Original Article / Araştırma Makalesi

THE RELATIONSHIP BETWEEN NUTRITION AND EXERCISE BEHAVIOR WITH SOCIAL MEDIA ADDICTION IN ADOLESCENT FEMALES

Adölesan Kızlarda Beslenme Ve Egzersiz Davranışının Sosyal Medya Bağımlılığı İle İlişkisi

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ABSTRACT

The aim of this study is to investigate the effect of social media addiction on nutrition/exercise behavior in adolescent females. The questionnaire study consisted 450 adolescent females as population and 295 adolescent females as sample. In this study, Short Form of the Social Media Addiction Scale for Adolescents and the Nutrition Exercise Behavior Scale (NEBS) were used. NEBS had four sub-dimensions (psychological/addicted eating behavior, healthy eating/exercise behavior, unhealthy eating-exercise behavior and meal pattern). The adolescent females' average age and Body Mass Index were 16.4 ± 1.17 years and 21.3 ± 3.46 kg/m^2, respectively. As a result, 84.7% of adolescents do not exercise regularly. Social media addiction was found in 63.4% of adolescents. While there was a positive correlation between social media scale score and psychological/addicted eating behavior (r:0.430, p<0.001) and unhealthy diet-exercise behavior (r:0.353, p<0.001); A negative correlation was found between social media score and healthy eating/exercise behavior (r:-0.165, p<0.05) and eating pattern (r:-0.399, p<0.05). In this study, it was prominently revealed the effect of social media addiction on nutrition-exercise behavior. It is thought that this study will raise awareness about the prevention of the negative effects of social media on nutrition-exercise behaviors and can be a source of data for other studies.

Keywords: Adolescent, Exercise, Nutrition, Social media.

ÖZ

Bu çalışmanın amacı adölesan kızlarda sosyal medya bağımlılığının; beslenme ve egzersiz davranışı üzerine etkisini araştırmaktır. Anket çalışması evren olarak 450 adölesan kadın ve örneklem olarak 295 adölesan kadından oluşmaktadır. Bu çalışmada Ergenler İçin Sosyal Medya Bağımlılığı Ölçeği Kısa Formu ve Beslenme Egzersiz Davranış Ölçeği kullanılmıştır. Beslenme Egzersiz Davranış Ölçeği 4 alt-boyuta (Psikolojik/bağımlı yeme davranışı, sağlıklı beslenme/egzersiz davranışı, sağlıksız beslenme-egzersiz davranışı ve öğün düzeni) sahiptir. Adölesan kızların yaş ve beden kütle indeksi ortalaması sırasıyla 16.4 ± 1.17 yıl ve 21.3 ± 3.46 kg/m^2'dir. Sonuç olarak adölesanların %84.7'si düzenli egzersiz yapmamaktadır. Sosyal medya bağımlılığı ise adölesanların %63.4'ünde saptanmıştır. Sosyal medya ölçek puanı ile psikolojik/bağımlı yeme davranışı (r:0.430, p<0.001) ve sağlıksız beslenme-egzersiz davranışı (r:0.353, p<0.001) arasında pozitif korelasyon; sosyal medya ölçek puanı ile sağlıklı beslenme/egzersiz davranışı (r:-0.165, p<0.05) ve öğün düzeni (r:-0.399, p<0.05) arasında negatif korelasyon saptanmıştır. Bu çalışmada sosyal medya bağımlılığının beslenme-egzersiz davranışı üzerindeki etkisi belirgin bir şekilde ortaya konmuştur. Bu çalışmanın, sosyal medyanın beslenme-egzersiz davranışlarına yönelik olumsuz etkilerinin önlenmesi hususunda farkındalık oluşturacağı ve diğer çalışmalara veri kaynağı olabileceği düşünülmektedir.

Anahtar kelimeler: Adölesan, Beslenme, Egzersiz, Sosyal medya.

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INTRODUCTION

Dependence on uncontrollable and harmful behavior is defined as a behavioral addiction and internet addiction and social media addiction are among the most common of these addictions (Starcevic, 2013). Social media networks are virtual communities where users can create individual profiles, interact with real friends, and meet other people (Kuss & Griffiths, 2011). Social media addiction is defined as having an excessive interest in social media networks, having a strong urge to use these networks, and devoting excessive time to social media networks to the degree that affects social activities, interpersonal relationships, psychological health and well-being (Cecilie Schou Andreassen, 2015; C. S. Andreassen & Pallesen, 2014). In addition, social media addiction is seen as a form of internet addiction where individuals feel a constant urge to use social media excessively (Starcevic, 2013).

Social media has made rapid progress in recent years (Stone & Wang, 2019). Overuse of social media and dependence on social networks caused by this progress has started to be seen frequently in society (Can Saglam & Kaya, 2016). Therefore the use of these networks is increasing, especially in adolescents (Spies Shapiro & Margolin, 2014). The use of social media has become one of the most popular entertainment activities among adolescents. In addition, it is known that especially female adolescents are riskier in terms of social media addiction, and their use of the internet and social media is higher (Bányai et al., 2017).

The use of social media causes many behavioral changes in adolescents. One of these behavioral changes is nutrition behavior (Hsu, Rouf, & Allman-Farinelli, 2018). Although social media is used to raise awareness for healthy nutrition, it affects body image, especially adolescents, and changes its nutrition behavior by increasing the levels of depression and anxiety. The desire to appear like a model and actress on social media can develop eating disorders in these individuals (Abideen, Latif, Khan, & Farooq, 2011). It has been reported that there is an increase in eating disorders related to increased social media use. Additionally, the overuse of social media networks is closely related to eating disorders in female adolescents (Qutteina, Nasrallah, Kimmel, & Khaled, 2019).

Social media networks are also very effective in the food preferences of adolescents (McDonald, 2017). The use of social media in adolescents leads to both healthy and unhealthy behavior. To prevent unhealthy behavior caused by social media, there is a need for multi-factorial solutions proposed by multidisciplinary teams that examine adolescents at the social level, not individually (Arias et al., 2015). Unlike, it is suggested that adolescents can improve fruit and vegetable consumption and reduce added sugar consumption by directing

them more towards interpersonal relations (McDonald, 2017). However, studies examining the effect of social media addiction on nutrition and exercise behavior in female adolescents are insufficient.

This study aimed to determine the effect of social media addiction on nutrition and exercise behavior in female adolescents.

MATERIALS AND METHODS

The research was planned as a questionnaire survey study for female adolescents to determine the effects of social media on nutrition and exercise behavior.

The method, process and results of the research are explained in detail. The study subjects were determined using a sample account of the universe formula (95% confidence level).

The study population consisted of adolescents studying at Gül Vocational and Technical Anatolian High School affiliated the Isparta Provincial Directorate of National Education between February 2020 and March 2020 and 295 adolescents as the sample. The participants for research were determined by stratified sampling method by the number of adolescents in classes. The minimum number of individuals that should be sampled with 90% power and 0.05 Type I error was at least 136 (R 3.0.1. open-source program).

This study was created by literature review and a questionnaire consisting of the "Descriptive Information Questionnaire", "Social Media Addiction Scale for Adolescents" and "Nutrition Exercise Behavior Scale (NEBS)" was used. Study data were obtained by face-to-face interview technique by researchers.

Body Mass Index (BMI):

Body mass index is calculated by dividing body weight (kg) by the height square (m^2) by self-declarations. BMIs of the participants were evaluated using the World Health Organization(WHO) Anthro Plus Program, according to the WHO 2007 reference 5-19 years of age according to age and gender (World Health Organization, 2007). The measurements are classified according to the Z-score (SD) intersection points. According to this; it is classified and interpreted as follows; <-1SD thinness (<-2SD severe thinness; ≥-2SD -<-1SD thinness), ≥-1SD -<+1SD normal, ≥ +1SD obese (≥+1SD -<+2SD overweight; ≥+2SD obese).

Social Media Addiction Scale for Adolescents (Short Form)

Turkish reliability and validity form of the Social Media Addiction Scale Short Form For Adolescents was carried out by Taş in 2017 (Eijnden, Lemmens, & Valkenburg, 2016;

Savci, Ercengiz, & Aysan, 2018). The scale consists of 9 items. SMAS-SF is scored between 0-9, and the cutoff score is five points. Scale items are scored between 0-1. Those who score 5 or above are considered social media addicts. The reliability coefficient of the factors (Cronbach Alpha) is 0.76 and is found reliable.

Nutrition and Exercise Behavior Scale

Nutrition and exercise behavior scale for adolescents Turkish validity and reliability studies were conducted (Yurt, Save, & Yildiz, 2016). The scale consists of 45 expressions and four sub-dimensions (Psychological/Addicted eating behavior, Healthy nutrition-Exercise behavior, Unhealthy nutrition-Exercise behavior, Meal Order). Positive statements on the scale have been scored as "It completely defines me=5", "It highly defines me=4", "It defines me a little=3", "It defines me very little=2", and "It doesn't define me at all=1". Scale scores are evaluated in line with the scores received from the scale sub-dimensions. The reliability coefficient of the factors (Cronbach Alpha) is 0.85.

•"Psychological/Addicted eating behavior sub-dimensions" score distribution is between 11-55. A high score indicates that there is a psychological/Addicted eating behavior.

•"Healthy diet-exercise behavior sub-dimensions" score distribution is between 14-70. A high score indicates that there is healthy diet-exercise behavior.

•"Unhealthy diet exercise behavior sub-dimensions" score distribution is between 14-70. A high score indicates that there is unhealthy diet-exercise behavior.

•The "meal order sub-dimensions" score distribution is between 6-30. A high score indicates that the meal order is appropriate.

Aspects of Research Ethics

This research was carried out with the approval of Süleyman Demirel University Health Sciences Ethics Committee No. 39/1 dated 09.01.2020 and with the necessary permission and approval from the Ministry of National Education. In addition, volunteers were included in the study by obtaining a parent consent form from the parents or guardians of the adolescents who formed the study sample and the adolescent's voluntary consent form.

Statistical Analysis

The data were analyzed using IBM SPSS 20.0 package program. As a result of the analysis, the $p < 0.05$ value was considered statistically significant. Reported as mean ± standard deviation for continuous variables, and reported as percentages and numbers for categorical variables. Pearson correlation analysis was performed to evaluate the strength of

the relationship between continuous variables, and Spearman correlation analysis was performed for non-continuous and categorical variables.

RESULTS

The general characteristics of the adolescents included in the research are given in Table 1. The average age of female adolescents was 16.4±1.17 years, and the average BMI was 21.3±3.46 kg/m^2. 16.6% of the adolescents were evaluated as overweight and obese. 15.3% of adolescents exercised regularly (according to the self-declaration). 63.4% of the adolescents were found to be social media addicts (Table 1).

Table 1. General characteristic of female adolescents

Variables	Study Group (n:295)
Age	16.4 ± 1.17
BMI for Age (n, %)	
Severe Thinness and Thinness	58 (19.7)
Normal	188 (63.7)
Overweight and Obese	49 (16.6)
Class level (n, %)	
9th grade	83 (28.1)
10th grade	59 (20.0)
11th grade	92 (31.2)
12th grade	61 (20.7)
Regular exercise	
Yes	45 (15.3)
No	250 (84.7)
Social media scale score	5.4±2.53
Social media addiction (n, %)	
Addicted	187 (63.4)
Nonaddicted	108 (36.6)

Data are given as mean ± standard deviation or percentage (n, %). BMI; Body mass index

When the distribution of Nutrition-Exercise Behavior Scale items by adolescent females with and without social media addiction was examined, it was found that the 7th, 8th, 9th, 10th, 11th, 12th, 14th, 17th, 18th, 25th, 3st, 35th, 37th, 38th, 39th, 40th, and 42nd items showed a statistically significant difference in adolescent females with and without social media addiction (p<0.05). According to the answers, it is seen that adolescent females with social media addiction exhibit statistically significantly more unhealthy eating and exercise behaviors than adolescent females without social media addiction (p<0.05). It was found that among adolescent females with social media addiction, consumption of chips, nuts, and chocolate and other snacks, sandwiches, biscuits and bagels, hamburgers and potatoes, soft drinks and soda pop, fat and fatty foods were higher, and their eating times were shorter (p<0.05) (Table 2).

Table 2. Distribution of Nutrition-Exercise Behavior Scale Items by Adolescent Female with and without Social Media Addiction

Items	Addiction (n=187)	Non-Addiction (n=108)	p
1. I have a regular breakfast every day.	129 (69.0%)	70 (64.8%)	0.162
2. I have a regular lunch every day.	147 (78.6%)	83 (76.9%)	0.914
3. I have a regular dinner every day.	162 (86.6%)	87 (80.6%)	0.914
4. I eat meals at the same time every day.	82 (43.9%)	41 (38.0%)	0.214
5. I regularly eat lunch outside or at home.	126 (67.4%)	69 (63.9%)	0.042
6. I have a dinner at home with my family.	144 (77.0%)	73 (67.6%)	0.192
7. I mostly eat something while studying.	72 (38.5%)	24 (22.2%)	**0.001***
8. I go to the fridge 4-5 times after meals and in between for a snack.	82 (43.9%)	20 (18.5%)	**<0.001***
9. I eat foods such as chips, nuts and chocolate every day.	84 (44.9%)	18 (16.7%)	**<0.001***
10. Even though I am satiated, I eat the food offered.	82 (43.9%)	21 (19.4)	**<0.001***
11. I eat sandwiches, biscuits and bagels between meals.	59 (31.6%)	21 (19.4%)	**0.049***
12. I eat foods like hamburgers and potatoes every day.	126 (67.4%)	56 (51.9%)	**0.029***
13. I drink milk, buttermilk, and fresh fruit juice between meals every day.	73 (39.0%)	42 (38.9%)	0.952
14. I drink soft drinks and soda pop between meals.	116 (62.0%)	49 (45.4%)	**0.004***
15. I drink tea/coffee every day.	44 (23.5%)	27 (25.0%)	0.892
16. I chew my food very well.	16 (62.0%)	66 (61.1%)	0.401
17. My eating time changes frequently.	45 (24.1%)	14 (13.0%)	**0.031***
18. I finish a meal in less than 20 minutes.	43 (23.0%)	13 (12.0%)	**0.001***
19. The amount I eat at meals is usually the same.	87 (46.5%)	50 (46.3%)	0.446
20. I stuff a lot of food on my plate.	86 (46.0%)	41 (38.0%)	0.256
21. I plan what to eat for my meals.	87 (46.5%)	47 (43.5%)	0.200
22. I eat a food I like until I finish it without adjusting the amount.	55 (29.4%)	25 (23.1%)	0.185
23. I have one serving of vegetable or salad for lunch and dinner.	95 (50.8%)	52 (48.1%)	0.860
24. I eat three-piece fruits a day.	84 (44.9%)	41 (38.0%)	0.244
25. I drink 1.5-2 liters of water daily.	133 (71.1%)	61 (56.5%)	**0.022***
26. I eat foods such as milk, yogurt, buttermilk, cheese every day.	116 (62.0%)	65 (60.2%)	0.935
27. I eat meat, chicken, or fish with my meals at least three days a week.	96 (51.3%)	50 (46.3%)	0.704
28. I include legumes such as chickpeas, beans and lentils in my meals.	126 (67.4%)	66 (61.1%)	0.546
29. I include bread, rice, pasta, and pastries in my meals.	126 (67.4%)	79 (73.1%)	0.272
30. I eat sweet food every day.	60 (32.1%)	26 (24.1%)	0.298
31. I include fat and fatty foods in my daily meals.	81 (43.3%)	28 (25.9%)	**<0.001***
32. I include dietetic products in my daily diet.	109 (58.3%)	59 (54.6%)	0.790
33. I read the labels showing the nutrients on food products.	71 (38.0%)	43 (39.8%)	0.776
34. Eating is one of the things I enjoy.	31 (16.6%)	10 (9.3%)	0.106
35. I eat more when I am with my friends.	56 (29.9%)	19 (17.6%)	**0.016***
36. I eat more when I'm alone.	63 (33.7%)	26 (24.1%)	0.167
37. I eat more when I'm sad.	91 (48.7%)	33 (30.6%)	**0.001***
38. Eating something when I'm angry calms me.	92 (49.2%)	36 (33.3%)	**0.002***
39. I eat more when I have a problem that I cannot solve.	108 (57.8%)	48 (44.4%)	**0.007***
40. I take every opportunity to do sports or physical exercise.	85 (45.5%)	31 (28.7%)	**0.017***
41. I behave in ways that increase my movement (like walking to school).	118 (63.1%)	61 (56.5%)	0.410
42. Even if it is a short distance, I get on vehicles such as buses, cars, minibusses.	119 (63.6%)	50 (46.3%)	**0.006***
43. I use the elevator instead of the stairs when going up or down the upper floors in the building.	108 (57.8%)	52 (48.1%)	0.277

44. I feel better after doing sports or physical exercise.	129 (69.0%)	60 (55.6%)	0.058
45. I do sports or physical exercise for at least three days a week for half an hour.	79 (42.2%)	37 (34.3%)	0.093

*p<0.05, Chi-Square Test

Factor scores of the nutrition and exercise behavior scale of adolescents, respectively, psychological/addicted eating behavior 30.8±9.89 points, healthy nutrition/exercise behavior 37.0±10.33 points, unhealthy nutrition-exercise behavior 40.6±9.75 points, and meal pattern is calculated as 13.1±4.98 points.

According to Table 3, the relationship between nutrition and exercise behavior scale with age and BMI variable was not determined. A positive relationship was observed between the duration of social media use and psychological/addicted eating behavior (r=0.306; p<0.001) and between the duration of social media use and unhealthy diet-exercise behavior (r=0.226; p<0.001). In addition, there is a positive correlation between social media scale score and psychological/addicted eating behavior (r=0.430; p<0.001) and between social media scale score and unhealthy diet-exercise behavior (r=0.222; p<0.001). A negative correlation was found between social media scale score and healthy diet/exercise behavior (r=-0.165; p<0.05) and between social media scale score and meal pattern (r=-0.399; p<0.05) (Table 3).

Table 3. The relationship between the adolescents' nutritional and exercise behavior subscales and some variables.

	Nutrition and Exercise Behavior Scale							
Characteristic	**Psychological/ Addicted eating behavior**		**Healthy nutrition-Exercise behavior**		**Unhealthy nutrition-Exercise behavior**		**Meal pattern**	
	r	p	r	p	r	p	r	p
Age	0.012	0.837	-0.014	0.170	0.060	0.306	-0.066	0.263
BMI	-0.027	0.658	0.008	0.890	0.047	0.444	0.069	0.260
Time spent on social media	0.306	**<0.001**	-0.033	0.585	0.226	**<0.001**	-0.128	0.093
Social media scale score	0.430	**<0.001**	-0.165	**0.004**	0.353	**<0.001**	-0.399	**0.002**

p<0.05, BMI: Body Mass Index

DISCUSSION

Social media addiction is more common among adolescents than other age groups (Griffiths & Kuss, 2017). Although social media has some benefits for adolescents, it poses severe risks for mental health some nutrition behaviors such as eating disorders (Reid & Weigle, 2014). In this study, possible effects of social media addiction on nutrition and exercise behavior in female adolescents were examined.

The use of social media affects eating habits, especially in childhood and adolescence. Exposure to high-fat, high-sugar, and high-salt food advertisements and ingredients occurs adverse effects (Glasper, 2011). Although the etiology of eating disorders is multifactorial, social media messages occupy an important place in this etiology. Rutsaert et al. (Rutsaert et al., 2013) reported that there were 3 million food-related posts on Instagram, and posts featuring the consumption of foods high in fat, cholesterol and sugar content are 5-17% higher than other posts. Holmberg et al. reported that most adolescent users (85%) shared posts, including food items. In addition most of the posts (67.7%) indicated foods being high in calories but poor in nutrients (Holmberg, Chaplin, Hillman, & Berg, 2016).

With the increasing popularity of social media sites among the young generation, fast-food chains find a more effective environment to advertise their chains in this segment (Gaber & Wright, 2014). Kent et al. reported that 72% of adolescents participating in the study were exposed to food marketing on social media apps (Potvin Kent, Pauzé, Roy, de Billy, & Czoli, 2019). It is reported that food marketing advertisements promote unhealthy foods such as fast food (44%) and sugary drinks (9%). Fleming-Milici and Harris reported that 70% of adolescent participants are exposed to any food/beverage brand on social media (Fleming-Milici & Harris, 2020). It was reported that almost one-half of the adolescents' exposure to brands of fast food (54%), sugar-sweetened beverages (50%), confectionery (46%), and snacks (45%) on social media.

Food marketing affects eating patterns and choices, particularly among adolescents. A quantitative and qualitative content analysis of 611 posts on social media showed that adolescents are mostly interactive with food brands (49% of posts) (Qutteina, Hallez, Mennes, De Backer, & Smits, 2019). Qutteina et al. (Qutteina, De Backer, & Smits, 2019) reported that there was effect of social media food marketing on unhealthy eating patterns. Boelsen-Robinson et al. (Boelsen-Robinson, Backholer, & Peeters, 2015) reported that trademarks were using advertisements for unhealthy food or beverages that had adverse effects for adolescents. Additionally, they found that brands are using attractive content via social media aimed at adolescents to encourage unhealthy food and beverages. In this study, a positive relationship was found between social media addiction and psychological/addicted eating behavior and unhealthy eating-exercise behavior, while a negative relationship was found between healthy eating-exercise behavior and food pattern.

Social media sites include eating disorder risk factors such as media and peer pressure. In a study conducted with 84 participants using social media, social media use was associated with more disordered eating habits. Thus, it has been suggested that targeting social media use

can assist intervention and prevention programs (Mabe, Forney, & Keel, 2014). In a study that examined the relationship between social media addiction and eating disorders in adolescents, it was determined that there was a statistically significant relationship between social media addiction with eating disorder pathology, body image and muscle building (Rodgers, et al., 2020). In another study conducted with 440 adolescents aged 12-19 years, it was found that social media use was positively associated with body dissatisfaction. However this relationship was weaker among adolescents who reported a more positive mother-adolescent relationship. Thus, it has been reported that the social environment of adolescents, especially their relationships with their mothers, can protect them against the harmful effects of social media use on body dissatisfaction (de Vries, et al., 2019). Buda et al. (Buda, Lukoševičiūtė, Šalčiūnaitė, & Šmigelskas 2021) investigated the relationship between problematic social media use and physical activity levels, sleep characteristics and life satisfaction in adolescents. The results of the study found that problematic social media use was associated with nearly twice as high rates of worse sleep quality and lower life satisfaction. It has been reported that social media use is an independent risk factor for negative health behaviors.

Sidani et al. (Sidani, Shensa, Hoffman, Hanmer, & Primack 2016) reported that daily social media use is 61 minutes on average and there is a positive relationship between social media use and nutritional disorders in adolescents. Latzer et al. (Latzer, et al., 2015) reported that visual social media increases nutritional disorders and affects body image, especially in adolescents aged 12-19. The importance of participation of adolescents and their parents to social media addiction prevention programs has been revealed by emphasizing the negative effects of social media on nutritional behaviors. In the present, it is seen that the daily social media usage time is relatively high. This situation is effective in the nutrition and exercise behaviors of adolescents.

Social media also affects the exercise behaviors of adolescents. Shimoga et al. (Shimoga, Erlyana, & Rebello, 2019) reported that level of social media use was associated with physical activity. It was found as adolescents increased their internet addiction, their level of physical activity decreased (Sahin & Lok, 2018). In this study, the number of adolescents engaged in physical activity was relatively low (15.3%), and as social media addiction increased, exercise behavior decreased.

Limitations

A limitation of this study is that it was conducted in only one vocational high school and, therefore, the small sample size. There is a need for larger-scale studies with larger

sample numbers on this subject. However, it is thought that this study will increase awareness about the effect of social media on nutritional behaviors and will be a source of data for other intervention studies.

CONCLUSION

In this study, the effect of social media addiction on nutrition and exercise behavior in female adolescents was revealed. It is thought that the study results will guide the interventions to be developed to improve nutrition and exercise behaviors by determining how social media affects behavior especially in adolescent female adolescents. In addition, it is thought that our study will raise awareness in adolescent female adolescents in preventing the negative effects of social media on nutrition and exercise behaviors and may be a data source for intervention-based studies.

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Conflict of interest

The authors declare that they have no conflict of interest.

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