

ORIGINAL ARTICLE

Relationship between Physical Activity and Nomophobia in University Students: A Cross-Sectional Study

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Main Points

- Smartphone use is more common in young people than in other age groups. For this reason, university students are more likely to have nomophobia and anxiety.
- Smartphone addiction negatively affects individuals both psychologically and physically.
- Physical activity has positive effects on mental health.

Abstract

This study aimed to examine the relationship between physical activity and nomophobia in university students. A total of 300 university student volunteers aged 17 – 25 years were included. Measurements were applied online via Google Forms. The nomophobia scale and the International Physical Activity Questionnaire Short Form were used. The number of vigorous physical activity days in the last week, daily vigorous physical activity levels, and metabolic equivalent of task values spent for vigorous activity were higher in male than in female participants ($p < .01$). No significant difference was found between the participants' moderate-intensity physical activity, walking, and sitting times ($p > .05$). A negative correlation was found between the physical activity of the female participants and their nomophobia levels ($r = -.217$, $p = .001$). The university students had insufficient physical activity and high levels of nomophobia. A negative correlation was found between physical activity and nomophobia levels. Approaches to increase physical activity may reduce anxiety and depression levels caused by nomophobia in young individuals with high nomophobia levels.

Keywords: Addiction, anxiety, nomophobia, physical activity, university students

Introduction

Anxiety disorders are characterized by extreme fear and avoidance, usually in response to certain objects or situations and in the absence of real danger, and are extremely common in the general population. An epidemiological study revealed that the lifetime incidence of any anxiety disorder was approximately 28.8% (Kessler et al., 2005). Anxiety disorders impair one's job performance and incur heavy economic costs (Greenberg et al., 1999). It is also associated with an increased risk of cardiovascular morbidity and mortality (Albert et al., 2005; Kawachi et al., 1994; Smoller et al., 2007). Anxiety

disorders include post-traumatic stress disorder, panic attacks, social phobia, specific phobias, obsessive-compulsive disorder, and generalized anxiety disorder (Shin & Liberzon, 2010).

At present, communication technology has become an integral part of daily life. The mobile phone, which is the most important tool of communication technology, has evolved into a smartphone, which is not only a communication tool but also a data storage, camera, music, and game device. However, unlimited use of smartphones leads to the development of behavioral addictions (Hamilton-Ekeke et al., 2016). Nomophobia is the abbreviation

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of “no mobile phone phobia” and is defined as the fear of not being able to use or reach one’s smartphone (King et al., 2013). Briefly, it is a modern-day phobia resulting from the interaction with new technologies (Salehan & Negahban, 2013). The term “nomophobia” was first used in a study by YouGov, an international research and analysis group established in the United Kingdom in 2008 (Notara et al., 2021). Nomophobia also negatively affects the psychological health of a person (Harwood et al., 2014). The phobia of being away from mobile phones was reported to increase stress, depression, and anxiety symptoms, especially in young individuals (Kuscu et al., 2020; Mir & Akhtar, 2020). Antipsychotic drugs can be used in the treatment of nomophobia. However, these drugs have the potential to cause addiction (Tiller, 2013). Another treatment option is cognitive behavioral therapy and existential psychotherapy approaches (Tathan Bekaroğlu & Yılmaz, 2020). However, this treatment option is both continuous and costly. Physical activity is a promising, cost-effective, and easily accessible treatment option for individuals with anxiety (Stonerock et al., 2015). Many studies have stated that physical activity has positive effects on mental health in all age groups (Biddle et al., n.d.; Fibbins et al., 2018; Mochcovitch et al., 2016). In addition, the risk of anxiety in men and women with high physical activity in daily life is reduced (Svensson et al., 2021). Despite the positive effects of physical activity on mental health, no study has explored its relationship with nomophobia. Thus, this study aimed to examine the relationship between physical activity level and nomophobia in young individuals.

Methods

Participants

The study approval was obtained from KTO Karatay University Faculty of Medicine Drug and Non- Medical Device Research Ethics Committee (decision no. 2021/005).

A total of 300 university student volunteers aged 17 – 25 years were included in the study. All stages of the study were in compliance with the Declaration of Helsinki. The inclusion criteria were having a smartphone and using the Internet over a smartphone. The exclusion criteria were exercising regularly and having a disability that limits physical activity.

Procedure

Measurements were applied online via Google Forms. Informed consent was obtained from each study participant, and they were required to answer all the questions.

Data about the demographic information, physical activity levels, and nomophobia levels of the participants were collected.

The International Physical Activity Questionnaire Short Form (IPAQ-SF) was used to determine the physical activity levels of the participants. IPAQ-SF, consisting of seven questions and collecting information about the time spent by the participants for vigorous physical activity, moderate-intensity physical activity, and walking and sitting in the last week, was developed by Craig et al., and its Turkish validity and reliability test was performed by Sağlam et al. (Craig et al., 2003; Sağlam et al., 2010). Metabolic equivalent of task (MET) values of the participants were calculated as follows:

Vigorous physical activity: number of days × day duration × 8.

Moderate-intensity physical activity: number of days × day duration × 4
Walking: number of days × day duration × 3.3.

Total MET: vigorous physical activity + moderate-intensity physical activity + walking (Sağlam et al., 2010).

The nomophobia scale, a 7-point Likert scale consisting of 20 questions developed by Yildirim and Correia, was used to evaluate the nomophobia levels of the participants (Yildirim & Correia, 2015). The scale consists of four sub-dimensions: “not being able to communicate,” “losing connectednes,” “not being able to have access to information,” and “giving up convenience.” In the scale, “1” represents “I strongly disagree,” whereas “7” represents “strongly agree.” The nomophobia levels of the participants were calculated by taking the sum of the scores obtained from the scale. Those with a total score <20 did not have nomophobia, 21 – 59 had mild, 60 – 99 had moderate, and 100 – 140 had extreme nomophobia.

Statistical Analysis

Statistical Package for the Social Sciences software version 25 (IBM Corp., Armonk, NY, USA) package program was used to analyze the data. The Kolmogorov – Smirnov and histogram method were used to test the conformity of the data to normal distribution. The difference between data conforming to the normal distribution was evaluated with the *t*-test and those that did not fit the normal distribution were evaluated with the Mann – Whitney *U* test. Results are given as mean ± standard deviation ($X \pm SD$), median (Q1 – Q3), and percentage values (%). The relationship between nomophobia and physical activity was analyzed with Spearman’s correlation test. All statistical analyses were evaluated at a significance level of $p < .05$.

Results

A total of 300 volunteers were included in the study, of which, 84 (28%) participants were male and 216 (72%) participants were female. Demographic information of the participants is given in Table 1.

The physical activity levels of the participants were evaluated separately in terms of gender. The number of vigorous physical activity days in the last week, daily vigorous physical activity levels, and MET values spent for vigorous activity were higher in male participants than in female participants ($p < .01$). No significant difference was found between the participants’ moderate-intensity physical activity, walking, and sitting times ($p > .05$). The MET values of the participants are given in Table 2.

Table 1.
Demographic Information

Age X ± SD	BMI X ± SD	
Female (n = 216)	20.12 ± 2.35	22.12 ± 3.96
Male (n = 84)	20.26 ± 3.43	22.67 ± 4.17
Total (n = 300)	20.16 ± 2.69	22.27 ± 4.02

X = mean; SD = standard deviation; n = number; BMI = body mass index.

Table 2.
Physical Activity Levels of the Participants

	Male Median (Q1 – Q3)	Female Median (Q1 – Q3)	p	Z
Vigorous physical activity (MET.min/week)	32 (0 – 1380)	0 (0 – 160)	.000	3.949
Moderate-intensity physical activity (MET.min/week)	28 (0 – 540)	70 (0 – 295)	.405	.832
Walking (MET.min/week)	693 (462 – 1386)	693 (396 – 1039.5)	.280	1.080
Total (MET.min/week)	1807.5 (1025.625 – 3287.25)	1372.5 (931.5 – 2170)	.001	3.257

Q1 = first quartile; Q3 = third quartile; Z = Mann – Whitney U test; MET = metabolic equivalent of task.

Of the participants, 102 (34%) had mild, 161 (53.7%) had moderate, and 37 (12.3%) had severe nomophobia. While 68 (31.5%) of the female participants had mild, 118 (54.5%) had moderate and 30 (13.9%) had severe nomophobia. Among the male participants, 34 (40.5%) had mild, 43 (51.2%) had moderate, and 7 (8.3%) had severe nomophobia. The nomophobia scores of the participants are presented in Table 3.

A negative correlation was found between the physical activity levels of the female participants and their nomophobia levels ($r = -.217, p = .001$). A negative correlation was found between the physical activity levels of the female participants and the sub-dimensions of the nomophobia scale ($p < .005$). By contrast, no significant correlation was found between the physical activity levels of the male participants and their nomophobia levels and sub-dimensions of the scale. The relationship between the physical activity levels of all participants and the nomophobia scale and its sub-dimensions is given in Table 4.

Discussion

The physical activity level of most of the university students participating in our study was not sufficient, and their nomophobia levels were high. A relationship was also found between the level of physical activity and nomophobia.

This study revealed that 66% of our participants had moderate and high levels of nomophobia, and all of the participants had nomophobia. These rates are similar to those in previous studies in Turkey (Dalbudak et al., 2020; Gurbuz & Ozkan, 2020). This shows the high prevalence of nomophobia among Turkish university students. In a study conducted on university students in 2016 by Yıldırım et al., who adapted the nomophobia scale into Turkish, 42.6% of the students were nomophobic (Yildirim et al., 2016). In the study by Burucuoğlu et al. on students with associate degree, 73.7% of the participating students had moderate and high levels of nomophobia, 25.9% had low levels of nomophobia,

Table 3.
Nomophobia Scores of the Participants

	Not Being Able to Have Access to Information X ± SD	Giving Convenience up X ± SD	Not Being Able to Communicate X ± SD	Losing Connectedness X ± SD	Total X ± SD
Female (n = 216)	16.19 ± 6.29	17.52 ± 7.40	25.83 ± 10.63	12.66 ± 7.27	72.19 ± 25.65
Male (n = 84)	16.13 ± 6.02	16.60 ± 7.33	21.61 ± 9.32	13.13 ± 7.66	67.46 ± 24.34
Total (n = 300)	16.13 ± 6.02	16.60 ± 7.33	21.61 ± 9.32	13.13 ± 7.66	70.87 ± 25.34

X = mean; SD = standard deviation; n = number.

Table 4.
Relationship Between MET Values and Nomophobia Scores

	1	2	3	4	5	6
1 MET	1					
2 Not being able to have access to information	-.091	1				
3 Giving up convenience	-.136*	.594**	1			
4 Not being able to communicate	-.172**	.419**	.567**	1		
5 Losing connectednes	-.188**	.468**	.664**	.487**	1	
6 Nomophobia	-.193**	.712**	.864**	.821	.786*	1

* $p < .05$; ** $p < .01$.
r, Spearman's correlation coefficient.

and 1 (.4%) had nomophobia (Burucuoğlu, 2017). In 2019, Akman et al. reported that .6% of their participants did not have nomophobia, 23.7% had mild, 59.9% had moderate, and 16.8% had extreme nomophobia (Akman, 2019). Regarding the years that studies were conducted, the rate of nomophobia is higher in recent studies. This can be attributed to innovations brought by technology and the introduction of smartphones to young populations at a very early age. Although the rates of nomophobia vary among studies, the level of nomophobia in each study should be considered. The difference in the results of the study can be related to the average age of the study group, environment and culture, year in which the study was conducted, and pandemic conditions.

Although high scores were obtained in all sub-dimensions of the nomophobia scale in this study, similar to previous studies (Yasan Ak & Yildirim, 2018; Yildirim et al., 2016), the most common sub-dimension was the sub-dimension of not being able to communicate. The importance of social media and communication for university students has been emphasized in the literature (Gezgin, Hamutoglu et al., 2018). This result revealed that university students needed social communication.

In our study, although the nomophobia levels of the female participants were higher than that of the male participants, no significant difference was noted. Early studies on technology addiction have shown that male participants are more addicted to technology than female participants. In a study conducted in the United Kingdom in 2008 in which the concept of nomophobia was mentioned for the first time, 58% of the male and 48% of the female participants had features of nomophobia (Dixit et al., 2010). This has been attributed to males' acquaintance with technology at an earlier age and being more inclined to technology (Augner & Hacker, 2012). However, in recent studies, addiction symptoms were higher in female participants. This difference is thought to be due to the more social nature of women and the longer time spent on the phone to communicate (Yang et al., 2010). Previous studies have also reported that women use smartphones more for communication and social purposes than men (Bianchi & Phillips, 2005; van Deursen et al., 2015). This is consistent with previous studies. As a result, the nomophobia scores were higher in women than in men (Gezgin, Cakir et al., 2018; Mallya et al., 2018; Yildirim et al., 2016). Because previous studies have reported different results in the relationship between gender and nomophobia, the finding in the present study may help clarify the relationship between gender and nomophobia.

The results of our study reveal that the physical activities of the participants were not sufficient, which is consistent with the results of previous studies that university students have low physical activity levels (Irwin, 2004, 2007). In our study, male students were more active than female students. In the literature, studies conducted on university students have demonstrated that male students are exercising regularly and have higher physical activity levels than female students (Aslan et al., 2007; Demirtürk et al., 2017; Kargün et al., 2016).

In our study, a relationship was found between the physical activity and nomophobia levels of the university students. This relationship was noted among female university students. Although

a relationship was found between physical activity and all sub-dimensions of the nomophobia scale, this was not observed on the sub-dimension of not being able to have access to information. Excessive use of smartphones may cause social isolation, decreased academic achievement, decreased physical activity, and psychiatric disorders (Boulos et al., 2011; Lepp et al., 2013). Making calls, sending and receiving messages, installing and using applications, and spending time on the Internet using smartphones reflect a sedentary lifestyle (Rosenberg et al., 2010). A study reported that excessive use of a smartphone or computer decreases physical activity (Kautiainen et al., 2005). Another study showed that university students have insufficient physical activity levels and a relationship exists between physical activity level and anxiety in female students (Ölçücü et al., 2015). This may cause psychiatric disorders such as nomophobia. The findings of our study reveal that increasing the physical activity levels of students can reduce their risks for nomophobia. The relationship between physical activity and the risk of nomophobia in female students was higher than that in male students. This might be due to the finding that the physical activity levels of male students were higher than that of female students. In the literature, no studies have evaluated the relationship between physical activity and nomophobia. Studies have generally focused on the relationship between variables such as physical activity, Internet addiction, smartphone addiction, digital game addiction, and psychiatric symptoms. Nevertheless, our study has some limitations. First, a certain age group was considered in our study. Second, the mental states of the individuals were not taken into account. Thus, comprehensive studies are warranted to shed light on the subject.

In this study, the physical activity was insufficient and nomophobia levels were high in university students. A negative correlation was also found between physical activity and nomophobia levels. We think that approaches to increase physical activity are important in reducing anxiety and depression levels possibly caused by nomophobia in young individuals with high nomophobia levels.

Limitations and Directions/Suggestions for Future Research

There are some limitations of the study. The study data were collected online due to pandemic conditions. In addition, data were collected from one university in the study, so the results may not reflect the entire population. However, this is the first study to examine the relationship between nomophobia and physical activity in university students. Smart technologies make life easier in daily life. However, these technologies have many negative effects on mental and physical health. Physical activity is a cheap and effective method to protect both mental and physical health. We think that the findings of this study will shed light on future studies on smartphone addiction and its treatment in university students. In addition, the relationship between physical activity and addiction in different age groups can be examined in future studies.

Ethics Committee Approval: The study protocol was approved by the KTO Karatay University nonclinical research Ethics Committee (number: 2021/005).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Peer-review: Externally peer-reviewed.

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