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Research Article

Investigation of Factors Affecting Digital Game Addiction in 10-14 Age Group Children

10-14 Yaş Grubu Çocuklarda Dijital Oyun Bağımlılığını Etkileyen Faktörlerin Araştırılması

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ABSTRACT

Objective: Children and adolescents constitute the risk group for digital game addiction, which has become a widespread and important public health problem. This study was conducted to determine the factors that cause digital game addiction in children and adolescents aged 10-14 years studying in secondary schools.

Methods: The data were completed with the participation of 151 students between March 20, 2021 and March 19, 2022.

Results: The analysis showed that playing computer games at home made a significant difference in the levels of digital game addiction in boys as gender and in the 10-11 age group as age group.

Conclusion: Based on the findings, pediatric nurses should investigate the negative impact of digital games on child development and provide education and counseling for the child and his/her family through education, counseling, supportive and advocacy roles.

Keywords: Adolescent, Children, Nursing, Video Game Addiction

ÖZ

Amaç: Çocuklar ve ergenler, yaygınlaşan ve önemli bir halk sağlığı sorunu haline gelen dijital oyun bağımlılığı için risk grubunu oluşturmaktadır. Bu çalışma, ortaokullarda öğrenim gören 10-14 yaş arası çocuk ve ergenlerde dijital oyun bağımlılığının oluşmasına neden olan faktörleri belirlemek amacıyla yapılmıştır.

Yöntem: Veriler, 20 Mart 2021 ile 19 Mart 2022 tarihleri arasında 151 öğrencinin katılımıyla tamamlanmıştır.

Bulgular: Analizler, evde bilgisayar oyunu oynamanın cinsiyet olarak erkeklerde ve yaş grubu olarak 10-11 yaş grubunda dijital oyun bağımlılığı düzeylerinde anlamlı bir fark yarattığını göstermiştir.

Sonuç: Bulgulara dayanarak, pediatri hemşireleri dijital oyunların çocuk gelişimi üzerindeki olumsuz etkisini araştırmalı ve eğitim, danışmanlık, destekleyici ve savunucu rolleri ile çocuk ve ailesine eğitim ve danışmanlık sağlamalıdır.

Anahtar Kelimeler: Adölesan, Çocuk, Hemşirelik, Video Oyunları

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INTRODUCTION

The accelerated pace of technological advancement has resulted in the pervasive accessibility and usability of a multitude of digital resources, including computers, cell phones, and tablets, among others. The target audience of digital materials encompasses a significant proportion of children and young people. The opinions regarding the positive and negative effects of digital platforms, which are subject to change, on children are becoming increasingly prevalent in the global and national contexts. In addition to the opinions on the benefits of children using digital platforms at a young age, research findings indicate that this platform can be harmful to children's health if used incorrectly (Mustafaoğlu et al., 2018). It is well documented that the reduction of outdoor play spaces has a detrimental impact on children. The widespread use of digital technology and the increased use of smartphones, tablets and laptops has led to a shift in children's activities to this area. It has been observed that online addictions are rapidly increasing as a result of the increase in the time allocated to digital gaming, the decrease in face-to-face communication with peers and the decrease in group play (Kaya et al., 2023; Rosen et al., 2014).

The use of digital devices for gaming may result in children exhibiting reduced levels of physical activity, passivity, and disconnectedness from their surroundings. This phenomenon has the potential to give rise to discussions between parents and children regarding disciplinary issues (Toran et al., 2016). Furthermore, the utilization of digital technology has been linked to the disruption of the reward-punishment mechanism within the brain. As a consequence of this disrupted mechanism, addiction may ensue and precipitate the emergence of addiction-specific behaviors in children (Mustafaoğlu et al., 2018; Orhan et al., 2018).

The definition of digital game addiction is a condition defined as children's inability to stop playing games for a long time, associating the game with their real lives, disrupting their responsibilities due to the game, and preferring the game to other activities (Horzum, 2011). In the ICD guideline published in 2018, the World Health Organization classified gaming addiction under the title of disorders related to behavioral addictions (https://icd.who.int). In the The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (APA, 2013), nine diagnostic criteria for online gaming addiction were identified. 1) being too busy with internet games. 2) experiencing withdrawal symptoms when distracted from internet games, 3) tolerance-increasing need to play internet games, 4) unsuccessful attempts to stop playing internet games, 5) losing interest in hobbies and recreational activities that they were previously interested in, 6) excessive desire to play internet games despite knowing that they have psychological problems, 7) deceiving family members, therapists and others about how much they play online games, 8) playing online games to distract themselves from negative emotional states, 9) jeopardizing or losing an important relationship, job or educational career opportunity to play online games. According to the DSM-5, internet gaming addiction is diagnosed when five out of nine symptoms are present for at least 12 months (American Psychiatric Association, 2013).

Although there is no national prevalence study in Turkey, Yalçın Irmak & Erdoğan (2016) conducted a study with 865 adolescents and reported that 28.8% of the sample met the definition of “game addict”. In another study examining the relationship between digital game addiction and physical activity levels, in line with the data collected from 350 middle school students, it was observed that six students (1.7%) were highly addicted to video games, 25 students (7.14%) were defined as only “video game addicted,” and 94 students (26.8%) were in the risk group (Hazar et al., 2017). Computer games, virtual chat, and internet addiction can lead to a decrease in academic achievement by preventing study behavior. Another cognitive problem caused by prolonged computer use is that it leads to attention deficit-hyperactivity symptoms.

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The use of digital platforms can lead to aggressive behavior, attention problems, physical inactivity, impairment in emotional and social intelligence, increased social isolation, negative effects on brain development, and sleep problems in children (Small et al., 2020).

The extent of game addiction in Turkey remains unclear. The reasons mentioned above illustrate the necessity for further investigation into digital game addiction in our country. Children and adolescents are considered to be at risk of developing digital game addiction, which has emerged in recent years and is becoming increasingly prevalent. This situation is gradually becoming a significant public health concern for children and adolescents, as well as for society at large in our country and globally. Immediate action must be taken to implement the measures outlined in the Digital Game Addiction Workshop Final Report (2018) to prevent the onset of digital game addiction.

In line with universal children's rights and professional nursing roles, the child health nurse is responsible for the physical, cognitive, emotional, and socially healthy growth and development of children between the ages of 0-18 in the family and society, protection from diseases and maximization of health, care, treatment, and rehabilitation when ill. The child health nurse provides education and counseling as well as guidance to the child and family and school staff within the scope of school health nursing. They are responsible for improving health and providing accurate health information to students at school (Conk et al., 2021).

In fulfilling the counseling role of the child health nurse, the nurse assumes an important role in the interaction between the child and parents and educators. In this context, nurses should assume an active role in identifying children at risk of developing an addiction to digital games and in preventing such addiction in children who are otherwise healthy, with a view to promoting a healthy society. The planning and implementation of educational programs that promote healthy play and positive life behaviors, coupled with an understanding of the effects of computers and the internet on children's health and development and the provision of counseling to families on this issue, will contribute to the reduction of the negative effects of digital gaming (Cabir, 2019).

This study is of great significance in terms of elucidating the variables that are efficacious in the context of digital game addiction among school-age children and illuminating the issues that arise from game addiction. It is anticipated that this study will contribute to the field by establishing healthy communication between parents, educators, and children, as well as by developing and promoting the health of the child.

Research Aim: This study aims to determine the factors affecting Digital Game Addiction in children between the ages of 10-14 studying in secondary schools in Aydın City Center.

Research question: Do the factors affecting digital game addiction differ in children aged 10-14?

METHODS

Design

This descriptive study was conducted to examine the factors affecting digital game addiction in children aged 10-14.

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Study Population

The study population consisted of students attending the 5th, 6th, 7th, and 8th grades of secondary schools affiliated with the Aydın Provincial Directorate of National Education. The total number of students studying in Aydın city center was requested by written application. Since the number of the population was not known at this stage, the sample calculation was made according to the unknown population.

Research Sample

The sample size was calculated using the formula (n= N t2pq / d2 (N-1) + t2pq), (N=15047, p=0.3, q=0,7, t=1.96 d2=0.0025). The study sample was planned to include 378 students between the ages of 10-14 who were attending the 5th, 6th, 7th, and 8th grades of secondary schools. Among the Central Efeler District Secondary Schools of the Directorate of National Education in Aydın, five schools with the highest number of students were randomly selected based on the principle of equality in education. According to the stratified sampling method, approximately how many students would be taken from each class in the schools was calculated. Then, a total of 95 students were selected from the randomly determined classes according to the class list according to the simple random sampling method (Özdamar, 2019). As a result of the research, the sample size was completed with a total of 151 students: 41 in 5th grade, 46 in 6th grade, and 64 in 7th grade. The total number of students who participated in the study could not reach 378 due to the fact that there were students who did not fill out the questionnaires or returned the questionnaires empty, and 8th graders were absent from school due to the high school transition exams.

Inclusion criteria: Children between the ages of 10-14 were required to agree to participate in the study, to be present at school on the day of data collection, and to fill out the data collection forms completely.

Exclusion criteria: Children who are not between 10 and 14 years of age, who have incomplete filling in the research data, and who do not want to participate in the research.

Exclusion criteria and actions to be taken in this case: Children and parents who wanted to leave the study for any reason, children whose data were incompletely filled in by their parents or themselves, children who wanted to leave the study at any stage of the study (or who were asked to leave by their parents) were excluded from the study.

Data Collection

Data were collected between March 20, 2021 and March 19, 2022.

Data Collection Tools

Data were collected using the researcher-designed Child Data Form describing socio-demographic characteristics and the Digital Gaming Addiction Scale for Children.

Child Data Form: In the study, the data of the students and their families were collected using the Child Data Form, which was prepared by the researchers using the relevant literature (Dilci et al., 2019; Gökçearslan & Durakoğlu, 2014; Karaca et al., 2016; Karacaoğlu, 2019). It consists of a total of 14 questions that include socio-demographic descriptive information about the student and his/her family (age, gender, education level, number of siblings, parents' education level, family type,

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etc.), parents' attitudes, parents' employment status, marital status, and information about whether the computer belongs to the child and whether the child has a separate room.

Digital Gaming Addiction Scale for Children (DGASC): It was developed by Hazar et al., (2017), with the participation of students aged 10-14 years, to determine the level of digital game addiction among children. The scale has four sub-dimensions and consists of a total of 24 items. The Excessive Focus and Conflict for Playing Digital Games sub-dimension of the scale consists of 7 items (items 5,6,7,10,13,14,23), the Development of Tolerance in Game Time and the Value Attributed to the Game sub-dimension consists of 7 items (items 1,3,11,16,18,21,24), the Development of Individual and Social Tasks/Tasks/Conflict sub-dimension consists of 7 items (items 1,3,11,16,18,21,24). The postponement of individual and social tasks/chores consists of 6 questions (items 12,15,17,19,20,22), and the psychological-physiological reflection of deprivation and immersion in play consists of 4 questions (items 2,4,8,9). The statements in the scale are rated on a 5-point Likert scale (1= strongly disagree, 5= strongly agree). Reliability coefficients for the total score and sub-dimensions of the scale were found to be .82 for excessive focus and conflict towards playing digital games, .76 for developing tolerance during game time and value attributed to the game, .79 for postponing individual and social tasks/assignments, .86 for psychophysiological reflection of deprivation and immersion in the game, and .91 for the total scale items (Hazar et al., 2017).

Data Collection

The study was conducted with students attending the 5th, 6th, 7th, and 8th grades of secondary schools affiliated with the Aydın Provincial Directorate of National Education. Students who were accepted to participate in the study by themselves and their parents were included in the study. All children and their parents who participated in the study were given time to ask questions after the details about the purpose, method, and application of the study were explained, and they were asked if they had any questions about the study. Written informed consent was then obtained from the children and their parents, who agreed to participate.

The data were collected by the researchers on weekdays (five days) during school hours during breaks. On the study days, the researchers entered each classroom during the breaks accompanied by the classroom teachers. They explained that all information in the questionnaires would be kept confidential and would not be shared with the participants' families, the school principal, and teachers and that the evaluations would be conducted in a computerized environment. The students were asked to answer each question.

Following the random selection of students from the class list, an explanation was provided to those who were to be included in the study. Once the verbal consent of students who volunteered to participate had been obtained, a sealed envelope containing the "Informed Voluntary Consent Form," "Child Data Form," and the "Digital Gaming Addiction Scale for Children" was given to the students to be given to their parents. Subsequently, the children were requested to complete the Informed Voluntary Consent Form and the Child Data Form, provided that their parents had consented to their participation in the study. Following this, the Digital Gaming Addiction Scale for Children was presented for review, after which the children were instructed to return the envelope to their teachers by placing it back in the envelope for their child to complete at school. At the subsequent visit, the school was again visited on the date previously arranged with the class teacher. The students who had brought the envelope and whose participation in the study had been approved by their parents

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were asked to sign the Informed Voluntary Consent Form (ICVF). Subsequently, the students were requested to complete the Digital Gaming Addiction Scale for Children via the self-report method.

Data Analysis

The data were evaluated using the SPSS (Statistical Package For Social Sciences) 27.0 package program. Frequency tables and descriptive statistics were used to interpret the findings. The conformity of the measurement values to normal distribution was analyzed using Shapiro-Wilk and Kolmogorov-Smirnov tests. For non-normally distributed measurement values, the "Mann-Whitney U" test was used to compare the measurement values of two independent groups, and the "Kruskal-Wallis H" test was used to compare the measurement values of three or more independent groups. Bonferroni correction was applied for pairwise comparisons of variables with significant differences for three or more groups. Spearman's correlation coefficient was used to examine the relationship between two quantitative variables that did not have a normal distribution. Values at $p<0.05$ level were considered statistically significant (Özdamar, 2019). A biostatistics expert was consulted for data analysis.

Ethical Approval

Written institutional permission was obtained from Aydın Adnan Menderes University Faculty of Nursing Non-Interventional Research Ethics Committee (No: 50107718-050.99, Decision: 2020/190) and Aydın Provincial Directorate of National Education for the schools in Efeler district. Before the data collection tools were applied, the principals or vice principals in the schools explained the nature and purpose of the study, the forms to be applied, and permission to obtain.

RESULTS

The results of the study, which was conducted to evaluate the factors affecting Digital Game Addiction in children between the ages of ten and fourteen, were presented under two headings: results on the descriptive characteristics of children and parents and results on digital game addiction.

Results on the Distribution of Descriptive Characteristics of Children and Parents

The age group of the students included in the study was between 10-14 years old. Considering the average age, 108 (71.5%) of the students were in the age group of 12/over. 64 (42.4%) of the students were still studying in the 7th grade. When the distribution of the secondary school they attended was analyzed, 46 (30.5%) of them were attending Dr. Fevzi Mürüvvet secondary school, and 94 (62.3%) of them were girls. Regarding the computer-use status of the students, it was determined that 130 students (86.1%) had a computer at home, 96 (63.6%) had a personal computer belonging to the child, 139 (92.1%) played computer games at home, and 129 (85.4%) had their own room (Table 1).

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Table 1. Distribution of Children's Descriptive Characteristics

Variable (N=151)	n	%
Grade		
5th	41	27.2
6th	46	30.4
7th	64	42.4
School		
Dr. Fevzi Mürüvvet	46	30.5
Mustafa Kiriş	26	17.2
Gazipaşa	29	19.2
Hacı Celal Oto	40	26.5
Özel Ege Atabey	10	6.6
Age [$\overline{X} \pm$ S.D.→12.16±0.99 (year)]		
10-11	43	28.5
12 and above	108	71.5
Gender		
Female	94	62.3
Male	57	37.7
Having a computer at home		
Yes	130	86.1
No	21	13.9
The child has his/her own computer		
Yes	96	63.6
No	55	36.4
The place where the child plays computer games the most		
At home	139	92.1
Not playing computer games	12	7.9
The child has his/her own room at home		
Yes	129	85.4
No	22	14.6

When the distribution of the socio-demographic characteristics of the parents was analyzed, it was determined that 134 parents (88.7%) were married, 76 (50.3%) of the children's mothers were employed, and 137 (90.7%) of the children's fathers were employed. Among them, 75 (49.7%) considered themselves as caring/tolerant parents, 136 (90%) had a nuclear family type, 87 (57.6%) had two children, and 63 (41.7%) mothers and 64 (42.4%) fathers were university graduates (Table 2).

Table 2. Distribution of Parents' Socio-demographic Characteristics

Variable (N=151)	n	%
Marital Status		
Married	134	88.7
Single	17	11.3
Mother's employment status		
Yes	76	50.3
No	75	49.7
Father's employment status		
Yes	137	90.7
No	14	9.3
Defining own parenting		
Protective/controller	66	43.7
Authoritarian/repressive	10	6.6
Caring/tolerant	75	49.7
Family Type		
Nuclear family	136	90.0
Extended family	6	4.0
Fragmented family	9	6.0
Number of children		
1	21	13.9
2	87	57.6
3 and above	43	28.5

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Table 2. Distribution of Parents' Socio-demographic Characteristics (Continued)

Variable (N=151)	n	%
Mother's education level		
Literate/Primary school	30	19.9
Middle School	20	13.2
High School	38	25.2
University	63	41.7
Father's education level		
Literate/Primary school	22	14.6
Middle School	21	13.9
High School	44	29.1
University	64	42.4

Descriptive results regarding the scores obtained by the participants are presented in the Table 3.

Table 3. Distribution of Scores on the Scale

Scale (N=151)		Mean	SD	Median	Min.	Max.
Digital Game Addiction Scale for Children (DGASC)	*Excessive focus/conflict*	12.53	5.79	11.0	7.0	34.0
	Tolerance/value	15.46	7.25	14.0	7.0	35.0
	Postponing social tasks	9.93	4.78	9.0	6.0	30.0
	Reflection of deprivation	8.49	2.99	8.0	4.0	17.0
	DGASC – Total	46.42	18.90	42.0	24.0	111.0

SD: Standard deviation, Min: Minimum, Max: Maximum.

It was determined that the responses of the respondents to the scale were generally at a high level of reliability (Table 4).

Table 4. Examining the Reliability Coefficient of the Scales

Scale (N=151)		Number of items	Cronbach-α coefficient
Digital Game Addiction Scale for Children (DGASC)	*Excessive focus/conflict*	7	0.856
	Tolerance/value	7	0.904
	Postponing social tasks	6	0.837
	Reflection of deprivation	4	0.799
	DGASC – Total	24	0.946

Results Regarding Digital Game Addiction

When analyzing the distribution of scores related to digital game addiction, no statistically significant difference was found in terms of DGASC total scores by grade, presence of a computer, owning a computer, mother's education, and father's education level ($p>0.05$). A statistically significant difference was found in DGASC-Total scores according to age classes ($Z=-2.667$; $p=0.008$). The DGASC-Total scores of subjects aged 10-11 years were found to be significantly higher than those of subjects aged 12 years and above. A statistically significant difference was observed in terms of DGASC-Total scores according to gender ($Z=-4.049$; $p<0.001$). It was determined that the DGASC-Total scores of male subjects were significantly higher than those of female subjects (Table 5).

Table 5. Comparison of DGASC-Total Scores According to Findings

Variable (N=151)	n	DGASC – Total		Statistical analysis* Probability
		$\bar{X} \pm S.D.$	Median [IQR]	
Grade				
5th	41	50.19±15.63	50.0 [25.5]	$\chi^2=5.438$
6th	46	47.11±22.08	38.5 [36.3]	p=0.066
7th	64	43.51±18.13	37.0 [28.0]	
Age group				
10-11	43	51.72±17.95	50.0 [26.0]	Z=-2.667
12 and above	108	44.31±18.93	37.0 [29.8]	**p=0.008**
Gender				
Female	94	41.92±17.58	36.0 [22.3]	Z=-4.049
Male	57	53.84±18.80	53.0 [25.5]	**p<0.001**

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Table 5. Comparison of DGASC-Total Scores According to Findings (Continued)

Variable (N=151)	n	DGASC – Total		Statistical analysis* Probability
		$\bar{X} \pm S.D.$	Median [IQR]	
Having a computer at home				
Yes	130	46.39±18.21	44.0 [31.3]	Z=-0.344
No	21	46.62±23.25	36.0 [25.0]	p=0.731
The child has his/her own computer				
Yes	96	46.31±18.78	43.0 [31.0]	Z=-0.106
No	55	46.62±19.28	41.0 [29.0]	p=0.915
Mother's education level				
Literate/Primary school	30	44.33±17.84	41.5 [20.0]	
Middle School	20	45.00±21.61	35.5 [31.3]	χ^2=1.133
High School	38	46.34±17.49	47.0 [35.0]	p=0.769
University	63	47.92±19.59	46.0 [28.0]	
Father's education level				
Literate/Primary school	22	42.36±12.81	42.0 [18.8]	χ^2=0.490
Middle School	21	48.43±24.57	38.0 [35.5]	p=0.921
High School	44	45.89±17.78	42.0 [27.0]	
University	64	47.53±19.49	46.0 [33.5]	

* Z-Table value- "Mann-Whitney U" test and χ2- Table value-"Kruskall-Wallis H" test

There was no statistically significant difference in DGASC- Total scores according to marital status, mother's employment, father's employment, parental self-identification, family type, number of children, and child's room (p>0.05). A statistically significant difference was found in terms of DGASC- Total scores according to the place of playing computer games (Z=-2.998; p=0.003). It was determined that the DGASC-Total scores of those who played computer games at home were significantly higher than those who did not play computer games (Table 6).

Table 6. Comparison of DGASC-Total Scores Based on Results

Variable (N=151)	n	DGASC – Total		Statistical analysis* Probability
		$\bar{X} \pm S.S.$	Median [IQR]	
Marital Status				
Married	134	45.29±18.22	41.0 [28.3]	Z=-1.885
Single	17	55.35±22.22	56.0 [36.5]	p=0.059
Mother's employment status				
Yes	76	46.67±19.72	45.0 [30.5]	Z=-0.089
No	75	47.17±18.15	42.0 [29.0]	p=0.929
Mother's employment status				
Yes	137	46.94±19.12	44.0 [31.0]	Z=-0.921
No	14	41.35±16.22	35.5 [13.5]	p=0.357
Playing computer game				
At home	139	47.48±18.82	44.0 [28.0]	Z=-20.998
Not playing	12	34.16±15.75	26.0 [20.3]	**p=0.003**
Defining own parenting				
Protective/controller	66	45.81±19.39	41.5 [31.0]	χ^2=0.303
Authoritarian/repressive	10	46.60±19.68	41.0 [18.8]	p=0.860
Caring/tolerant	75	46.93±18.59	42.0 [29.0]	
Family Type				
Nuclear family	136	45.43±18.34	41.5 [28.5]	χ^2=3.679
Extended family	6	50.50±19.82	48.0 [41.3]	p=0.159
Fragmented family	9	58.66±24.00	61.0 [36.5]	
Number of Children				
1	21	41.95±18.23	34.0 [28.5]	χ^2=1.684
2	87	46.57±17.42	46.0 [28.0]	p=0.431
3 and above	43	48.30±21.94	41.0 [30.0]	
The child has his/her own room				
Yes	129	46.29±18.58	42.0 [29.5]	Z=-0.069
No	22	47.18±21.08	45.5 [33.3]	p=0.945

* Z-Table value- "Mann-Whitney U" test and χ2- Table value-"Kruskall-Wallis H" test

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DISCUSSION

The rapid advancement of technology has caused an increase in the number of children who develop an addiction to digital games due to the ease of access to digital gaming tools. This situation gives rise to a number of adverse outcomes, including a decline in academic performance, an increase in violent behavior, a deterioration in social interactions, and the emergence of physical disorders. The objective of this study was to investigate the factors affecting digital game addiction in children and adolescents aged 10-14 years. Our findings revealed a significant disparity in digital game addiction between boys and girls, with a higher prevalence among the former. A review of the literature reveals that studies have consistently demonstrated a higher prevalence of digital game addiction and internet gaming disorders among boys compared to girls (Juthamanee & Gunawan, 2021; King & Potenza, 2020; Lee et al., 2017; Leonhardt & Overå, 2021; Şimşek et al., 2023). Similarly, Atabay et al. (2023) demonstrated in their study, entitled "Comparison of Digital Game Playing Habits of Secondary School Students in Terms of Game Addiction and Various Demographics," that the scale scores of male participants were significantly higher than those of female participants.

The study conducted by Boz & Dinç (2023) revealed that the prevalence of digital game addiction was higher in boys than in girls among children between the ages of 4 and 15. This difference, which was found to be higher in boys than girls, can be explained by affective differences such as boys' greater curiosity about technological devices and their greater enjoyment of spending time on computers, tablets, and mobile phones or the fact that games that appeal to boys are more popular (Atak, 2020; Balıkçı, 2018). In Budak's (2020) study, it was determined that boys exhibited a preference for violent games, whereas girls demonstrated a proclivity for social and educational games.

Another finding was that there was a significant correlation between age and digital game addiction. Specifically, 10- to 11-year-old children exhibited higher levels of digital game addiction than children aged 12 and above. The results of studies examining the relationship between age and digital game addiction vary across the literature. Similarly, Aydoğdu (2018) discovered that children between the ages of 11 and 12 exhibited higher levels of addiction than those between the ages of 13 and 14. Additionally, the literature includes studies indicating that digital game addiction increases linearly with age (Hazar et al., 2017; Lee & Kim, 2017). Nevertheless, some studies have indicated that age is not a statistically significant factor in digital game addiction (Demir, 2024; Hazar, 2016; Özdemir & Karaboğa, 2021; Yang et al., 2023).

The study revealed no statistically significant correlation between the number of siblings and digital game addiction. A review of the literature reveals both similarities and differences in the relationship between the number of siblings and game addiction. Some studies (Avşar, 2013; Aydoğdu, 2018; Hazar et al., 2017) are analogous to our study in that they do not demonstrate a statistically significant correlation between the number of siblings and addiction levels. In the study conducted by Kablan & İmamoğlu (2024), while a correlation was identified between the number of siblings and the status of digital game playing, no such correlation was observed with regard to the motivation to play games and addiction levels.

A correlation was identified between the prevalence of digital game addiction and the frequency of computer gaming at home. In a study conducted by Demir (2024), a statistically significant positive correlation was observed between children's digital game addiction and the amount of time spent on the internet and television. Nevertheless, the subject remains under-researched in the existing literature. The findings of our study indicate that children who engage in excessive screen time, including internet and television usage, at home are at an elevated risk of developing digital game addiction.

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Finally, the level of parental education and the type of family did not prove to be significant factors in the development of digital game addiction, as evidenced by the findings of our study. Our study yielded comparable results to those of Ankara and Baykal (2022), indicating that family type had no impact on game addiction. As demonstrated in studies by Aydoğdu (2018) and Demir (2024), which employed a similar methodology to our own, the educational status of parents was found to have no effect on the addiction levels of their children. In this context, it can be posited that children emulate their mothers and engage with digital games as a consequence of being influenced by their families and their environment. However, an examination of the literature revealed disparate results compared to those observed in our study. As the mother's educational level increases, the incidence of digital game addiction in children declines (Ankara & Baykal, 2022; Erdoğan, 2019).

In this study, it was found that variables such as marital status, mother's employment, father's employment, parent's self-identification, family type, number of children and whether the child has a room of his/her own did not make a statistically significant difference on digital game addiction in children. Similarly, studies have also reported that the marital status of the parents, the total number of children in the family, whether the child has a room of his/her own, and the occupational status of the parents do not have a significant effect on digital game addiction in children (Ankara & Baykal, 2022; Yang et al., 2023).

Some studies indicate that as the mother's education level increases, children's digital game addiction levels tend to rise (Nielsen et al., 2020; Öztürk Eyimaya et al., 2020; Wu et al., 2016). Additionally, studies have indicated that the prevalence of mothers' engagement in digital gaming significantly correlates with their children's susceptibility to digital game addiction (Ankara & Baykal, 2022; Aydoğdu, 2018). In a study conducted by Aksoy and Erol (2021) that examined the relationship between children's digital game addiction and lifestyles, it was found that the prevalence of digital game addiction was significantly higher among boys who reported that their families had low-income, poor relations with their family and friends, and poor living conditions.

Limitations

The absence of eighth-grade students from school due to their participation in examinations and the fact that our data collection occurred during the ongoing pandemic resulted in a reduction in the number of samples. The study was limited in scope in that it focused exclusively on students enrolled in schools within the Central Efeler District of the Directorate of National Education in Aydın who were present on the day the data were collected.

CONCLUSIONS

The findings of our study indicate that gender, age, and the presence of computer games in the home environment are significant predictors of children's levels of digital game addiction. No significant correlation was identified between parental education level, family structure, or the number of siblings and the observed outcomes. Child health nurses who serve in an educational, counseling, supportive, and advocacy capacity for both the child and his or her family should investigate the potential negative effects of digital games on child development and provide education and counseling to parents and teachers at school. In alignment with the findings, child health nurses may facilitate evidence-based training for children on the adverse effects of digital games on child development. Teachers can raise awareness about organizing social and academic activities that prevent digital gaming from increasing children's socialization, organize training for families about setting limits on digital devices at home, conduct studies on different age groups and other variables on digital gaming

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addiction levels with the role of researcher, and play an advocacy role in developing policies to set legal limitations to protect children regarding digital games. Furthermore, it is recommended that this study be conducted with a larger sample group.

Ethics Comittee Approval/Araştırmanın Etik Yönü: Written institutional permission was obtained from Aydın Adnan Menderes University Faculty of Nursing Non-Interventional Research Ethics Committee (No: 50107718-050.99, Decision: 2020/190) and Aydın Provincial Directorate of National Education for the schools in Efeler district. Before the data collection tools were applied, the principals or vice principals in the schools explained the nature and purpose of the study, the forms to be applied, and permission to obtain.

Conflict of Interest/Çıkar Çatışması: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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