


# The relationship between nursing students' digital and smartphone addiction levels and nomophobia: A descriptive, correlational study

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## Abstract

**Purpose:** This study aimed to investigate the relationship between nursing students' digital addiction and smartphone addiction levels and nomophobia.

**Methods:** This is a descriptive, correlational study. It was conducted with 215 nursing students in a university located in northeastern Turkey.

**Results:** A positive and moderate correlation was found between students' nomophobia levels with smartphone addiction and digital addiction levels ( $p < 0.05$ ). Analysis of the regression coefficients determined that smartphone addiction ( $\beta = 0.765$ ;  $p < 0.01$ ) had a significant positive effect on nomophobia.

**Practice Implications:** In conclusion, nursing students should seek professional psychological help in developing health and life behaviors, such as sports, healthy eating, and sleep, to reduce nomophobia.

## KEYWORDS

digital addiction, nomophobia, nursing students, smartphone addiction

## 1 | INTRODUCTION

The use of smartphones and digital devices has been rapidly increasing throughout the world.<sup>1,2</sup> According to the "The Household Use of Information Technology" survey conducted in Turkey by the Turkish Statistics Institute,<sup>3</sup> the percentage of mobile phone subscribers was 96.9%, and the 16–24 year age group has the highest rate (77%) of computer and Internet use. Besides being a communication means, smartphones have become an important part of our lives because of several functions, such as providing Internet access, accessing social networks, e-mails, messages, playing games, and shopping online.<sup>1,4</sup> These functions offer the individuals many advantages that make their life easier, such as elimination of time and space dependence, speed, saving of time, freedom of expression, keeping away from the hierarchical structure, easy information sharing, and enhanced participation.<sup>5</sup>

## 2 | BACKGROUND

The term nomophobia is an abbreviation for "no-mobile-phone phobia."<sup>6</sup> It is defined as "the fear of being out of mobile phone contact or an uncontrollable fear of leaving the house without a mobile phone."<sup>7</sup> It is a health problem also associated with smartphone use. Studies conducted on nursing students suggest that the use of digital devices, internet addiction, and nomophobia levels are quite high.<sup>8–13</sup> Turkish nursing students have moderate or high smartphone and digital addiction levels.<sup>14–16</sup>

Smartphone and digital addictions can be considered as forms of technological addiction and involve human–machine interaction.<sup>17</sup> The concept of addiction includes tolerance, withdrawal symptoms, dependence, social problems, and loss of control.<sup>18</sup> Smartphone addiction occurs when a person spends a lot of time using a smartphone and has negative physical and mental effects on life.<sup>19</sup> Digital addiction is the problematic usage of digital devices and includes

harmful social consequences, such as social isolation and neglect of social activities.<sup>20</sup>

The studies conducted on nursing students show that the rate of students who use smartphones during clinical practice is quite high, and the learning levels and academic achievements of students who are highly addicted to smartphones are low.<sup>21–24</sup> The widespread use of digital devices and smartphones causes physical and psychosocial damages to students. The excessive use of digital devices and mobile phones reduces the academic success of students, decreases their satisfaction with life, impairs their sleep quality, negatively affects their social lives and verbal communication, and isolates them.<sup>9,25,26</sup>

The studies report that the majority of nursing students have moderate nomophobia.<sup>27,28</sup> Nomophobia influences certain aspects of nursing students' decision-making levels, such as not taking responsibility for their own decisions and blaming others, delaying the decisions, and lack of control over their time.<sup>29</sup> It also deteriorates clinical nurses' psychological well-being, disrupts communication between nurse and patient, and decreases the quality of nursing care.<sup>30</sup> Nomophobia for nursing students may lead to more serious problems in the future. The excessive use of smartphones in work environments may affect the clinical performance of nursing students who have responsibilities regarding patient and employee safety.<sup>31</sup> Therefore, it is important to determine the effects of digital addiction and smartphone addiction levels of nursing students on nomophobia.

## 2.1 | Purpose of the study

This study aimed to investigate the relationship between nursing students' digital addiction and smartphone addiction levels and nomophobia.

## 3 | METHODOLOGY

### 3.1 | Design

This descriptive and correlational study aimed to investigate the relationship between nursing students' digital addiction and smartphone addiction levels and nomophobia.

### 3.2 | Sample and setting

The study was conducted at a nursing department of a university located in northeastern Turkey between June and July 2019. The population of the study consisted of 224 students who were enrolled in the nursing department in the 2018–2019 academic years. The study aimed to reach the whole universe between the specified dates without using purposive sampling method. The inclusion criteria were being enrolled at the nursing department, having a smartphone, and giving informed consent. Furthermore, 215 students who met

the inclusion criteria volunteered to participate in the study. Thus, 96% of the whole universe was reached. After obtaining the approval of the ethics committee, the data were collected with the survey method.

### 3.3 | Instruments

The data for the study were collected using a student information form, the Nomophobia Questionnaire (NMP-Q), Digital Addiction Scale (DAS), and Smartphone Addiction Scale–Short Version (SAS-SV).

#### 3.3.1 | Student information form

This form was developed by the researcher in line with the most recent literature and included questions on age, gender, grade, parents' education level, parents' working status, socioeconomic status, income level, smartphone usage time and purposes, and characteristics of smartphone use in clinical environments.<sup>8–13</sup>

#### 3.3.2 | NMP-Q

The NMP-Q was developed by Yildirim and Correia<sup>6</sup> to measure the nomophobia of university students and was validated in Turkish by Yildirim et al.<sup>13</sup> The scale consists of 20 items, covering four dimensions of nomophobia: not being able to access information, giving up convenience, not being able to communicate, and losing connectedness. Possible scores on the scale range from 0 to 140. The scale intervals and corresponding nomophobia levels are as follows: 0–20 points, no nomophobia; 21–59 points, mild nomophobia; 60–99 points, moderate nomophobia; and 100–140 points, severe nomophobia. The instrument uses a seven-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The Cronbach's alpha values of the subdimensions and entire scale were 0.90, 0.74, 0.94, 0.91, and 0.92, respectively.

#### 3.3.3 | DAS

The DAS was developed by Kesici and Tunç.<sup>32</sup> After the scale was applied to individuals whose digital addiction level is to be measured, scores from 1 to 5 points are given to the options *Totally Agree*, *Agree*, *Neither Agree nor Disagree*, *Disagree*, and *Totally Disagree*, respectively. The points are summed up and divided by the number of items. Thus, the digital addiction levels of the students are measured. The expected point range is 1.00 (the lowest) and 5.00 (the highest), and the high point relatively indicates that the digital addiction level of the individual is high. The DAS consists of 19 items, has a five-point Likert-type scale, and is composed of five subdimensions called Overuse, Non-restraint, Inhibiting the Flow

**TABLE 1** Correlation analysis between the NMP-Q, SAS-SV, and DAS

Variables	Not being able to access information	Giving up convenience	Not being able to communicate	Losing connectedness	Total NMP-Q
Daily-life disturbance	0.400**	0.423**	0.144*	0.422**	0.418**
Overuse	0.402**	0.427**	0.224**	0.311**	0.412**
Withdrawal	0.570**	0.611**	0.392**	0.505**	0.634**
Cyberspace-oriented relationship	0.449**	0.509**	0.251**	0.567**	0.543**
Tolerance	0.293**	0.400**	0.106	0.348**	0.346**
Total SAS-SV	0.567**	0.625**	0.321**	0.554**	0.628**
Overuse	0.339**	0.390**	0.099	0.487**	0.399**
Nonrestraint	0.343**	0.401**	0.193**	0.405**	0.410**
Inhibiting the flow of life	0.245**	0.283**	0.080	0.355**	0.292**
Emotional state	0.397**	0.422**	0.196**	0.414**	0.433**
Dependence	0.298**	0.363**	0.313**	0.219**	0.369**
Total DAS	0.443**	0.506**	0.229**	0.524**	0.518**

Abbreviations: DAS, Digital Addiction Scale; NMP-Q, Nomophobia Questionnaire; SAS-SV, Smartphone Addiction Scale–Short Version.

\* $p < 0.05$ .

\*\* $p < 0.01$ .

of Life, Emotional State, and Dependence. The Cronbach's alpha values of the subdimensions were 0.75, 0.84, 0.74, 0.69, and 0.69, respectively.

### 3.3.4 | SAS-SV

The SAS-SV, developed by Kwon et al.,<sup>33</sup> was adapted into Turkish by Noyan et al.<sup>34</sup> The 10-item scale has no subdimensions and is rated on a six-point scale ranging between 1 and 6. The minimum and maximum possible scores are 10 and 60, respectively. No cut-off point was reported in the original scale. As the score obtained from the scale increases, the risk of addiction also increases. In this study, the scale's Cronbach's alpha coefficient was 0.87. Subscales have been identified as daily-life disturbance, withdrawal, cyberspace-oriented relationship, overuse, and tolerance.

### 3.4 | Data analysis

In data analysis, sociodemographic variables are presented as the mean  $\pm$  SD and categorical variables as frequencies and percentages. To check for normality, Kolmogorov–Smirnov test was conducted, and normal distribution values were bigger than the level of statistical significance observed ( $p > 0.05$ ). Pearson's correlation analysis was used to analyze data, and multivariate linear regression analysis to assess the relationship between nursing students' digital addiction and smartphone addiction levels and nomophobia. The results were interpreted in a confidence interval of 95% and a significance level of  $p < 0.05$ .

### 3.5 | Ethical consideration

The study was carried out according to the ethical principles of the Declaration of Helsinki. Ethics committee approval was obtained from the Medicine Faculty Ethics Committee (May 31, 2019/2019/175).

## 4 | RESULTS

The average age of the students who participated in the research was  $20.91 \pm 2.06$  (min = 18, max = 33) years. Of the students, 76.3% were women, and 32.6%, 24.2%, 20.9%, and 22.3% were in the first, second, third, and fourth grades, respectively. The mothers of 26% were primary school graduates and 22.8% had university degrees. The fathers of 38.1% of students were secondary school graduates and 34% had university degrees. The mothers and fathers of 29.8% and 84.7%, respectively, were employed. Of students, 65.6% perceived their socioeconomic status as middle and only 2.3% as low. Although the incomes of 64.2% were equal to their expenses, 12.6% stated that their incomes were less than their expenses.

Total NMP-Q was found to have a positive and moderate correlation with total SAS-SV ( $r = 0.628$ ), inability to access information ( $r = 0.567$ ), giving up convenience ( $r = 0.625$ ), inability to communicate ( $r = 0.321$ ), and losing connectivity ( $r = 0.554$ ;  $p < 0.01$ ). Total NMP-Q was found to have a positive and moderate correlation with total DAS ( $r = 0.518$ ), inability to access information ( $r = 0.443$ ), giving up convenience ( $r = 0.506$ ), and losing connectivity ( $r = 0.524$ ). Total DAS was found to have a positive and weak correlation and inability to communicate ( $r = 0.229$ ;  $p < 0.01$ ; Table 1).

**TABLE 2** The regression analyses of the effects of SAS-SV and DAS on NMP-Q

Variables	B	SD	$\beta$	t	p
Constant	25.528	6.090		4.192	0.000
Nonrestraint	0.497	0.660	0.057	0.753	0.452
Inhibiting the flow of life	-0.417	0.512	-0.060	-0.815	0.416
Emotional state	0.339	0.545	0.047	0.622	0.535
Dependence	1.154	0.523	0.129	2.208	0.028
Overuse	0.476	0.411	0.075	1.158	0.248
Daily-life disturbance	-1.672	0.753	-0.215	-2.221	0.027
Cyberspace-oriented relationship	2.483	1.318	0.152	1.883	0.061
Tolerance	-2.748	1.243	-0.169	-2.210	0.028
Overuse	-1.824	1.325	-0.108	-1.376	0.170
Total SAS-SV	1.816	0.412	0.765	4.408	0.000

Note:  $R = 0.688$ ,  $R^2 = 0.473$ ,  $F = 18.051$ ,  $p < 0.01$ .

Abbreviations: DAS, Digital Addiction Scale; NMP-Q, Nomophobia Questionnaire; SAS-SV, Smartphone Addiction Scale-Short Version.

The regression analyses of the effects of smartphone addiction and digital addiction on nomophobia (Table 2) showed statistically significant results for the subdimension “dependence” of the DAS and the SAS-SV and its subdimensions, including “daily-life

disturbance” versus “tolerance” ( $F = 18.051$ ;  $p < 0.01$ ). The effect size of smartphone addiction and digital addiction on nomophobia was 0.47. Analysis of the regression coefficients determined that the total SAS-SV ( $\beta = 0.765$ ;  $p < 0.01$ ) had a significant positive effect on nomophobia.

The results of the stepwise regression analysis on the effects of the SAS-SV on nomophobia are shown in Table 3. For nomophobia and subdimensions, including “not being able to access information” ( $\beta = 0.635$ ;  $p < 0.01$ ) and “not being able to communicate” ( $\beta = 0.571$ ;  $p < 0.01$ ), subdimension “withdrawal” ( $\beta = 0.392$ ;  $p < 0.01$ ) had the largest effect. Total SAS-SV ( $\beta = 0.826$ ;  $p < 0.01$ ) and subdimension “daily-life disturbances” ( $\beta = -0.247$ ;  $p < 0.05$ ) had a significant effect on subdimension “giving up convenience.” Subdimension “cyberspace-oriented relationship” has the largest effect for subdimension “losing connectedness” ( $\beta = 0.568$ ;  $p < 0.01$ ).

The results of the stepwise regression analysis on the effects of digital addiction on nomophobia are shown in Table 4. In the first model, total DAS ( $\beta = 0.518$ ;  $p < 0.01$ ) was found to have a positive and significant effect on nomophobia. In the second model, total DAS ( $\beta = 0.730$ ;  $p < 0.01$ ) and subdimension “inhibiting the flow of life” ( $\beta = -0.273$ ;  $p < 0.05$ ) were found to have a significant effect on nomophobia, and its effect size on nomophobia was 0.29. Although total DAS had a positive and significant effect on subdimension “not being able to access information” ( $\beta = 0.633$ ;  $p < 0.01$ ), subdimension “inhibiting the flow of life” ( $\beta = -0.245$ ;  $p < 0.05$ ) was found to have a negative and significant effect on it. Although total DAS had a

Model	Variables	B	SD	$\beta$	t	p	R	R <sup>2</sup>
Total NMP-Q								
1	Withdrawal	3.076	0.258	0.635	11.905	0.000	0.635	0.403
2	Withdrawal	2.326	0.311	0.480	7.484	0.000	0.668	0.446
	Cyberspace-oriented relationship	4.239	1.046	0.260	4.052	0.000		
Not being able to access information								
1	Withdrawal	0.678	0.067	0.571	10.067	0.000	0.571	0.325
2	Withdrawal	0.556	0.083	0.468	6.705	0.000	0.587	0.345
	Cyberspace-oriented relationship	0.689	0.279	0.172	2.469	0.014		
Giving up convenience								
1	Total SAS-SV	0.444	0.038	0.625	11.613	0.000	0.625	0.391
2	Total SAS-SV	0.587	0.065	0.826	9.081	0.000	0.642	0.412
	Daily-life disturbance	-0.574	0.212	-0.247	-2.713	0.007		
Not being able to communicate								
1	Withdrawal	0.691	0.112	0.392	6.172	0.000	0.392	0.154
Losing connectedness								
1	Cyberspace-oriented relationship	3.094	0.310	0.568	9.997	0.000	0.568	0.322
2	Cyberspace-oriented relationship	2.256	0.374	0.414	6.030	0.000	0.604	0.365
	Withdrawal	0.418	0.111	0.258	3.759	0.000		

**TABLE 3** The results of the stepwise regression analysis on the effects of the SAS-SV on NMP-Q

Abbreviations: NMP-Q, Nomophobia Questionnaire; SAS-SV, Smartphone Addiction Scale-Short Version.

**TABLE 4** The results of the stepwise regression analysis on the effects of the DAS on NMP-Q

Model	Variables	B	SD	$\beta$	t	p	R	R <sup>2</sup>
Total NMP-Q								
1	Total DAS	1.060	0.120	0.518	8.845	0.000	0.518	0.269
2	Total DAS Inhibiting the flow of life	1.492 -1.897	0.186 0.632	0.730 -0.273	8.022 -3.001	0.000 0.003	0.546	0.298
Not being able to access information								
1	Total DAS	0.222	0.031	0.443	7.217	0.000	0.443	0.196
2	Total DAS Inhibiting the flow of life	0.317 -0.417	0.048 0.163	0.633 -0.245	6.605 -2.560	0.000 0.011	0.470	0.221
Giving up convenience								
1	Total DAS	0.310	0.036	0.506	8.570	0.000	0.506	0.256
2	Total DAS Inhibiting the flow of life	0.440 -0.568	0.056 0.191	0.718 -0.273	7.821 -2.973	0.000 0.003	0.535	0.286
Not being able to communicate								
1	Dependence	1.022	0.212	0.313	4.812	0.000	0.313	0.098
Losing connectedness								
1	Total DAS	0.357	0.040	0.524	8.978	0.000	0.524	0.275
2	Total DAS Overuse	0.247 0.459	0.059 0.186	0.362 0.215	4.155 2.469	0.000 0.014	0.543	0.295

Abbreviations: DAS, Digital Addiction Scale, NMP-Q, Nomophobia Questionnaire.

positive and significant effect on subdimension “giving up convenience” ( $\beta = 0.718$ ;  $p < 0.01$ ), subdimension “inhibiting the flow of life” ( $\beta = -0.273$ ;  $p < 0.05$ ) was found to have a negative and significant effect on it. For subdimension “not being able to communicate,” subdimension “dependence” had a significant effect ( $\beta = 0.313$ ;  $p < 0.01$ ). Total DAS ( $\beta = 0.362$ ;  $p < 0.01$ ) and subdimension “overuse” ( $\beta = 0.215$ ;  $p < 0.05$ ) were found to have a significant effect on subdimension “losing connectedness,” and the effect size was 0.29.

## 5 | DISCUSSION

In this study, it was determined that there was a positive and moderate relationship between students' nomophobia levels with smartphone addiction and digital addiction levels in this study. In other words, as the students' nomophobia levels increase, their smartphone and digital addiction levels also increased. Similarly, Aguilera-Manrique et al.<sup>1</sup> found that there was a positive correlation between the use of smartphones and the total score of nomophobia. In a study, there is a significant relationship between smartphone addiction and nomophobia among adolescents.<sup>35</sup> Semerci<sup>36</sup> revealed a moderately significant relationship between nomophobia and smartphone addiction, and nomophobia was the strongest predictor of smartphone addiction. Daei et al.<sup>37</sup> found a positive correlation between nomophobia and smartphone use frequency among university students. Therefore, it may be important to analyze nomophobia to prevent students' smartphone and digital addiction levels from turning into a serious problem.

The most important predictor for nomophobia was withdrawal, according to SAS-SV. Tams et al.<sup>38</sup> stated that smartphone withdrawal might create nomophobia or the fear of not being able to use one's smartphone and the services it offers. The withdrawal symptoms referred to the unpleasant psychological and physiological effects that occurred as a consequence of discontinuance of the particular activity.<sup>39</sup> Withdrawal symptoms may be in play when people's access to their smartphone is restricted. The symptoms of smartphone restriction withdrawal can be explained by fear of missing out (FoMO), which was associated with deficits in mood and satisfaction with a life driven by social media engagement.<sup>40</sup> Gezgin et al.<sup>41</sup> revealed a positive and moderate relationship between nomophobia and FoMO. To better understand the relationship between nomophobia and smartphone withdrawal, it may be useful to reveal FoMO and its causes in nursing students.

In this study, digital addiction has a positive and significant effect on nomophobia. Pavitra et al.<sup>42</sup> reported that 79% of medical college students are nomophobic and about 23% felt they lose concentration and become stressed when they do not have their mobile phones around. In another study, the inability to access information and communication highlighted nomophobia prevalence among university students.<sup>5</sup> Considering these findings because students need to use digital devices for social networking, accessing information, and communicating, nomophobia can be related to digital addiction. Nomophobia is also defined as the irrational fear of inability to

access one's mobile device (smartphone, tablet, pocket computer) or inability to communicate via one's mobile device.<sup>43</sup> Perhaps, the nature of nomophobia brings digital addiction.

## 6 | CONCLUSION

In conclusion, in this study, it is determined that there is a positive and moderate relationship between nursing students' nomophobia levels with smartphone addiction and digital addiction levels. In this study, the most important predictor of nomophobia is withdrawal symptoms, according to SAS-SV, and digital addiction has a positive and significant effect on nomophobia.

## 7 | IMPLICATIONS FOR NURSING PRACTICE

Considering these findings, it can be suggested that nursing students with nomophobia and at risk for nomophobia should undergo a psychiatric assessment in terms of addiction. They should develop healthier beliefs, thoughts, and behaviors about nomophobia with motivational interviews and cognitive behavioral therapy. In addition, the causes of nomophobia should be well defined in these students, and attempts should be planned to eliminate the causes. To reduce nomophobia, they should seek professional psychological help in developing health and life behaviors, such as sports, healthy eating, and sleep. Finding meaning from life, spending life with higher quality, working and producing, gaining awareness, developing communication skills, and getting to know yourself can also contribute to the solution of the problem.

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### CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

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