using descriptive statistics (i.e., mean, standard deviation, number, and percentage) and analytic statistics. Pearson correlation test was applied to measure the relationship of demographic variables with the tendency to computer games and mental health. In addition, independent t-test and ANOVA test were employed to compare boys and girls in terms of the tendency to computer games and different dimensions of mental health. The level of significance was determined to be 0.05.

Results

The study population comprised 245 students including 131 girls (53.5%) and 114 boys (46.5%). Based on the results, 53.5% (131) of the participants of this study were girls, 42% (103) of them aged 13 and 31.8% (78 students) were 14 years old. As regards parental job, 80% of mothers (196) were housewives, 53.9% (132) of fathers were self-employed, and 38.8% (95) of fathers were employees. Based on the study results, 36.7% (90) of mothers and 35.5% (87) of fathers had a high school diploma and 27.3% of fathers had a bachelor's degree (Table 2).

The mean score of the tendency to computer games was equal to 48.03±14.12 and 57.02±18.27 for boys and girls, respectively. There was no significant relationship between the tendency to computer games and mental health in boys (r=-0.114, *P*=0.377), whereas an inverse and significant relationship was observed between the tendency to computer games and mental health among the girls (r=-0.243, *P*=0.041). The results also indicated that the mean of the mental health score of the girls was equal to 31.14±16.21 (Table 3).

The findings further revealed that social function obtained the highest mean score in both boy (10.39±3.95) and girl (11.65±3.60) groups (i.e., both girls and boys represented more symptoms of the disease in this regard). The lowest mean score in girls was related to somatic dimension (6.08±3.99), while the lowest mean score in boys was observed concerning depression (4.17±4.95). In other words, boys were healthier in this dimension. In general, the mental health of boys was better than that of the girls in all areas (Table 4).

As shown in Figure 1, the general health level of many of the students was unfavorable in this study. This was more prominent in girls and the number of girls suffering from a mental health disorder was more compared to boys.

There was a significant relationship between the tendency to computer games and the age of the students (*P*=0.023). In other words, the tendency to computer games increased with an increase in students' age. The results also demonstrated a significant relationship between the tendency to computer games and gender (*P*=0.027) so that the tendency to computer games was higher in girls when compared to boys.

Furthermore, an inverse and significant relationship was found between mental health and the age of the students (*P*=0.025). This means that younger students were in better

Table 1. Scores on Each Subscale of the GHQ

Subscales	Scores on Subscales	Scores on the Whole Questionnaire
No or minimum	0-6	0-22
Mild	7-11	23-40
Moderate	12-16	41-60
Severe	17-21	61-84

Note. GHQ: General health questionnaire.

Table 2. Demographic Characteristic of the Studied Girl Adolescents

Variables	Subgroups	Number	%
Age	12 years	30	12.2
	13 years	103	42
	14 years	78	31.8
	15 years	34	13.9
Gender	Girls	131	53.5
	Boys	114	46.5
Father's education level	Middle school	43	17.6
	High school	22	9
	Diploma	87	35.5
	Associate degree	26	10.6
	Bachelor degree	67	27.3
Mother's education level	Middle school	50	20.4
	High school	29	11.8
	Diploma	90	36.7
	Associate degree	31	12.7
	Bachelor degree	45	18.4
Father's job	Unemployed	18	7.3
	Self-employed	132	53.9
	Employee	95	38.8
Mother's job	Housewife	196	80
	Employee	49	20

Table 3. The Mean and Standard Deviation of the Tendency to Computer Games and Mental Health of Students Under Study

Variable	Girls	Boys	*P* Value
	Mean ± SD	Mean ± SD	
Tendency to computer games	57.02±18.27	48.03±14.12	0.003*
Mental health	31.14±16.21	25.73±12.33	0.032*

Table 4. The Mean and Standard Deviation of Different Dimensions of Mental Health in Students Under Investigation

Dimensions of Mental Health	Girls	Boys	*P* Value
	Mean ± SD	Mean ± SD	
Somatic symptoms	6.08±3.99	5.35±3.59	0.064
Anxiety and sleep disorders	7.01±5.74	5.66±4.10	0.024*
Social function	11.65±3.60	10.39±3.95	0.016*
Depression symptoms	6.51±6.77	4.17±4.95	0.003*

Note. *$P<0.05$

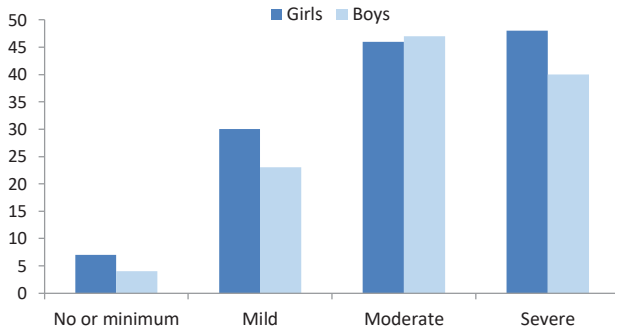

Figure 1 Classification of Mental Health Status in Students Under Investigation.

mental health status. Moreover, an inverse and significant relationship was observed between mental health and the gender of the students (P=0.032), indicating that male students had a higher level of mental health (Table 5).

Discussion

The present study aimed to investigate the relationship between the tendency to computer games and mental health of junior high school students in Shahr-e Kord.

According to the study results, the highest mean score of mental health was attributed to social function (the participants demonstrated more symptoms of the disease in this respect), followed by the dimensions of anxiety and sleep disorders, depression, and somatic symptoms. This implies that the participants were healthier in terms of somatic dimension compared to the other dimensions. In a study conducted by Mousavi-Moghadam et al,[11] the highest mean score of mental health was reported about anxiety and then depression dimensions. The age of junior high school students overlaps the age of puberty. Therefore, the higher anxiety score of students in this age group may be due to the fear of the future and the signs of puberty. Similarly, Ramezani et al[3] observed that students who were still engaged in computer games and

Table 5. Comparison of the Mean of the Tendency to Computer Games and Mental Health Considering Demographic Variables

Variable	Subgroups	Tendency to Computer Games	*P* Value	Mental Health	*P* Value
Age (y)	12	60.26±18.52	0.023*	48.01±12.62	0.025*
	13	59.68±17.26		49.29±12.83	
	14	61.18±20.74		56.17±8.51	
	15	65.83±15.96		51.57±14.54	
Gender	Girl	60.43±19.18	0.027*	31.14±16.21	0.032*
	Boy	57.02±18.27		25.73±12.33	
Father's educational attainment	Middle school	55.05±20.99	0.841	53.14±8.95	0.878
	High school	62.50±17.49		51.03±11.84	
	Diploma	61.36±19.67		47.81±14.11	
	Associate degree	60.98±13.86		48.67±14.56	
	Bachelor degree	64.47±16.51		48.95±13.51	
Mother's educational attainment	Middle school	56.82±21.37	0.496	53.61±1.23	0.881
	High school	55.24±22.86		51.18±11.37	
	Diploma	62.25±17.67		52.36±13.80	
	Associate degree	61.69±16.62		48.17±16.68	
	Bachelor degree	57.33±15.40		48.19±13.11	
Father's job	Unemployed	58.47±21.88	0.346	51.23±12.49	0.753
	Self-employed	60.76±19.02		49.47±13.10	
	Employee	61.97±17.94		49.52±12.69	
Mother's job	Housewife	61.16±17.87	0.562	50.06±12.90	0.531
	Employee	63.02±16.91		49.64±12.68	

Note. *$P<0.05$

imitated the game motions after playing obtained higher scores on depression and their general health was lower. The findings of Mousavi-Moghadam et al[11] showed that age has a significant relationship with somatic, depression, and the social dimensions of mental health, namely, the general health score increases with an increase in age. This indicates that younger students are in a better status of general health, which is consistent with the findings of the present study. The mean score of general health dimension among Sabzevar students was reported to be 46.36±15.29 and mental disorders were higher in women as compared to men 12.

Likewise, Shobeiri et al[13] found a significant relationship between the amount of playing computer games and mental health among the elementary students of Tehran. They showed that the students who do not play computer games are in a much better condition in terms of mental health in all dimensions (i.e., aggression, depression, anxiety, interpersonal sensitivity, and somatic symptoms) compared to those who play these games much or less. This is in line with the findings of the present study and Saffarian Hamedani et al[1] In another study by Yousefi et al, it was shown that there is a significant relationship between higher education attainment and the mental health of girls and women. In addition, their results indicated that employed women are in better mental health than unemployed ones.[14]

Psychologically speaking, increased aggression and violent behaviors, addiction to computer, depression, and anxiety are some of the negative consequences of computer games.1 In fact, students who have more addiction to computer games are more aggressive, anxious, and depressed.[13] Saffarian Hamedani et al[1] claimed that playing computer games has a negative relationship with mental health status and directly affects the frequency of aggressive behaviors, anxiety, depression, and the isolation of adolescents. Although the harms of computer games outweigh their benefits, they have both positive and negative functions. Positive functions include the evolution of personality and behavior, development of talents, creativity, as well as concentration and power, increased intelligence, and the enhancement of artistic taste, cultural transfer, and the like. On the other hand, negative functions encompass the lack of proper education for children and adolescents, the incorrect introduction of computer games to them, and unfamiliarity of users with the computer language.[7] Akbari et al also confirmed the negative effects of computer games on emotions and the behavior of adolescents.[6] Moreover, the disadvantages of these games are classified into physical damages, psychoeducational damages (an increased sense of aggression and isolationism), and negative effects on family relationships.[1] Most families believe that there is a constant intellectual intervention in playing computer games. However, the reality is that this is not an intellectual intervention, but computer games cheat the brain cells. In addition, only a few fingers are involved in playing computer games. According to Ganther, the potential psychological effects are more tangible and harmful than the perceived harms caused by the continuous use of the computer. Further, anxiety and stress-related reactions to the use of this new technology have led to the coinage of a new term called "cyberphobia".[13]

The excessive use of the internet and mobile phones can lead to psychological damages, violence, distraction, and sleep disorders in students. It can also play a major role in the lack of social control of the students by the community and family.[15]

Similarly, Chou et al found that depression, anxiety, suicide, aggression, violence, and antisocial behavior are more frequent among students who are addicted to the internet.[16]

In the present study, no significant relationship was observed between the tendency to computer games and parental job and educational attainment. In a study conducted by Shaverdi et al, it was shown that mothers with higher educational attainment and higher-rank jobs have children who do not spend much time playing computer games and vice versa. Therefore, maternal educational attainment and job is a decisive factor in the time children spend on playing computer games. In other words, mothers have more influence on their children and children of young and educated mothers allocate less time for playing these games.[5]

The age of father led to no significant difference between the two groups since mothers are more in contact with their children and have more influence on them. Nevertheless, paternal educational attainment also made a difference between the two groups. Accordingly, the results showed that fathers with higher educational attainment have more control over their children and thus their children spend less time playing computer games.[5] The study findings also indicated that retired or self-employed fathers have children who play computer games less. Overall, parental age, educational attainment, and job caused a significant difference between the two groups. In addition, the influence of mothers on children was more obvious than fathers.[5]

In this study, the general health of many of the participants was in an unfavorable level, which is inconsistent with the findings of Mousavi-Moghadam et al,[11] who reported that the general health level of the majority of the studied students was favorable. Sadeghian et al[18] also showed that the general health of many of the students was unfavorable.

There was a significant relationship between mental health and gender, as men were in a better status of mental health than women. This can be attributed to women's need for more attention and support or their different hormonal patterns that lead to a lower level of mental health, while a higher level of stress and anxiety.[17]

This is consistent with the findings of the present study where male students had a higher level of mental health compared to female ones.

In another study by Kouhi, the prevalence of addiction to computer games was reported to be 50.5% and addiction to these games was above the average among the students. In addition, an inverse relationship was observed between addiction to computer games and the mental health of students. In other words, the mental health of students who were more addicted to computer games was in a lower level and vice versa, which corroborates the findings of the present study about the girls.[19] It should be noted that mental health is a concept reflecting our feeling and function in the face of different situations of life. In fact, mental health refers to a balanced behavior in harmony with society, recognition, and the acceptance of social realities, along with the balanced satisfaction of personal needs.[20]

Limitations of the Study

Some of the study limitations included accessibility to only junior high school students, the lack of the cooperation of some schools, and sampling on only two high schools for girls and two high schools for boys in a certain district. These may reduce the generalizability of the findings. Therefore, it is recommended to conduct more studies on larger sample sizes and in multiple schools of different geographical locations.

Conclusions

In general, the results of the present study demonstrated that the general health of many of the participants was in an unfavorable level, and overall, girls with a lower level of mental health represented a higher tendency to computer games. According to the study results, families, education departments, and the government should have full and careful monitoring in this field in order to reduce possible destructive damages. In addition, the expansion of the culture of reading, the development of attractive and diverse sports facilities, and the promotion of community awareness through media can be effective in the reduction of inactivity among students and the improvement of their mental health.

Ethical Approval

The study was approved at the Student Research Committee of Shahr-e Kord University of Medical Sciences (under the code of ethics IR.SKUMS.REC.1395.154) and a letter of recom-mendation was obtained from the university.

Conflict of Interest Disclosures

None.

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