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Assessment of Electronic Gaming Addiction among Secondary School Children

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Abstract

Background: The widespread use of electronic games has significantly impacted children, influencing various psychological, social, and physical aspects of their development. This study aims to assess the prevalence of electronic gaming addiction among secondary school children and explore its relationship with demographic factors.

Objective: To evaluate the extent of electronic gaming addiction in secondary school children and examine how demographic variables such as age, gender, and parental education levels correlate with addiction levels.

Study Design: A cross-sectional descriptive quantitative design was employed. The study was conducted between September 1, 2022, and February 1, 2023, in Al Najaf Al-Ashraf City, Iraq. A sample of 960 students aged 15-19 years was selected from 32 schools, with 30 randomly chosen from each school.

Setting: The study was conducted across 16 preparatory and 16 secondary schools in eight Al Najaf Al-Ashraf City districts.

Results: The findings revealed a moderate level of electronic gaming addiction among secondary school children. A significant relationship was observed between electronic gaming addiction and certain socio-demographic factors, including age and maternal presence, with older children and those whose mothers were alive showing higher addiction levels. Other demographic variables, such as parental education, gender, and sibling number, did not show a significant relationship with addiction.

Conclusion: The study concludes that electronic gaming addiction among secondary school children is moderately prevalent and is influenced by specific demographic factors. The findings emphasize the need for targeted interventions, including promoting alternative pastimes and encouraging physical activity to mitigate the effects of prolonged gaming.

What is already known about the topic? Electronic gaming addiction among secondary school children is recognized as a growing concern. It is characterized by excessive gaming that interferes with daily life, school performance, and social relationships. Known issues include negative impacts on mental health, such as anxiety and depression, and physical health concerns, like poor sleep and sedentary behavior. Strategies for managing this include setting limits on gaming time and promoting balanced activities.

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INTRODUCTION

During the early modern period, the term "addicere," derived from Latin, gained prominence due to its classical roots, symbolizing attachment or devotion. The term "addict" initially referred to positive habits, such as yoga or running, which enhance individual functioning. These activities were believed to lead to a transcendental state of mind when practiced consistently for approximately an hour daily, providing a sense of well-being and fulfillment (Rosenthal & Faris, 2019).

However, addiction often develops as individuals seek an escape from reality, leading to emotional dysregulation, social withdrawal, and psychological issues such as low mood, anxiety, and depression. In electronic gaming, excessive gameplay can negatively affect social relationships and personal well-being. It impairs the ability to function normally, not necessarily through physical issues, but due to declining mental health, as seen in reduced performance and concentration (Abbasi et al., 2023).

In 2000, Halley Pontes and Mark Griffiths introduced a formal definition of behavioral addiction, describing it as "non-chemical (behavioral) addictions involving human-machine interactions," categorizing gaming addiction as a subset of behavioral addictions (Hasan & Sameen, 2020). Individuals affected by gaming addiction often experience physical and psychological health issues, including back pain, dark circles under the eyes, obesity, wrist pain, lack of sleep, fatigue, and depression. These individuals may neglect their social lives, personal responsibilities, and even their diets, exacerbating the problem further (Al-hillaly et al., 2021).

Electronic games are often characterized as highly addictive, whether played online or offline. These games negatively affect individuals, especially children, across multiple domains—social, psychological, and health-related. Excessive gaming encompasses a wide range of devices and platforms, including computers, mobile phones, PlayStations, and other gaming systems (Rofia et al., 2022).

Gaming itself is an inherent part of human nature, providing a form of amusement. However, it's important to distinguish between recreational play and harmful addiction. Games are generally categorized into two types—physical and cerebral. For many individuals, especially adolescents, the internet and gaming have become central to daily life, driven by game design, psychological triggers, and social dynamics. Over time, long-term gaming can cause deterioration of eyesight, sleep disorders, emotional instability, and other health issues. Fortunately, therapeutic interventions such as cognitive-behavioral therapy (CBT), self-control techniques, and family involvement have been proven effective in mitigating the negative consequences of excessive gaming (Hu & Ji, 2023).

The growing dependence on electronic devices has led researchers to explore the social and psychological profiles of individuals engaging in extensive online activities. Prominent issues include social isolation, anxiety, psychological distress, and difficulties in adapting socially (Al-hillaly et al., 2021). Electronic game addiction hinders a child's psychological development by inducing fear, stress, insomnia, and emotional instability from exposure to disturbing game content. Moreover, prolonged gaming can lead to increased aggression, anxiety disorders, and depression, as well as the development of violent tendencies (Elsayed, 2021).

Adolescence, a crucial period of physical, behavioral, and emotional development, is particularly vulnerable to the effects of electronic media use (EMU). During this stage, the brain undergoes significant changes, which can be negatively influenced by excessive gaming (Li et al., 2022). While gaming is a natural part of childhood play, which supports mental and psychological growth, excessive use has severe consequences. On the positive side, electronic games can help develop academic skills such as language learning, typing, and critical thinking. However, negative outcomes, including headaches, musculoskeletal disorders, and eye strain, arise from overuse (Rofia et al., 2022).

Electronic games serve multiple purposes for teenagers, including providing a sense of competition, adventure, and skill development. While gaming in moderation can offer benefits such as emotional relaxation and problem-solving practice, excessive gaming leads to addiction, causing more harm than good. Various types of games, including fighting, puzzle, sports, adventure, and strategy games, appeal to different interests, but all can pose risks if overindulged (Fahim et al., 2023).

Methodology

Study Design

This research employs a cross-sectional descriptive quantitative design to assess the prevalence and impact of electronic gaming addiction among secondary school children in Al Najaf Al-Ashraf City, Iraq. The study was conducted over a period of five months, from September 1, 2022, to February 1, 2023. This design was chosen for its effectiveness in collecting data at a single point in time to identify patterns and relationships between electronic gaming addiction and demographic factors among the targeted population.

Administrative Agreements and Ethical Considerations

Prior to data collection, all necessary ethical and administrative approvals were obtained. Ethical clearance was granted by the Ethics Committee of the Faculty of Nursing at the University of Kufa. Additionally, official permissions were secured from several governmental bodies:

University of Kufa: Approval from the College of Nursing and the Department of Graduate Studies was obtained to proceed with the research.

Ministry of Planning: The Central Statistical System provided approval for the use of the questionnaire draft.

Ministry of Education: Formal permission was received from the

General Directorates of Education in Al Najaf Al-Ashraf City to access the schools and collect data from students.

Ministry of Municipalities and Public Works: Consent was obtained from the Directorate of Najaf Municipality for further support during the study.

All participants were fully informed about the study's aims and their rights. Written informed consent was obtained from the parents or guardians of the students, ensuring voluntary participation with the option to withdraw from the study at any time.

Setting of the Study

The study was conducted in 32 schools located across Al Najaf Al-Ashraf City, Iraq. These schools were divided into two categories:

- **16 preparatory high schools**
- **16 secondary schools**

The schools were selected from eight districts of the city, with four schools randomly chosen from each district, ensuring a representative sample of both urban and rural areas. The diversity in school types and locations aimed to provide comprehensive insight into electronic gaming addiction among a varied demographic of students.

Sample Selection

A multi-stage probability sampling technique was utilized to select the participants:

Stage 1: School Selection

The schools were chosen using a stratified cluster sampling method. Al Najaf Al-Ashraf City was divided into eight districts, from which 32 schools (16 preparatory and 16 secondary) were randomly selected from a total of 96 schools in the city.

Stage 2: Student Selection

From each selected school, 30 students aged between 15 and 19 years were randomly selected through disproportional stratified sampling. This yielded a total sample size of 960 students, ensuring a robust dataset that could support the study's statistical analysis.

Study Instrument

The instrument used for data collection was a structured questionnaire designed specifically for this study. The questionnaire was developed in Arabic to ensure the participants could easily understand it. It consisted of two major sections:

1. **Socio-Demographic Data**
2. This section gathered information on the students' age, gender, grade level, family background, parental education levels, and socio-economic status (SESS).
3. **Electronic Gaming Addiction Assessment**
   This section focused on evaluating the level of electronic gaming addiction among students using a Likert scale, ranging from 1 (never) to 5 (all the time). The questionnaire items were designed to capture the extent of gaming addiction, the amount of time spent playing, and the social,

psychological, and physical impacts of gaming.

The instrument was validated through expert reviews and pilot testing. Reliability testing, using Cronbach's alpha, indicated an acceptable level of internal consistency for the scales included in the questionnaire.

Data Collection Procedure

Data were collected through self-report questionnaires distributed to students in the selected schools. Before administering the questionnaires, the researcher met with the school administrators to explain the study and ensure that appropriate consent was obtained. Students were then provided with the questionnaires, completed independently within a supervised setting to ensure accuracy and completeness.

The data collection occurred from December 21, 2022, to February 1, 2023. Out of the 960 distributed questionnaires, 954 completed responses were collected and used for statistical analysis, as 6 questionnaires were discarded due to incomplete information.

Data Analysis

The collected data were initially organized and entered into Microsoft Excel for preliminary assessment. For detailed statistical analysis, the data were transferred to SPSS version 26. Descriptive statistics, including means and standard deviations, were calculated to evaluate the overall level of gaming addiction. Inferential statistics, such as ANOVA and Pearson's correlation, were used to identify relationships between electronic gaming addiction and various socio-demographic factors. Results were presented in tabular form for clarity.

RESULTS

The primary aim of this study was to assess the prevalence of electronic gaming addiction among secondary school children in Al Najaf Al-Ashraf City, Iraq, and to explore its association with socio-demographic factors. The results of the study are presented in tables and summarized below.

1. Demographic Characteristics of the Study Population

The study involved 954 students aged between 15 and 19 years from 32 secondary schools. The demographic data of the students revealed the following:

Gender Distribution: The sample comprised 52% males and 48% females.

Age Distribution: The majority of the students were aged 16-17 years, accounting for 60% of the sample.

Parental Education: Most of the students' parents had completed elementary or secondary education, with 45% of the fathers and 40% of the mothers having a middle school education.

Socio-Economic Status (SESS): Approximately 55% of the students reported a moderate socio-economic status, while 25% reported low socio-economic status.

2. Levels of Electronic Gaming Addiction

The analysis of the gaming addiction levels indicated the following results for the study and control groups:

Control Group: Students in the control group displayed a **low level** of addiction across all items, with a mean score ranging between 1.18 and 1.99 (Low Addiction). This suggests that control group participants played electronic games at a recreational level without excessive use.

Study Group: In contrast, students in the study group exhibited **moderate levels** of electronic gaming addiction. The mean scores ranged between 2.37 and 3.38 (Moderate Addiction). The highest reported behaviors were "spending much free time on games" (mean = 3.38) and "feeling better after playing games" (mean = 3.30). These findings suggest that gaming occupies a significant portion of the student's free time and is often used for emotional relief or stress management.

3. Relationship Between Gaming Addiction and Socio-Demographic Variables

The relationship between electronic gaming addiction and various socio-demographic factors was analyzed using ANOVA and correlation tests. The key findings are summarized below:

Age: A statistically significant relationship was found between age and gaming addiction, with older students (17-19 years) showing higher addiction levels (p-value = 0.01). Students aged 17 had the highest mean addiction score (mean = 2.95), while those aged 15 had the lowest (mean = 2.46).

Gender: No significant relationship was observed between gender and the level of gaming addiction (p-value = 0.15). However, male students had slightly higher mean scores (2.85) compared to female students (2.73).

Parental Education Level: The father's education level did not show a significant relationship with gaming addiction (p-value = 0.14). However, the mother's education level had a marginal effect, with students whose mothers had higher education levels showing slightly elevated addiction scores (p-value = 0.08).

Socio-Economic Status (SESS): No significant relationship was found between socio-economic status and electronic gaming addiction (p-value = 0.62), although students from higher socio-economic backgrounds exhibited slightly higher addiction tendencies.

Mother Alive Status: A statistically significant relationship was found between gaming addiction and whether the mother was alive (p-value = 0.05). Students whose mothers were not alive reported higher levels of gaming addiction (mean = 3.20) compared to those whose mothers were alive (mean = 2.80).

4. Behavioral Aspects of Electronic Gaming Addiction

The study also assessed the behavioral impact of electronic gaming addiction on students. The following behavioral patterns were observed:

Inability to Reduce Game Time: Approximately 75% of students in the study group reported being unable to

reduce their gaming time despite trying to do so.

Impact on Daily Activities: Over 60% of students admitted to neglecting essential activities such as schoolwork or sports due to prolonged gaming sessions.

Emotional and Social Effects: Nearly 65% of the students indicated that they played games to relieve stress or escape real-life problems. A significant portion also reported becoming angry or stressed when unable to play.

5. Comparative Analysis Between Control and Study Groups

Overall, the comparison between the control and study groups showed that the study group exhibited significantly higher levels of gaming addiction across all measures. While the control group maintained recreational gaming habits, the study group displayed moderate signs of behavioral addiction, which impacted their academic, social, and emotional well-being.

Table (1): Adolescents' distribution according to the schools' type and locations in Al-Najaf Al-Ashraf City.

School Location	High School (Preparatory)	Secondary	Total Schools Selected
First District	2	2	4
Second District	2	2	4
Third District	2	2	4
Fourth District	2	2	4
Fifth District	2	2	4
Sixth District	2	2	4
Seventh District	2	2	4
Eighth District	2	2	4
Total	16	16	32

Table 2: Age and Gaming Addiction

Age (years)	Mean	SD	F	P-Value
15	2.46	0.80	3.63	0.01
16	2.91	0.91		
17	2.95	0.94		
18	2.79	0.89		
19	2.64	0.82		

Table 3: Number of Siblings and Gaming Addiction

Number of Siblings	Mean	SD	F	P-Value
<= 3	2.81	0.82	0.21	0.81
4 – 6	2.80	0.98		
7+	2.89	0.75		

Table 4: Order in Family and Gaming Addiction

Order in Family	Mean	SD	F	P-Value
1	2.80	0.82	1.46	0.19
2	2.73	0.94		
3	2.92	0.93		
4	2.72	1.08		
5	3.06	0.81		
6	2.74	0.81		
7	2.24	0.42		

Table 5: Residency and Gaming Addiction

Residency	Mean	SD	F	P-Value
Rural	2.67	0.79	0.93	0.33
Urban	2.82	0.91		

Table (6) The Assessment of electronic gaming addiction among secondary school children				
Items	Control Mean	Control Assessment	Study Mean	Study Assessment
Did you think about playing a game all day long?	1.44	Low Add.	2.85	Moderately Add.
Did you spend much free time on games?	1.58	Low Add.	3.38	Moderately Add.
Have you felt addicted to a game?	1.53	Low Add.	2.7	Moderately Add.
Did you spend increasing amounts of time on game?	1.67	Low Add.	3.06	Moderately Add.
Did you play longer than intended?	1.25	Low Add.	2.98	Moderately Add.
Were you unable to stop once you started playing?	1.54	Low Add.	2.87	Moderately Add.
Did you play games to forget about real life?	1.6	Low Add.	2.66	Moderately Add.
Have you played games to release stress?	1.53	Low Add.	3	Moderately Add.
Have you played games to feel better?	1.99	Low Add.	3.3	Moderately Add.
Have others unsuccessfully tried to reduce your game use?	1.18	Low Add.	2.94	Moderately Add.
Were you unable to reduce your game time?	1.41	Low Add.	2.8	Moderately Add.
Have you failed when trying to reduce game time?	1.19	Low Add.	2.59	Moderately Add.
Have you felt bad when you were unable to play?	1.26	Low Add.	2.74	Moderately Add.
Have you become angry when unable to play?	1.45	Low Add.	2.72	Moderately Add.
Have you become stressed when unable to play?	1.16	Low Add.	2.52	Moderately Add.
Did you have fights with others over your time spent on games?	1.41	Low Add.	2.76	Moderately Add.
Have you neglected others because you were playing games?	1.43	Low Add.	2.37	Moderately Add.
Have you lied about time spent on games?	1.23	Low Add.	2.57	Moderately Add.
Have you neglected other important activities to play games?	1.55	Low Add.	2.67	Moderately Add.
Has your time on games caused sleep deprivation?	1.76	Low Add.	2.8	Moderately Add.
Did you feel bad after playing for a long time?	1.66	Low Add.	2.77	Moderately Add.

DISCUSSION

This study aimed to assess the prevalence of electronic gaming addiction among secondary school children and its relationship with socio-demographic factors, including age, gender, family dynamics, and parental education. The findings provide valuable insights into how these variables influence gaming behavior, particularly in the context of adolescence—a critical period for emotional, social, and cognitive development.

Moderate Levels of Gaming Addiction

The assessment of electronic gaming addiction among the study group revealed moderate addiction levels. This is consistent with prior research conducted by Rajab et al. (2020), who found that adolescents with gaming addictions tend to experience moderate to high levels of stress. The addictive nature of gaming, particularly during adolescence, can serve as a coping mechanism for stress, anxiety, and other emotional challenges. However, this escape mechanism can exacerbate feelings of isolation and exacerbate mental health issues, leading to a cyclical pattern of stress and gaming. This suggests a need for intervention strategies that not only address gaming behavior but also tackle underlying emotional or psychological issues.

Age and Gaming Addiction

One of the most significant findings of this study is the strong relationship between age and gaming addiction. Older adolescents, particularly those aged 16 to 17, exhibited the highest levels of addiction. This trend could be attributed to several factors. First, as adolescents age, they may experience increasing academic pressures, social challenges, and the desire for autonomy, making gaming a convenient outlet for stress relief and social connection. Gaming often provides an environment where adolescents can achieve a sense of accomplishment, especially when success in real-world endeavors, such as school performance or social relationships, is more challenging.

The significant impact of age on gaming behavior aligns with Nagata et al. (2022), who reported that older adolescents are more prone to problematic mobile phone and video game usage, especially in low-income households. This may be due to the fact that older teenagers have more access to personal devices and greater autonomy in managing their free time. Furthermore, as they approach adulthood, adolescents may increasingly rely on gaming as a distraction from the pressures of academic expectations and future career decisions.

The Role of Gender in Gaming Addiction

Although this study did not find a statistically significant difference between male and female gaming addiction levels, it is important to note that past research has often highlighted gender as a significant factor in gaming behavior. Typically, males are reported to engage more frequently and intensely in gaming activities than females, which could be due to gender socialization and the types of games marketed to young boys, which often emphasize competition and skill mastery. On the other hand, girls may gravitate towards social or casual games that do not necessarily lead to addiction. Future studies could explore these nuanced differences in greater depth, especially in cultural contexts such as Iraq, where gaming habits might vary based on social norms and access to technology.

Family Dynamics and Gaming Addiction

The relationship between family dynamics and gaming addiction, particularly in terms of parental presence, provides crucial insights. The significant finding that students whose mothers are alive have lower gaming addiction levels suggests the pivotal role of maternal influence in regulating gaming behavior. Al-Dakheel (2012) also emphasized the role of mothers as the central figure in guiding and monitoring children's habits, including gaming. Mothers often serve as the primary caregivers, offering emotional support, supervision, and discipline. In homes where the mother is present, children may receive more direct guidance on managing their screen time and balancing gaming with other activities.

Interestingly, no significant relationship was found between the father's presence or parental education levels and gaming addiction. This could be due to the cultural context of Iraq, where mothers often take a more hands-on role in day-to-day parenting, particularly in monitoring children's recreational activities. Additionally, it may suggest that simply having a parent with higher education does not necessarily translate into more effective regulation of gaming behavior, especially if parents are not fully aware of the addictive potential of electronic games.

Number of Siblings and Family Order

While the study did not find a statistically significant relationship between the number of siblings or the order in the

family and gaming addiction, there were some notable trends. Students who were the fifth child in their families exhibited the highest levels of gaming addiction, while those who were the seventh child had the lowest. These findings may reflect differences in parental attention and resource allocation. In larger families, parents may have less capacity to monitor each child's activities, particularly as younger children tend to receive less direct supervision as parents become more experienced. Consequently, some children may turn to gaming for entertainment or to fill a gap in parental attention.

The trends seen in family order also raise questions about the role of sibling relationships in shaping gaming behavior. Older siblings may influence the gaming habits of younger siblings, serving as role models or encouraging shared gaming activities. However, this dynamic requires further exploration, as the current study does not provide conclusive evidence of its impact.

Urban vs. Rural Residency and Gaming Addiction

The study found that students from urban areas displayed slightly higher levels of gaming addiction compared to their rural counterparts, although this difference was not statistically significant. This trend may be explained by greater access to technology and high-speed internet in urban areas, which makes gaming more readily available and attractive to adolescents. Urban environments typically offer fewer outdoor recreational opportunities compared to rural settings, where children may engage in physical activities that reduce screen time. Additionally, urban students may experience more social pressures related to gaming, particularly in terms of keeping up with peers or staying connected through online gaming communities.

Nagata et al. (2022) also highlighted how adolescents from lower-income or more technologically connected regions are more prone to gaming addiction, which corresponds with the findings regarding urban students in this study. Although the rural-urban divide was not statistically significant, it points to a need for future research exploring how access to technology and socio-economic factors influence gaming behavior in different environments.

Psychological and Social Implications of Gaming Addiction

Electronic gaming addiction poses a range of psychological and social challenges for adolescents. Beyond the immediate effects of addiction, such as impaired academic performance and social isolation, long-term gaming can disrupt sleep patterns, increase stress levels, and contribute to mental health disorders such as anxiety and depression. The study's findings underscore the importance of developing targeted interventions that address not only the symptoms of gaming addiction but also the underlying causes, such as stress, peer pressure, or emotional regulation issues. Schools, parents, and community organizations must work together to create balanced technology use approaches, promoting healthy gaming habits and alternative leisure activities.

Study Limitations

While this study provides valuable insights, there are some limitations to consider. First, the cross-sectional design limits the ability to establish causal relationships. Longitudinal studies could provide a clearer understanding of how socio-demographic factors influence gaming addiction over time. Second, using self-reported data may introduce bias, as students might underreport or

overestimate their gaming habits. Finally, the study was conducted in a specific cultural context, which may limit the generalizability of the findings to other regions or countries.

Future Directions

Future research should focus on exploring the cultural nuances of gaming addiction, particularly in non-Western contexts, where gaming habits and parental involvement may differ from global trends. Additionally, studies could examine the impact of emerging technologies, such as virtual reality and augmented reality, on gaming behavior. With the rise of new gaming platforms, understanding how these technologies influence addiction patterns will be crucial in developing effective intervention strategies.

CONCLUSION

In conclusion, the moderate levels of gaming addiction observed among secondary school children emphasize the need for intervention, especially among older adolescents and urban residents. The significant relationship between maternal presence and lower addiction levels underscores the importance of family involvement in regulating gaming behavior. While age and residency appear to be key factors, further research is needed to understand the nuances of family dynamics and socio-economic influences on gaming addiction.

DECLARATION SECTION

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Ethical Considerations

This study was conducted in full compliance with ethical guidelines and principles for research involving human participants. Ethical approval was obtained from the Ethics Committee of the University of Baghdad. The research protocol, objectives, and methods were reviewed and approved before data collection commenced.

All participants were fully informed about the purpose of the study, their rights, and the voluntary nature of their participation. Written informed consent was obtained from both the students and their legal guardians prior to participation. Confidentiality and anonymity were ensured throughout the study by assigning identification numbers to participants and ensuring that no personally identifiable information was collected or disclosed. All data were securely stored and only accessible to the research team.

The study adhered to the ethical standards set forth by the Declaration of Helsinki and the relevant national guidelines on research ethics in Iraq.

Conflict of interest

The authors declare that they have no competing interests.

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Data availability:

Data are available by contacting the corresponding author by email.

Authorship

All authors have read and approved the manuscript.

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