Relationship between social media addiction level and nutritional status in students of the faculty of health sciences

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ABSTRACT

Aims: University students widely use social media applications to acquire a social environment and access/share information. However, more time spent on social media may put individuals at risk of addiction and indirectly affect their nutritional status. This study investigated the relationship between social media addiction and the nutritional habits of university students.

Methods: We enrolled volunteers using an online questionnaire. The Social Media Addiction Scale-Student Form (SMA-SF) and the Attitude Scale for Healthy Nutrition (ASHN) were administered online. The primary outcomes were the SMA-SF and ASHN total scores and their correlation.

Results: The study included 957 subjects (mean age: 19.8±1.4; 91.3% female). A low but significant negative correlation was found between SMA-SF and ASHN scores (r=-0.245, p=0.001). Concerning the time spent daily on social media, we identified that taking less than 1 hour/day as the reference, spending 1 to 3 or above 3 hours/day on social media was significantly associated with higher SMA-SF scores [beta=0.387, t(956)=12.951, p<0.001, 95% confidence interval (CI): 8.814 to 11.962]. Similarly, taking less than 1 hour/day as the reference, spending 1 to 3 or above 3 hours/day on social media was significantly associated with a lower ASHN scale for healthy nutrition scores [beta=-0.173, t(956)=-5.437, p<0.001, 95% CI: -3.725 to -1.749].

Conclusions: Our findings show that increasing time spent on social media during university may increase social media addiction and negatively affect attitudes toward healthy eating.

Introduction

Healthy eating is one of the most important determinants of individual and societal well-being. Maintaining a healthy diet throughout life protects individuals from malnutrition and diet-related chronic diseases (1). Failure to maintain an adequate and balanced diet can lead to poor quality of life and many health problems.

Even if university students know nutrition, factors such as the difficulty of the academic program, limited food options, or economic conditions impact healthy food choices and eating habits (2). Students who leave the family home eat more unhealthy (3). Moreover, higher prices of healthy food, lack of healthy food in the canteen, and inability to find a suitable time for cooking cause students to have an unhealthy diet (4). Therefore, university students need more information on adequate and balanced nutrition, more nutritional information on ideal body weight, and effective intervention programs (5-7).

Thanks to rapidly developing technology, access to social media tools has become quite easier. While social media applications offer benefits such as access to all kinds of information, networking with people, having fun, participating in events, playing online, and being able to access them on the go, they also pose risks such as misinformation, invasion of privacy, and social media addiction (8-10). The ability to use social media anytime, anywhere and the use of the social media

platform by mobile phones also increases the time spent on these applications (11). Increased long-term use may lead to social media addiction (11).

Students can access all kinds of information about nutrition in social media applications. Food-related posts by individuals or food companies and the sharing of nutrition-related posts by non-experts on this platform result in misleading nutrition information (12). In addition, the use of social media can negatively impact an individual's body image and lead to eating disorders (13-15). A previous study found a correlation between the use of social media tools and eating disorders in individuals aged 19-32 (16). Easier access to these applications anytime, anywhere allows individuals to view other people's posts and compare their appearance with others (13). As a result, the risk of obsession with healthy eating may increase (17,18). It is also thought that as people spend more time on social media, they skimp on meals and replace them with unhealthy options because they do not have time to cook, on top of an inactive lifestyle (15,19,20), raising the question of whether the students are influenced by posts about nutrition and food on social media, and whether the time they spend on social media affects their nutritional status. Therefore, this study investigated the relationship between social media addiction and the dietary habits of university students.

Methods

The study included students from the departments of nutrition and dietetics, child development, midwifery, occupational therapy, physiotherapy and rehabilitation, audiology, orthotics-prosthetics, health management, and social work, Gülhane Faculty of Medicine, University of Health Sciences Türkiye, Ankara, Türkiye. They were enrolled through an online survey because of the COVID-19 pandemic from December 2020 to January 2021. Invitations were sent via e-mail and phone text messages. Ethical approval was obtained from the Non-interventional Research Ethics Committee of Gülhane University of Health Sciences Türkiye (decision no: 2020-437, date: 05.11.2020).

Survey Questionnaire

The online survey included anthropometric measures, duration and content of social media use, the Social Media Addiction Scale-Student Form (SMA-SF) and the Attitude Scale for Healthy Nutrition (ASHN) (21,22). In the first part, individuals were asked about the time they spent daily on the internet and social media and which social media application they used most. In the second part, the volunteers were asked to report their height and weight to calculate the body mass index (BMI) (23).

SMA-SF

In the third part of the questionnaire, SMA-SF was applied online to measure social media addiction level of the students,

which was developed previously to determine social media addiction levels of middle school, high school, and university students (21). The total variance of the scale was 53.2%. Cronbach's alpha coefficient was 0.93 on average and 0.81, 0.81, 0.86, and 0.82 for virtual tolerance, virtual communication, virtual problem, and virtual information, respectively (21). SMA-SF is a 5-point Likert-type scale comprising 29 questions. It consists of four factors: virtual tolerance, virtual communication, virtual problem, and virtual information. Virtual Tolerance consists of items 1-5, Virtual Communication 6-14, Virtual Problems 15-23, and Virtual Information 24-29. Each item is rated "1-Not at all suitable for me," "2-Not suitable for me," "3-I am undecided," "4-It is suitable for me," and "5-Very suitable for me." Scores range between 29 and 145. Addiction levels were determined by dividing the minimum and maximum score intervals into five levels. These were classified as "no dependency (29-51 points), "low dependency (52-74 points), "moderate dependency (75-97 points), "high dependency (98-120 points)' and 'very highly dependent (121-145 points)'.

ASHN

In the fourth part of the questionnaire, the students' ASHN was administered online, which was developed and validated previously (22). The ASHN consists of 21 questions and four factors. The factors are 'Information on Nutrition', for items 1-5, 'Emotion for Nutrition', for items 6-11, 'Positive Nutrition' for items 12-16, and 'Malnutrition' for items 17-21. The scale is a 5-point Likert-type and consists of "Strongly Disagree," "Disagree," "Undecided," "Agree," and "Strongly Agree" options. Items 1-5 and 12-16 are positive, and items 6-11 and 17-21 are negative. Scores range between 21 and 105. The scores are classified into very low (21 points), low (23-42 points), moderate (43-63 points), high (64-84 points), and ideally high (85-110 points) attitudes toward healthy eating. The total variance of the scale was 57.8% and 0.90, 0.84, 0.75, and 0.83 for "Information on Nutrition," "Emotion for Nutrition," "Positive Nutrition," and "Malnutrition," respectively (22).

Statistical Analysis

The data were analyzed using the IBM Statistical Package for the Social Sciences statistics (22.0.0.0). Data were summarized as mean±standard deviation. Skewness and kurtosis values were used to assess the data distribution. The chi-square test was used to compare the categorical variables. Pearson's correlation coefficients were calculated to assess potential correlations. Linear regression analysis was used to evaluate the potential correlations of the SMA-SF and ASHN scores with categorical variables above two levels. $P<0.05$ was considered statistically significant.

Results

A total of 1,856 students were invited from the departments of nutrition and dietetics (n=243), child development (n=245),

midwifery (n=220), occupational therapy (n=223), physiotherapy and rehabilitation (n=240), audiology (n=222), orthotics-prosthetics (n=53), health management (n=187) and social work (n=223), and 957 (mean age: 19.8±1.4 years; 91.3% female) completed the questionnaire. Table 1 shows the time volunteers spent daily on the internet and social media and the applications they used most. The rates were similar between genders, and 68.3% of students spent more than 3 hours/day on the internet. Concerning time spent on social media, 58% of students spent 1-3 hours on social media applications, while 24.8% spent more than 3 h. Seventy percent were of normal weight.

There was a relationship between the ASHN scores and the most followed topic about nutrition and food on social media. Individuals who follow accounts that share information about healthy nutrition and healthy nutrition recipes on social media have achieved higher ASHN scores than those who do not. On the other hand, there was also an association between the ASHN scores and the most followed people on nutrition and food on social media. The students who followed doctors' and dietitians' accounts received higher ASHN scores than those who did not follow (Table 2).

There was a correlation between the SMA-SF total score and its four factors with the ASHN total score (Table 3) (p=0.001). Furthermore, there were correlations between BMI and virtual communication (p=0.04) and virtual problems (p=0.049).

Figure 1 shows weak, negative correlations between the SMA-SF total score and its four factors, virtual tolerance, virtual

communication, virtual problems, and virtual information scores, with the ASHN total scores. There was a positive and very weak correlation between BMI and the virtual communication and virtual problem sub-dimensions.
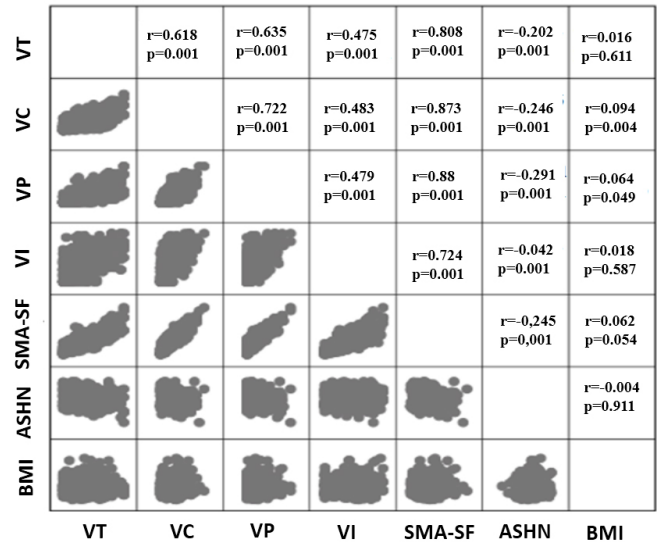

Figure 1. Matrix scatter plot of correlation between SMA-SF total score and its four factors, virtual tolerance, virtual communication, virtual problem and virtual information scores, and ASHN total scores and BMI values

VT: Virtual tolerance, VC: Virtual communication, VP: Virtual problems, VI: Virtual information, SMA-SF: Social Media Addiction Scale-Student Form, ASHN: Attitude Scale for Healthy Nutrition, BMI: Body mass index

Table 1. Internet-social media use and BMI levels						
	Gender					
	Male		**Female**		**Total**	
Variables	**n**	**%**	**n**	**%**	**n**	**%**
Internet use (daily)						
<1 hour	1	1.3	22	2.5	23	2.4
1-3 hours	28	35.4	252	28.7	280	29.3
>3 hours	50	63.3	604	68.8	654	68.3
Total	79	100	878	100	957	100
Social media use (daily)						
<1 hour	19	24.0	146	16.6	165	17.2
1-3 hours	47	59.5	508	57.9	555	58
>3 hours	13	16.5	224	25.5	237	24.8
Total	79	100	878	100	957	100
Body mass index (kg/m²)						
Underweight (≤18.4)	8	10.1	151	17.2	159	16.6
Normal weight (18.5-24.9)	46	58.2	626	71.3	672	70.2
Pre-obesity (25.0-29.9)	25	31.7	86	9.8	111	11.6
Obesity (≥30.0)	0	0	15	1.7	15	1.6
Total	79	100	878	100	957	100
BMI: Body mass index						

Table 2. ASHN classification with the most followed topics/people related to nutrition and food on social media

Classification of ASHN	a) The most followed topic about nutrition and food on social media											b) The most followed people on nutrition and food on social media										
	Not interested		Healthy eating		Recipes		Weight loss		Total		p	Not following		Dietitians		Doctors		Social media and magazine celebrities		Total		p
	n	%	n	%	n	%	n	%	n	%	0.001	n	%	n	%	n	%	n	%	n	%	0.001
Very low, low and moderate	22	17.2	17	5.6	30	7.9	18	12.2	87	9.1		42	9.6	24	6.6	5	7.4	16	18.4	87	9.1	
High	88	68.8	171	56.8	284	74.7	94	63.5	637	66.6		328	75.1	213	58.4	40	58.8	56	64.4	637	66.6	
Ideal	18	14.1	113	37.5	66	17.4	36	24.3	233	24.3		67	15.3	128	35.1	23	33.8	15	17.2	233	24.3	
Total	128	100	301	100	380	100	148	100	957	100		437	100	365	100	68	100	87	100	957	100	

The chi-square test was used to calculate the p value.
ASHN: Attitude Scale for Healthy Nutrition

Concerning the time spent daily on social media, we identified that taking less than 1 hour/day as the reference, spending 1 to 3 or more hours/day on social media was significantly associated with higher social media addiction scores [beta=0.387, t(956)=12.951, p<0.001, 95% confidence interval (CI): 8.814 to 11.962]. Similarly, taking less than 1 hour/day as the reference, spending 1 to 3 or more hours/day on social media was significantly associated with lower ASHN scores [beta=-0.173, t(956)=-5.437, p<0.001, 95% CI: -3.725 to -1.749].

Discussion

The results showed that most university students (58%) spent 1-3 hours on social media, while 24.8% spent more than 3 hours. In a study conducted in the USA, 45% of students spent 6-8 hours on social media applications (24). However, although a significant proportion of students spend considerable time on social media, it should be noted that social media use might have increased during the pandemic (25). As time spent on social media increases, so do social media addiction scores (26-28). Salari et al. (29) found that the global social media addiction prevalence was 18.4% among university students. These results indicate that social media addiction among university students is becoming a public health problem, and it is necessary to take the necessary measures to prevent this issue.

In this study, subjects who followed healthy eating and recipes on social media applications were less likely to have a low level of healthy eating attitudes than those who did not. Those who followed weight loss posts were more likely to have a low level of healthy eating attitudes than those who followed healthy eating posts. In particular, subjects who followed celebrities' nutrition-related social media posts were more likely to have low levels of healthy eating attitudes. It can be assumed that posts by people who are not experts in the field of weight loss cause a negative perception in the followers and negatively affect healthy eating attitudes. In addition, exposure to photos of celebrities or peers on social media might be harmful to women's body image, and affect the physical and mental health of individuals by causing a negative body image and psychological problems (26,30-32). In contrast, in this study, we observed that students who followed dietitians' and doctors' posts about healthy eating on social media were more likely to have ideal healthy eating attitudes. This finding suggests that since posts about nutrition and food on social media may influence individuals' healthy eating attitudes, they should be made by experts in the field.

Although social media addiction is not related to healthy eating attitudes, there is a relationship between social media addiction and eating disorder risk among university students (21). Social media addiction also has negative effects on eating behavior among adolescents and young individuals (33). As the time spent on social media increases, healthy eating

Table 3. Correlations of SMA-SF total score and its four factors virtual tolerance, virtual communication, virtual problem and virtual information scores with ASHN total score and BMI

		Virtual tolerance	Virtual communication	Virtual problems	Virtual information	SMA-SF	ASHN	BMI
Virtual tolerance	**r**		0.618	0.635	0.475	0.808	-0.202	0.016
	p		**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	0.611
Virtual communication	**r**	0.618		0.722	0.483	0.873	-0.246	0.094
	p	**0.001**		0.001	**0.001**	**0.001**	**0.001**	**0.004**
Virtual problems	**r**	0.635	0.722		0.479	0.88	-0.291	0.064
	p	**0.001**	**0.001**		**0.001**	**0.001**	**0.001**	**0.049**
Virtual information	**r**	0.475	0.483	0.479		0.724	-0.042	0.018
	p	**0.001**	**0.001**	**0.001**		**0.001**	0.193	0.587
SMA-SF	**r**	0.808	0.873	0.88	0.724		-0.245	0.062
	p	**0.001**	**0.001**	**0.001**	**0.001**		**0.001**	0.054
ASHN	**r**	-0.202	-0.246	-0.291	-0.042	-0.245		-0.004
	p	**0.001**	**0.001**	**0.001**	0.193	**0.001**		0.911
BMI	**r**	0.016	0.094	0.064	0.018	0.062	-0.004	
	p	0.611	**0.004**	**0.049**	0.587	0.054	0.911	

Pearson correlation analysis was used to calculate the p value.
SMA-SF: Social Media Addiction Scale-Student Form, ASHN: Attitude Scale for Healthy Nutrition, BMI: Body mass index

behaviors are affected negatively, leading to young individuals' involvement with social media, skipping breakfast and drinking sugary soft drinks (34,35). As the amount of time spent on social media increases, young people's exposure to high-calorie, low-nutrient food posts increases, which is thought to impact food preferences negatively, which can lead to disordered eating behaviors (32,36).

Limitations and Future Directions

This study was conducted with volunteer university students using an online survey. The results may not reflect all students of the faculty and all students studying in Türkiye. Because of the pandemic, the survey could not be conducted face-to-face and was distributed online. Therefore, the height and weight information of the individuals was self-reported, which may be less reliable. In addition, the students were studying online because of the pandemic, which may have affected their daily internet and social use (37). Studies with larger samples and follow-up are needed to examine the effects of social media addiction and dietary habits among university students. Moreover, social media addiction education should be provided at universities, and policies should be developed to support healthy nutrition and access to healthy food.

Conclusion

Although social media offers many benefits to university students, spending too much time on social media platforms increases the risk of addiction and negatively affects individuals' attitudes toward healthy eating. Students should be informed

about social media use, and necessary protection programs should be implemented. Some studies have shown that nutrition education through social media tools has a positive impact on the nutritional status of individuals (38-41). The social media platform can be the cheapest, fastest, and most comprehensive tool for implementing these protective programs.

Ethics

Ethics Committee Approval: Ethical approval was obtained from the Non-interventional Research Ethics Committee of Gülhane University of Health Sciences Türkiye (decision no: 2020-437, date: 05.11.2020).

Informed Consent: This study is an online questionnaire.

Authorship Contributions

Concept: M.H., Design: B.A., M.H., E.K., Data Collection or Processing: B.A., M.H., Analysis or Interpretation: B.A., E.K., Literature Search: B.A., Writing: B.A., E.K.

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