EJSSE

Eurasian Journal of Sport Sciences and Education
Avrasya Spor Bilimleri ve Eğitim Dergisi
Vol: 5, Issue: 1, 2023
E-ISSN: 2717-8455
URL: http://www.dergipark.org.tr/ejsse

Investigation of the Relationships between Digital Game Addiction, Nutritional Attitudes and Body Mass Index Values of 12-14 Year Old Children*

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Original Article
Received: 04.11.2022 Accepted: 19.03.2023 **DOI: 10.47778/ejsse.1199423**
Online Publishing: 31.03.2023

Abstract

This study was conducted to examine the relationships between digital game addiction, nutritional attitudes and body mass indexes in children aged 12-14. Before starting the study, necessary permission and ethics committee approval were obtained for the research. Research data were collected face-to-face in some schools in the Menteşe district of Muğla province. The mean age of the children participating in the study was 12.83±0.71 years for girls and 12.95±0.68 years for boys. Body mass index values were determined as 21.58±2.64 kg/m2 for girls and 21.88±2.87 kg/m2 for boys. According to the gender variable, a significant difference was found between the digital game addiction values and the positive nutrition, malnutrition sub-dimensions and total scores of attitudes toward nutrition ($p<0.05$). A significant difference was found between the digital game addiction values and the sub-dimensions of knowledge about nutrition according to the age variable ($p<0.05$). There was a positive correlation between the digital game addiction of boys and the feeling of nutrition; On the other hand, significant negative correlations were found between digital game addiction and malnutrition. On the other hand, negative and significant relationships were found between digital game addiction and nutritional emotion, digital game addiction and positive nutrition, digital game addiction and malnutrition, and digital game addiction and Attitude Scale for Healthy Nutrition (ASHN) total scores of girls. As a result, it is thought that the presence of digital game addiction and some negative factors related to nutrition among children can also affect unhealthy eating attitudes, and this situation, combined with the effect of a sedentary lifestyle, may have very important consequences for children's health.
Keywords: Child, Game, Addiction, Nutrition.

12-14 Yaş Arası Çocuklarda Dijital Oyun Bağımlılığı, Beslenme Tutumları ve Beden Kütle İndeksi Arasındaki İlişkilerin Araştırılması

Öz

Bu çalışma, 12-14 yaş arası çocuklarda dijital oyun bağımlılığı, beslenme tutumları ve beden kütle indeksleri arasındaki ilişkilerin incelenmesi amacıyla yapılmıştır. Çalışmaya başlamadan önce, araştırma için gerekli izin ve etik kurul onayı alınmıştır. Araştırma verileri, Muğla ili Menteşe ilçesine bağlı bazı okullarda yüz yüze olarak toplanmıştır. Araştırmaya katılan çocukların yaş ortalamaları, kızlarda 12,83±0,71 yıl, erkeklerde 12,95±0,68 yıldır. Beden kütle indeksi değerleri ise kızlarda 21,58±2,64 kg/m2, erkeklerde 21,88±2,87 kg/m2 olarak belirlenmiştir. Cinsiyet değişkenine göre, dijital oyun bağımlılığı değerleri ile beslenmeye ilişkin tutumlarının olumlu beslenme, kötü beslenme alt boyutları ve toplam puanları arasında anlamlı farklılık tespit edilmiştir ($p<0,05$). Yaş değişkenine göre dijital oyun bağımlılığı değerleri ile beslenme hakkında bilgi alt boyutları arasında anlamlı fark bulunmuştur ($p<0,05$). Erkek çocukların; dijital oyun bağımlılığı ile beslenmeye yönelik duygu arasında pozitif yönde; dijital oyun bağımlılığı ile kötü beslenme arasında ise negatif yönde anlamlı düzeyde ilişkiler tespit edilmiştir. Kız çocukların ise dijital oyun bağımlılığı ile beslenmeye yönelik duygu, dijital oyun bağımlılığı ile olumlu beslenme, dijital oyun bağımlılığı ile kötü beslenme ve dijital oyun bağımlılığı ile sağlıklı beslenmeye ilişkin tutum ölçeği (SBİTÖ) toplam puanları arasında negatif yönde anlamlı düzeyde ilişkiler tespit edilmiştir. Sonuç olarak, çocuklar arasında dijital oyun bağımlılığı ile beslenmeye ilişkin bazı olumsuz etkenlerin varlığının sağlıklı olmayan beslenme tutumlarını da etkileyebildiği, bu durumun hareketsiz bir yaşam tarzının da ortaya çıkaracağı etkiyle birleşince, çocuklarda sağlık açısından dikkat edilmesi gereken oldukça önemli sonuçlar doğurabileceği düşünülmektedir.
Anahtar kelimeler: Çocuk, Oyun, Bağımlılık, Beslenme.

* This study was supported by TUBITAK "2209-A University Students Research Projects Support Program". We would like to thank TÜBİTAK.
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INTRODUCTION

In living conditions, with the advantages of technology, the daily physical activities of many individuals remain at a very low level. Naturally, people tend to be more inactive (Bulut, 2013). It is stated that a sedentary lifestyle is one of the most important problems for modern societies that make even their daily shopping from virtual markets with computers (Bek, 2008).

The fact of obesity is one of the main causes of inactivity is seen as a widespread problem worldwide. It is revealed to the World Health Organization that this problem is rapidly spreading among children. Watching television and playing digital games are among the most serious reasons for this situation (Marshall et al., 2004). According to Hazar and Hazar (2017), playing digital games is at the top of the list of activities that should be done in children's spare time.

Nutrition is the use of nutrients for growth, survival and maintenance of health. Nutrition is not to suppress the feeling of hunger, to fill the stomach or to eat what you want. Nutrition is an action that must be done consciously in order to take the nutrients needed by the body in sufficient quantities and at appropriate times in order to protect and improve health and improve the quality of life (Efe-Aydın, 2017). Healthy nutrition, on the other hand, is expressed as consuming foods in terms of growth and development, sustaining life, protecting, improving and improving health and increasing the quality of life (Pekcan, 2008).

The increase or decrease in body weight is a state of balance that occurs in the organism of the individual. If more consumption than the daily requirement and less amount of activity is done, body weight will increase, while if less consumption is done more activity, body weight will decrease (Güneş, 2005). Among the behavioral factors that guide eating habits, there are reasons such as consumption of food/beverage in front of the television and computer, eating fast, skipping meals and portion size, and consumption of energy-dense foods and beverages between meals. In the daily diet, consumption of fresh vegetables and fruits, whole grain products, skim milk and products, fish, chicken and other lean meats and legumes are stated as healthy choices. It is emphasized that the consumption of foods with high fat and sugar content from processed and ready-made foods are unhealthy choice (Republic of Turkey Ministry of Health, 2017).

Adequate, balanced and regular nutrition from birth is of fundamental and undeniable importance in raising individuals who have primary importance in reaching a healthy and civilized society level (Zembat et al., 2015). It is of great importance to prevent diseases by developing a healthy diet and healthy lifestyle. In the globalization process, healthy nutrition should be transformed into a lifestyle for all individuals in order to achieve the desired quality of life (Pekcan et al., 2019).

It can be considered as a possible situation that the body mass index values of children who do not have regular and healthy eating behaviors can go beyond the normal limits with the inactivity that digital game commitment can bring. In this study, it is aimed to determine and interpret the relationship between digital game addiction, nutritional attitudes and body mass indexes in children aged 12-14.

METHODS

Research Model

This research was designed in a descriptive study model, using the questionnaire technique as a data collection tool. The study is in a descriptive survey model that questions the digital game addictions, nutritional attitudes and body mass indexes of children aged 12-14.

Research Group

The research group voluntarily consisted of 491 girls with an average age of 12.83±0.71 years and 508 boys with an average age of 12.95±0.68 years, attending schools in the Mentese district of Mugla province.

Data Collection Tools

Personal Information Form, Attitudes towards Healthy Eating Scale and Digital Game Addiction Scale for Children were used to collect data in the study.

Attitude Scale for Healthy Nutrition: The "Attitude Scale for Healthy Nutrition (ASHN)" developed by Tekkurşun-Demir and Cicioğlu (2019) was used to determine the students' attitudes towards nutrition. The scale consists of four sub-factors and 21 items as "Knowledge About Nutrition, Feelings About Nutrition, Positive Nutrition and Malnutrition". The lowest score that can be obtained from the scale is 21, while the highest score is 105. In the scale, 21 points are described as very low, 23-42 points low, 43-63 points moderate, 64-84 points high and 85-110 points ideally high as the attitude towards healthy eating.

Digital Game Addiction Scale for Children: This scale developed by Hazar and Hazar (2017) was used to determine students' digital game addictions. The scale consists of 24 items. There are four sub-factors: "Excessive Focus and Conflict on Digital Gaming", "Development of Tolerance in Playtime and Value attributable to Play", "Postponement of Individual and Social Tasks/Homework", "Psychological Physiological Reflection of Deprivation and Playing". The lowest score that can be obtained from the scale is “24” and the highest score is “120”. According to the evaluation in the scale, 1-24 points are in the normal group, 25-48 points are in the low-risk group, 49-72 points are in the risky group, 73-96 points are in the dependent group, and 97-120 points are in the highly dependent group.

Body Mass Index (BMI): Body mass index is a practical method used to determine the state of weakness and obesity (Pekcan, 2008). Body mass index values were calculated from the heights and body weights of the individuals participating in the study.
BMI Formula= [Body weight (kg) / Height (m)2] (Republic of Turkey Ministry of Health, 2012; WHO, 2022).

Research Publication Ethics

Ethical approval of the research was obtained with the decision of Mugla Sitki Kocman University Medical and Health Sciences Ethics Committee (Sports, Health) dated 07.02.2022 and numbered 8. On the other hand, in order to implement the study, research application permission was obtained from the Mugla Provincial Directorate of National Education.

Data Collection

The research data were collected face-to-face at schools in the Mentese district of Mugla province after the necessary permissions and ethics committee approval was obtained.

Analysis of Data

All other data obtained in the research were recorded in the SPSS program. The normality distributions of the obtained data were determined by using the Kolmogorov-Smirnov test. After the arithmetic mean and standard deviation values were calculated, the differences between the groups (t-test and ANOVA) were examined. Post hoc (Tukey HSD) was used to determine the group or groups that created the difference, and correlation tests were used to examine the relationships between parameters. The significance level was accepted as $p<0.05$.

RESULTS

Table 1. Descriptive statistics of participating in the study

	Variables	N	Mean	Std. Dev.
Girls	Body Height (cm)	491	150,64	7,68
	Body Weight (kg)	491	49,26	8,75
	Body Mass Index (kg/m^2)	491	21,58	2,64
	Age (year)	491	12,83	0,71
Boys	Body height (cm)	508	150,76	8,09
	Body Weight (kg)	508	50,14	9,81
	Body Mass Index (kg/m^2)	508	21,88	2,87
	Age (year)	508	12,95	0,68

The mean age of the girls participating in the study was 12.83±0.71; average height of 150.64±7.68 cm; mean body weight is 49.26±8.75 kg. The mean BMI values of girls were determined as 21.58±2.64 kg/m^2.

The mean age of the boys participating in the study was 12.95±0.68; average height of 150,64±8,09 cm; mean body weight is 50,14±9,81 kg. The mean BMI values of girls were determined as 21,88±2,87kg/m^2.

Table 2. Descriptive statistics of the participants

Variables		F	%
Gender	Girl	491	49,1
	Boy	508	50,9
Class	6th grade	182	18,2
	7th grade	544	54,5
	8th grade	273	27,3
	Total	999	100

The rate of girls participating in the research is 49.1%. The rate of boys is 50.9%. Among the children constituting the research group, the sixth-grade students were 18.2%; seventh grade 54.5%; the eighth grade is 27.3%.

Table 3. Comparison of digital game addiction and attitude for healthy nutrition by gender

Variables	Gender	N	Mean	Std. Dev.	t	p
Nutrition Information	Girl	491	21,35	2,47	1,373	,170
	Boy	508	21,13	2,55		
Emotion to Nutrition	Girl	491	25,90	2,44	-,520	,603
	Boy	508	25,98	2,64		
Positive Nutrition	Girl	491	21,51	2,08	3,966	0,000*
	Boy	508	20,93	2,49		
Malnutrition	Girl	491	21,89	2,18	5,179	0,000*
	Boy	508	21,11	2,55		
Attitude for Healthy Nutrition Total score	Girl	491	90,66	6,34	3,554	0,000*
	Boy	508	89,17	6,90		
Digital Game Addiction	Girl	491	54,31	20,95	10,177	0,000*
	Boy	508	41,73	18,06		

*p<0,05

When digital game addiction and attitudes for healthy nutrition were compared according to the gender variable; a significant difference was found between digital game addiction values and positive nutrition, malnutrition sub-dimensions and total scores of attitudes for healthy nutrition ($p<0.05$).

Table 4. The relationship between boys' BMI, Digital Game Addictions and Attitude for Healthy Nutrition

Variables		BMI	1	2	3	4	5
Nutrition Information **(1)**	p	-,078					
	r	,078					
	N	508					
Emotion to Nutrition **(2)**	p	-,029	,128**				
	r	,510	,004				
	N	508	508				
Positive Nutrition **(3)**	p	-,005	,354**	,268**			
	r	,916	,000	,000			
	N	508	508	508			
Malnutrition **(4)**	p	-,008	,175**	,268**	,446**		
	r	,850	,000	,000	,000		
	N	508	508	508	508		
Attitude for Healthy Nutrition Total score **(5)**	p	-,045	,612**	,627**	,761**	,698**	
	r	,311	,000	,000	,000	,000	
	N	508	508	508	508	508	
Digital Game Addiction **(6)**	p	,025	,019	,109*	-,030	-,096*	,003
	r	,575	,670	,014	,506	,030	,954
	N	508	508	508	508	508	508

When the relationships between the digital game addictions of boys and their attitudes for healthy nutrition are examined; a positive correlation was found between digital game addiction and emotion towards nutrition. On the other hand, significant negative correlations were found between digital game addiction and malnutrition.

Table 5. The Relationship between Girls' BMI, Digital Game Addictions and Attitude for Healthy Nutrition

Variables		BMI	1	2	3	4	5
Nutrition Information **(1)**	p	-,023					
	r	,614					
	N	491					
Emotion to Nutrition **(2)**	p	,050	,113*				
	r	,268	,012				
	N	491	491				
Positive Nutrition **(3)**	p	,079	,408**	,264**			
	r	,082	,000	,000			
	N	491	491	491			
Malnutrition **(4)**	p	-,024	,411**	,247**	,405**		
	r	,589	,000	,000	,000		
	N	491	491	491	491		
Attitude for Healthy Nutrition Total score **(5)**	p	,028	,709**	,601**	,729**	,733**	
	r	,539	,000	,000	,000	,000	
	N	491	491	491	491	491	
Digital Game Addiction **(6)**	p	-,030	-,264**	,057	-,137**	-,332**	-,240**
	r	,513	,000	,203	,002	,000	,000
	N	491	491	491	491	491	491

When the relationships between girls' digital game addictions and their attitudes towards nutrition are examined; significant negative correlations were found between digital game addiction and emotion towards nutrition. On the other hand, negative and significant correlations were found between digital game addiction and positive nutrition, digital game addiction and malnutrition, and digital game addiction and attitude total scores.

DISCUSSION AND CONCLUSION

According to the findings obtained in the research; In terms of gender variable, a significant difference was found between digital game addiction values and positive nutrition, malnutrition sub-dimensions and total scores of attitudes towards nutrition. According to the class variable, a significant difference was found between digital game addiction values and nutritional knowledge, malnutrition sub-dimensions and total scores. According to the age variable, a significant difference was found between the digital game addiction values and the knowledge about nutrition.

While there was a positive relationship between the digital game addiction of boys and their emotional values for nutrition, a negative significant relationship was found between digital game addiction and malnutrition. On the other hand, negative and significant correlations were found between digital game addiction and nutritional emotion, digital game addiction and positive nutrition, digital game addiction and malnutrition, and digital game addiction and attitude total scores of girls.

In a study conducted by Metinoğlu et al., (2012), 9.5% of female students and 11.2% of male students were found to be overweight. In the study conducted by Alphan et al., (2002) it was determined that 25.2% of 12-14 year old students were classified as fat in terms of body mass index values. In Başar's (2019) study on children aged 11-14, it was found that 24.2% of children were classified as obese. In the study conducted by Semiz et al., (2008), 11.6% of children between the ages of 6-15 are overweight. On the other hand, 1.4% of the children are in the obese class.

In a study conducted by Yiğit and Günüç (2020) on digital game addiction in children, 44% of children were in the group at risk of addiction and 15.1% in the addicted group. In the study conducted by Aslan et al., (2022), it was concluded that there is a significant relationship between digital game addiction and negative social skills and social behaviors in children.

In a study conducted by Mustafaoğlu and Yasacı (2018), the negative effects of playing digital games on the mental and physical health of children were examined. In this study, it was determined that 85.2% of children aged 7-15 use tablets and 72.1% use mobile phones, on the other hand, these individuals play digital games for an average of 3 hours a day. In a study conducted by Savaşhan et al., (2015) on children, it was concluded that the prevalence of obesity is significantly higher in children who spend more time in front a television or computer.

In a study conducted by Hendekçi and Aydın-Avcı (2020) on children with a mean age of 12.25±0.98 years, they found that internet addiction and Unhealthy Eating-Exercise Behavior

scores were against men. On the other hand, it was found that there is a relationship between adolescent school success and internet addiction and nutrition exercise behaviors.

Increasing evidence shows that certain types of nutrients, certain food groups, and comprehensive dietary patterns positively affect health (Cena and Calder, 2020). Health and nutrition are among the most important factors contributing to the development of human resources in the country. Today, unhealthy diet and inactivity cause about 1/3 of premature deaths. Today, non-communicable diseases related to nutrition are seen as a major threat to public health (Somavarapu, 2017).

It can be thought that it is possible for children who do not have regular and healthy eating behaviors to go beyond the normal limits with the inactivity that digital game commitment can bring. As a result, it is thought that digital game addiction among children and the existence of some negative factors related to nutrition may also affect unhealthy eating attitudes. When this situation is combined with the effect of a sedentary lifestyle, it can be said that it can have very important consequences for children's health.

Conflict of Interest: There is no conflict of interest between the authors of the article.

Researchers' Statement of Contribution Rate: Research Design-MA; KG, Data Collection-MA, statistical analysis-MA, KG; Preparation of the article, KG; MA.

Information on Ethics Committee Permission
Name of Board: Mugla Sitki Kocman University Medical and Health Sciences Ethics Committee (Sports, Health)
Date: 07.02.2022
Issue No: 8

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