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Research Article

Evaluation of the association between nomophobia, mindful eating, and nutritional status

Nomofobi, yeme farkindaliği ve beslenme durumu arasindaki ilişkinin değerlendirilmesi

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Abstract

Aim: The prevalence of nomophobia, defined as the fear of disconnecting from the mobile phone connection, has increased with the excessive use of mobile phones. Nomophobia is known to lead to various psychological problems such as low self-esteem, extroverted personality, social phobia, social anxiety and panic disorder, as well as unhealthy eating behaviors. For this reason, it is stated that it is important to raise awareness about the possible harms of excessive smartphone use and to inform all age groups.

Material and Methods: This study was conducted on university students between the ages of 18-30, who are smartphone users and whose smartphone usage time is at least 1 hour per day. Data were collected through face-to-face interviews with the participants using a questionnaire form. "24-hour Dietary Recall" was used to determine the daily nutrients consumption levels of the students; 'Nomophobia Questionnaire (NMP-Q)' was used to determine nomophobia levels; and 'Mindful Eating Questionnaire-MEQ' was used to evaluate eating awareness.

Results: The study included 622 participants (48.2% female; mean age: 19.2 ± 2.0 years). Higher nomophobia levels were significantly associated with lower mindful eating scores ($p < 0.001$), and a negative correlation was observed between the two variables. Additionally, it has been determined that the energy coming from fat in individuals' daily energy intake is above the recommended levels and has an unbalanced distribution.

Conclusion: This study revealed that increased nomophobia levels in university students are associated with decreased eating awareness and unbalanced eating patterns. The findings indicate that smartphone addiction may have adverse effects on eating behaviors and that this relationship should be addressed more comprehensively in terms of public health.

Keywords: eating habits, mindful eating, nomophobia, nutrition, smartphone addiction

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Öz

Amaç: Cep telefonu bağlantısından kopma korkusu olarak tanımlanan nomofobinin yaygınlığı, akıllı telefonların aşırı kullanımıyla birlikte artmıştır. Nomofobinin sağlıksız beslenme davranışlarına yol açtığı bilinmektedir. Bu çalışmanın amacı, üniversite öğrencilerinde nomofobi ve yeme farkındalığı arasındaki ilişkileri inceleyerek mobil cihaz bağımlılığının yeme farkındalığı ve beslenme durumu üzerindeki etkilerini anlamaktır.

Gereç ve Yöntemler: Bu çalışma, akıllı telefon kullanıcısı olan ve akıllı telefon kullanım süresi günde en az 1 saat olan 18-30 yaş aralığındaki üniversite öğrencileri üzerinde yürütülmüştür. Veriler, katılımcılarla anket formu kullanılarak yüz yüze görüşmeler yoluyla toplanmıştır. Öğrencilerin günlük besin tüketim düzeylerini belirlemek amacıyla "24 Saatlik Geriye Dönük Besin Tüketim Kaydı"; nomofobi düzeylerini belirlemek amacıyla 'Nomofobi Anketi'; yeme farkındalığını değerlendirmek amacıyla 'Yeme Farkındalığı Anketi' kullanılmıştır.

Bulgular: Çalışmaya 622 katılımcı (kadın %48,2; yaş ortalaması: 19,2 ± 2,0 yıl) katılmıştır. Daha yüksek nomofobi düzeyleri daha düşük yeme farkındalığı puanlarıyla anlamlı şekilde ilişkili bulunmuştur ($p<0,001$) ve iki değişken arasında negatif korelasyon gözlenmiştir. Ayrıca bireylerin günlük enerji alımlarında yağdan gelen enerjinin önerilen seviyelerin üzerinde olduğu ve dengesiz bir dağılıma sahip olduğu belirlenmiştir.

Sonuç: Bu çalışma, üniversite öğrencilerinde artan nomofobi düzeylerinin, azalan yeme farkındalığı ve dengesiz yeme düzenleriyle ilişkili olduğunu ortaya koymuştur. Bulgular, akıllı telefon bağımlılığının yeme davranışları üzerinde olumsuz etkileri olabileceğini ve bu ilişkinin halk sağlığı açısından daha kapsamlı bir şekilde ele alınması gerektiğini göstermektedir.

Anahtar Kelimeler: akıllı telefon bağımlılığı, beslenme durumu, internet bağımlılığı, yeme davranışı

Introduction

Nomophobia or NO MObile PHone Phobia, defined as the fear of disconnection from the mobile phone connection, is used to describe the psychological state experienced. The term Nomophobia was created according to the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition) criteria and labeled as "phobia of certain things" [1]. Although nomophobia is not included in the DSM-V criteria, it is recommended that nomophobia be included in the DSM-V criteria since it is thought that the incidence of nomophobia and the interest in nomophobia will increase accordingly [2]. Especially in the 21st century, the rapid increase in the use of and dependence on cell phones and other technological devices has increased the incidence of nomophobia. For this reason, it is emphasized that the public should be informed about nomophobia and the negative side effects of excessive use of mobile phones [3].

Excessive use of mobile phones, which has become widespread globally, can lead to various psychological problems such as low self-esteem, extroverted personality, social phobia, social anxiety, and panic disorder. Nomophobia is reported to show symptoms such as anxiety, respiratory irregularities, tremors, sweating, agitation, disorientation, and tachycardia [1,4]. Nomophobia is considered as a modern age phobia that has entered our lives as a by-product of interaction with smartphones. Nomophobia is a form of behavioral addiction to mobile phones and manifests itself as psychological and physical addiction symptoms. Given the negative effects of chronic mobile phone use, studies have generally focused on somatic effects [5].

It is reported that the prevalence of nomophobia is higher in women and young people. The prevalence of nomophobia varies between studies, ranging from 6% to 73%. This difference is due to differences in assessment criteria [6]. It is known that the prevalence of nomophobia is high especially among university students. It is usually seen at younger ages and is associated with anxiety-depression symptoms. In addition, it has been observed that the incidence of nomophobia is higher in individuals with high anxiety, hyperactivity and fear of loneliness [7]. Therefore, it is emphasized that nomophobia is a health problem that negatively affects the person, causing psychological problems, physical, and behavioral changes [8].

Nomophobia is associated with dietary behaviors. It has been reported that as nomophobia increases, daily consumption of meat, fish, eggs, vegetables, milk, and dairy products decreases [9]. In addition, smartphone addiction in individuals leads to some eating behavior disorders and obesity [10]. Smartphone addiction leads to an increase in body weight by affecting eating attitudes. The effect of eating behavior disorders on the emergence of smartphone addiction should be taken into consideration. Multidisciplinary

solutions are needed to prevent this addiction, which may increase over time. For this reason, it is recommended that dietary habits and lifestyle should also be taken into consideration for the prevention and development of an intervention for smartphone addiction among university students [11].

This study aims to understand the effects of mobile device addiction on eating awareness and nutritional status by examining the relationships between nomophobia and eating awareness in university students in detail. In particular, it is thought that investigating how healthy eating habits are affected by the increased use of smartphone and how eating awareness provides a balance against these effects will be a useful approach to improve both individual and public health.

Material and Methods

Study samples

This study was conducted on a total of 622 university students between November 2024 and February 2025. Participants who were continuing their education at the university, between the ages of 18-30, were smartphone users, had a smartphone usage time of at least 1 hour per day, did not have any psychological illness, and voluntarily agreed to participate in the study were included in the study.

Participants were selected on a voluntary basis among undergraduate students between the ages of 18-30 from different faculties and departments of the university. The settings in which the research will be conducted were determined as classrooms, laboratories or study rooms in the relevant departments of the university. Data were collected through face-to-face interviews with the participants using a questionnaire form. In order to protect the confidentiality of the participants, all data were kept anonymized and only accessible to the research team.

Tools

In the study, a questionnaire form created by the researchers and some scales were used. The sections in the questionnaire form and the scales to be used are given below.

General information: Demographic information of the participants was questioned.

Eating habits: The general eating habits and meal consumption status of the participants were questioned.

Smartphone usage habits: Participants were questioned about their smartphone usage habits.

Anthropometric measurements: Participants' height (cm) and body weight (kg) were questioned.

24-hour dietary recall: Through this form, the foods consumed by the individuals the day before and how much of these foods they consumed were questioned and recorded in detail through retrospective recall.

Nomophobia questionnaire (NMP-Q)

Nomophobia levels of the participants were measured with the Nomophobia Questionnaire (NMP-Q). The scale developed by Yıldırım and Correira [12] includes 20 items. It is a 7-point Likert-type scale based on self-report (1=strongly disagree, 7=strongly agree). A minimum of 20 and a maximum of 140 points can be obtained from the scale. At the end of the scale, 0-20 points range indicates no nomophobia, 21-60 points range indicates low level of nomophobia, 61-100 points range indicates moderate level of nomophobia, and 101-140 points range indicates high level of nomophobia. The scale has 4 sub-dimensions: inability to communicate, losing online connection, inability to access information, and sacrificing comfort.

Mindful eating questionnaire-MEQ

The Mindful Eating Questionnaire (MEQ) was used to assess participants' mindfulness of eating. The scale was developed by Framson et al., [13] to measure the quality of attention to eating. Its adaptation into Turkish was conducted by Köse et al., [14] in 2016. The scale consists of 30 questions and 7 sub-factors in total and each question is scored between 1-5. The sub-factors of the scale are; Mindless Eating, Emotional Eating, Eating Control, Awareness, Eating Discipline, Conscious Eating and Interference. While the minimum score that can be obtained from the scale is 30, the maximum score is 150 [14].

Statistical Analysis

SPSS 23.0 (IBM Corp., Armonk, NY) package program was used for statistical analyses. Descriptive statistics are presented as frequency (n), percentage (%), mean, standard deviation (SD), median and interquartile range (IQR). The assumption of normal distribution was checked by Shapiro Wilk test. In the analysis of the difference between the measurements of two independent groups, the Mann-Whitney U, and the Independent T Test was used. Spearman correlation test and Pearson correlation test were used to determine the relationships between continuous variables. Significance $p < 0.05$ values were considered statistically significant.

Results

Table 1 presents the general characteristics of the participants. A total of 622 participants, 48.2% female, participated in the study. The mean age of the participants was 19.2 ± 2.0 years, and the

mean body mass index (BMI) was 23.9 ± 3.7 kg/m^2. The average daily screen time was determined to be 5.62 ± 1.62 hours, and the majority of participants (96.5%) used a smartphone, 2.4% used a tablet, and 1.1% used a computer. Device use while eating was quite common, with 91.0% of participants reporting using a device. The total mean score of the nomophobia scale was 75.7 ± 32.3. When the distribution of nomophobia levels was examined, it was found that 7.7% of the participants had no nomophobia, 19.0% had low, 40.7% had moderate, and 32.6% had high levels of nomophobia. The total mean score of the eating consciousness scale was 130.1 ± 32.3. Statistically significant differences were found between the mean eating awareness scale scores of the participants according to their level of nomophobia; it was observed that the mean eating awareness scale scores decreased as the level of nomophobia increased (p<0.001) (Figure 1). In addition, a negative significant relationship was found between the nomophobia scale score and the eating awareness scale score (p < 0.001) (Figure 2). Table 2 shows the participants' daily energy and macronutrient intakes. The mean daily energy intake was 2059.1 ± 469.2 kcal; the energy proportions from carbohydrates, protein, and fat were 45.8 ± 8.1%, 14.0 ± 2.8%, and 40.2 ± 8.0%, respectively.

Table 1. Demographic characteristics of the study group.

Variables	(n=622)
Age, years	19.2 ± 2.00
Female, n(%)	300 (48.2%)
Body mass index, kg/m2	23.9 ± 3.70
Average screen usage time, hours	4.62 ± 1.62
Most used technological device, n(%)	
Phone	600 (96.5%)
Tablet	15 (2.4%)
Computer	7 (1.1%)
Use of devices during meals, n(%)	566 (91.0%)
Device use while consuming snacks, n(%)	567 (91.2%)
Monitoring of food amount while using the device, n(%)	138 (22.2%)
Change in eating habits if device is not used, n(%)	530 (85.2%)
Device use extends meal time, n(%)	530 (85.2%)
Smoking, n(%)	101 (16.2%)
Average Nomophobia scale score	75.7 ± 32.30
Nomophobia level, n(%)	
None	48 (7.7%)
Low	118 (19.0%)
Medium	253 (40.7%)
High	203 (32.6%)
Average eating awareness scale score	130.1 ± 32.30

Data are given as mean ± standard deviation or percentage [n (%).

Table 2. Evaluation of daily energy and macronutrient consumption of study groups.

Variables	(n=622)
Energy (kcal)	2059.1 ± 469.20
Carbohydrate (g)	162.6 ± 63.60
Carbohydrate (%TE)	45.8 ± 8.10
Protein (g)	70.4 ± 20.10
Protein (%TE)	14.0 ± 2.80
Fat (g)	154.3 ± 89.90
Fat (%TE)	40.2 ± 8.00
Fiber (g)	26.1 ± 8.30

Data are given as mean ± standard deviation or percentage [n (%). TE; total energy.

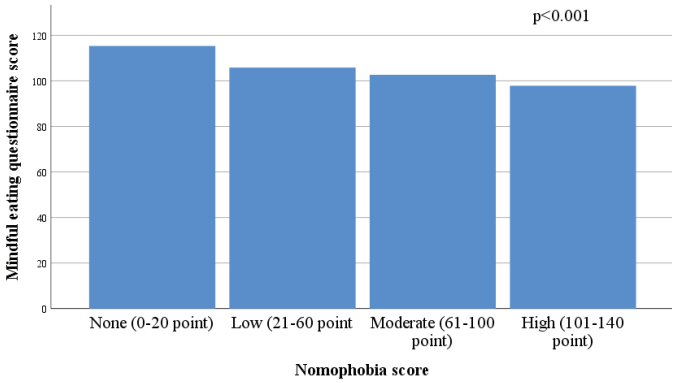

Figure 1. Average eating awareness scale score according to nomophobia levels

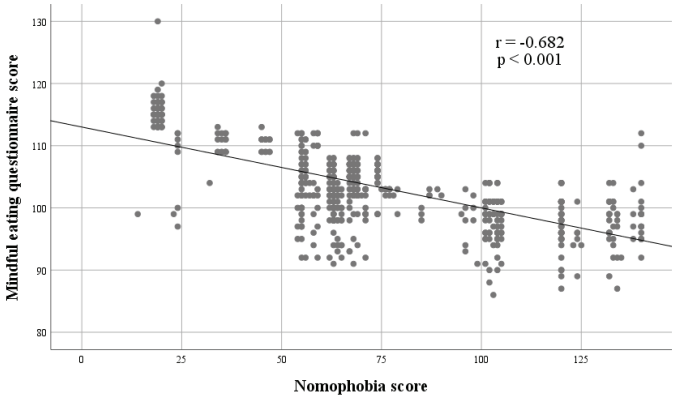

Figure 2. Correlation of nomophobia scores and eating awareness scale scores

Discussion

Smartphone addiction is reported to be associated with eating disorders, body weight and obesity. For this reason, it is stated that it is important to raise awareness about the possible harms of excessive smartphone use and to inform all age groups. Especially in university students, it is important to increase participation in sports and art activities that can be beneficial for

their mental, social and physical health and to encourage young people to establish face-to-face social relationships [15]. The aim of this study is to examine the possible relationship between nomophobia, eating habits, and eating awareness in university students. University students who agreed to participate in the study were questioned about their eating habits, mobile device usage habits, and 24-hour Retrospective Food Consumption Record. In addition, "Nomophobia Questionnaire (NMP-Q)" developed by Yıldırım and Correira in 2015 and "Mindful Eating Questionnaire (MEQ)" developed by Framson et al., were used.

In a study conducted by Farooqui et al., among medical students, 17.9% of students had mild nomophobia, while 60% had moderate nomophobia and 22.1% had severe nomophobia [16]. Dixit et al., reported that the prevalence of nomophobia in university students in India was 18.5% [17]. In a systematic review of 370 articles, Notara et al., emphasized that nomophobia was observed in 15.2%-99.7% of the participants and psychological, emotional, social, and physical side effects were observed due to excessive smartphone use [18]. In this study, more than half of the participants were found to have moderate (40.7%) and high (32.6%) levels of nomophobia, 7.7% had no nomophobia, and 19.0% had low nomophobia. These results are parallel to those in the literature and show that smartphone addiction is widespread among students in Turkey.

Rahme et al., reported that 1089 (48.3%) of the participants had moderate nomophobia, while 349 (15.5%) exhibited severe nomophobia. Higher hyperthymic temperament was associated with less nomophobia, while higher irritable temperament was associated with more nomophobia 19. In addition, it was found that reward addiction was positively associated with "Smartphone Addiction" and "Loss of Control" factors in nomophobia [19].

Nomophobia and feeding behaviors are closely related. Jahrami et al., reported a relationship between nomophobia and eating addiction. It was observed that Body Mass Index (BMI) and restricted eating attitude increased as smartphone addiction increased [20]. In a study conducted in Brazilian university students, smartphone addiction was found to be associated with eating disorders, bulimic behavior and social pressure to eat in the general eating disorders classification [21]. In this study, eating awareness, which expresses the level of consciousness and attention of individuals when eating, was evaluated, not eating disorders directly. The results showed that eating awareness scores decreased as the level of nomophobia in individuals increased. Decreased eating awareness can be associated with an increased risk of eating disorders. When evaluated from this perspective, low eating awareness scores in individuals with high levels of nomophobia in the study may cause negative changes in eating behaviors and an increased risk of eating disorders.

Yılmaz et al., investigated the effects of problematic internet and smartphone use on nutritional behaviors and abnormal body weight status in university students. It was observed that there was a negative relationship between nutritional behaviors and problematic internet and smartphone use. It was found that individuals with smartphone addiction consumed less cereals, fruits, and vegetables [22]. Similarly, this study determined that individuals' daily energy intake from fat was above the recommended levels. This finding shows that an adverse change in diet quality due to smartphone use is effective in food consumption and macronutrient distribution, providing important findings supporting the relationship between technology addiction and dietary patterns. It is also reported that nomophobia affects diet and meal timing. Especially, this is an important risk factor for obesity. It is reported that individuals with smartphone addiction have a higher BMI. It has also been observed that as the rate of addiction increases, the BMI increases [23].

Çelik et al., reported that problematic internet use is significantly associated with eating disorders. It is stated that long-term smartphone use leads to more fast-food consumption and triggers unhealthy eating habits [24].

Smartphone addiction is considered as a possible risk factor for eating disorders, obesity, and overweight. Considering that smartphone use is increasing and will increase over time, it is recommended that smartphone use should be taken into consideration to prevent obesity, which is an important public health problem [15]. It is reported that students with problematic internet usage lead an unhealthy lifestyle and show symptoms of depression and eating disorders more frequently. Increasing internet usage in young people may lead to eating disorders and unhealthy eating habits, as there are various contents that promote anorexia and bulimia in social media. Being overly preoccupied with the internet, neglecting sleep and ignoring negative emotions while online are seen as important predictors of eating disorders [25].

In conclusion, this study has shown that as the level of nomophobia increases in university students, eating awareness decreases, and unbalanced patterns are seen in eating habits. It is thought that nomophobia can negatively affect healthy eating behaviors by negatively affecting

individuals' attention at the time of eating, which can lead to undesirable changes in eating behaviors in the long term. The data obtained from the study show that phone addiction can also affect eating behaviors. Therefore, it is important to address the relationship between phone addiction and eating patterns more comprehensively and to develop preventive public health strategies in this regard.

Conflict of Interest

The authors have no conflict of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Ethical Approval

This study was approved by Suleyman Demirel University Health Sciences Ethics Committee Subcommittee with the letter dated 05/11/2024, numbered 09/83. All stages of the study were conducted within the framework of ethical rules.

Authors contributions

Concept: AK,KT; Supervision: AK,MY.; Materials: AK,MY; Data: AK,MY; Analysis: KT, AK; Literature search: MY,KT; Writing: KT,AK, MY; Critical revision: AK,KT.

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