

# Nomophobia and Phubbing Levels of Nursing Students

## A Multicenter Study

Gul Sahin Karaduman, PhD, RN, Tulay Basak, PhD, RN, Maria Margarida Santana Fialho Sim-Sim, PhD, RN, Vicki Aaberg, PhD, RN, Maria José Bule, PhD, RN

Today, with the enhancement in the usage of smartphones, the concepts of nomophobia and phubbing have emerged. Nomophobia refers to the fear of being deprived of smartphones/smart devices. Phubbing is the use of a person's smartphone in situations that are not appropriate for the situation, time, and place. Therefore, the study purposed to evaluate nursing students' nomophobia and phubbing scores in Turkey, Portugal, and the United States. The data were collected with the Personal Information Questionnaire, Nomophobia Scale, and Phubbing Scale from  $N = 446$  nursing students. The mean age of the students was  $22.04 \pm 4.08$  years, and 86.5% were women. It was found that the total nomophobia scores of the nursing students were  $80.15 \pm 21.96$ ,  $72.29 \pm 28.09$ , and  $99.65 \pm 6.11$ , respectively in Turkey, Portugal, and the United States. When the countries' Nomophobia Scale total scores, "giving up convenience," "not being able to communicate," and "losing connectedness" scores were compared with each other, they were found to be statistically significant ( $P < .05$ ). When the countries' Phubbing Scale total scores and all subscale scores were compared with each other were found to be statistically significant ( $P < .05$ ). It is seen that nomophobia scores were moderate ( $60 \leq \text{NMP-Q nomophobia} \leq 99$ ) and phubbing scores ( $<40$ ) were below the level indicating addiction in all countries.

**KEY WORDS:** Cell phone, Education, Nomophobia, Nursing, Phubbing, Portugal, Smartphone, Students, Turkey, United States

Access to technologic opportunities such as computers and smartphones is rising all around the world.<sup>1</sup> Regarding the United Nations Children's Fund report,<sup>2</sup> "The age group that uses the internet the most is young people, and the rate of young people using the internet is 92.4%." The use of technologic devices is rising gradually as young people use these modern devices better and perform social communication mostly through technological devices.<sup>3</sup> However, unbounded or unsensible use of these technological devices can lead to undesired consequences such as smartphone addiction. Excessive use of smartphones causes many problems. These problems include "a decline in school performance, self-esteem, attention, and social abilities, neck, and back pain, blurred vision, sleep disorders, stress, anxiety, depression, and, interpersonal challenges."<sup>1,3,4</sup>

Nomophobia, the fear of being bereft of smartphones/smart devices, is one of the topics that has been discussed recently. Nomophobia, "NO Mobile PHOne phoBIA," is pointed out as the involuntary fear of being inaccessible or communicating with mobile devices.<sup>5</sup> Although nomophobia has been discussed in recent years, it is an important factor that negatively affects the daily lives of individuals today. Nomophobia has negative effects on individuals' academic achievement and physical and psychological health. Nomophobic individuals begin to get anxious when they forget to take their smartphones with them and cannot be reached because the smartphone is out of power or out of range. In addition, nomophobic individuals feel the need to constantly check their smartphones, even if they are with them.<sup>6,7</sup>

The term *phubbing* is a combination of the words "phone" and "snubbing."<sup>8</sup> Phubbing is pointed out as the individual ignoring/despising the people they interact with within the social environment and being interested in their phone. Phubbing is the use of one's smartphone in situations where it is not suitable for the situation, time, and place. This concept includes individuals displaying irreverent attitudes towards the people addressed, ignoring them, and preferring the virtual environment to real life.<sup>8,9</sup>

When the literature is examined, studies report that smartphone use has increased among university students, especially during the COVID-19 quarantine period.<sup>10,11</sup> Today, the youth spend most of their time in the virtual world by sharing content, following the agenda and their friends,

**Author Affiliations:** Gulhane Faculty of Nursing, University of Health Sciences Turkey (Dr Sahin Karaduman and Basak), Ankara; Comprehensive Health Research Centre, University of Evora (Dr Santana Fialho Sim-Sim and Bule), Portugal; and Seattle Pacific University (Dr Aaberg), WA.

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**Author Contributions:** G. Sahin Karaduman: conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, writing-original draft, and writing-review & editing. T. Basak: conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, writing-original draft, and writing-review & editing. M. Sim-Sim: conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, writing-original draft, and writing-review & editing. V. Aaberg: conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, writing-original draft, and writing-review & editing. M. Bule: conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, writing-original draft, and writing-review & editing.

**Corresponding author:** Gul Sahin Karaduman, PhD, RN, Gulhane Faculty of Nursing, University of Health Sciences Turkey, General Dr. Tevfik Saçgılam Street, 06010, Ankara, Turkey (sahing@gmail.com).

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and updating their social media status.<sup>7</sup> It is stated that people use technological devices for communication and prefer communicating with their smartphones to face-to-face communication.<sup>1</sup> The study conducted with nursing students in Turkey supports these findings. It is reported that as students' smartphone addiction and phubbing scores increase, their communication skills decrease.<sup>1</sup>

Studies show that nursing students have a high level of addiction to smartphones.<sup>12,13</sup> In a study carried out in Portugal with nursing students, the students' nomophobia levels were found to be high. This high nomophobia score is associated with nursing students being distracted in professional clinical practices and causing problems that may jeopardize patient safety.<sup>14</sup>

Nursing students represent a unique population whose smartphone use may differ from other disciplines for reasons such as clinical practices.<sup>4</sup> In a study, nursing students state that they need their smartphones to escape from the clinical environment and relieve their emotional burden due to reasons such as long working hours and stressful situations.<sup>12</sup> For these reasons, it is stated that awareness of mobile technology use should be raised from the beginning of university education.<sup>15</sup> Studies evaluating nursing students' phubbing and nomophobia levels show that excessive use of mobile technology may negatively affect their physical and mental health, student learning in the classroom and the clinical environment, their relations with patients or colleagues, and their academic performance.<sup>3,5,16</sup> The results of a study conducted with nursing students show that students who do not have access to smartphones during class have higher academic success.<sup>17</sup>

In the database analysis, no multicultural studies were found that compared the nomophobia and phubbing levels of nursing students in Portugal, Turkey, and the United States. In this study, it was thought that evaluating the results in Washington, the northwesternmost state of the United States, Portugal, the westernmost part of Europe, and Turkey, the easternmost part of Europe, would lead to a global insight for nursing students. Therefore, it was purposed to examine the levels of nomophobia and phubbing in nursing students in Portugal, Turkey, and the United States.

## Research Questions

- Is there a difference between the three countries' students from the point of nomophobia?
- Is there a difference between the three countries' students from the point of phubbing?
- Is there a difference between the three countries' students from the point of the relationship between nomophobia and phubbing?

## METHODS

The study aims to examine the nomophobia and phubbing scores of Turkish, Portuguese, and American nursing students.

## Design and Participants

This study was a descriptive and cross-sectional study. The universe of the study consists of students in nursing schools in three different countries. Nursing schools offering 4-year education were selected to be included in the study. The number of nursing school students in Portugal is 213, that in Turkey is 745, and that in the United States is 196. Since students studying in the United States are included in the nursing department in the third and fourth years and receive a general education in the first and second years only, the third and fourth years are included. The number of third- and fourth-year students studying in the department of nursing in the United States is  $n = 45$ . An online calculation software program was used to estimate the study sample ( $n = 138$  for Portugal,  $n = 254$  for Turkey, and  $n = 41$  for the US sample) (Raosoft, Inc, Seattle, WA, USA). Students were invited to participate in the study, and all students who volunteered to participate were included in the study. The sample of this study comprises  $n = 256$  students from Turkey,  $n = 149$  from Portugal, and  $n = 41$  from the United States. The study sample comprises  $n = 446$  students in total.

## Instruments

The data were collected by the Personal Information Questionnaire, Nomophobia Scale (NMP-Q), and Phubbing Scale.

### Personal Information Questionnaire

The questionnaire was designed by the authors in terms of its suitability for nursing students in Portugal, Turkey, and the United States. The questionnaire includes questions about the age, sex, and frequency of smartphone use of the participants.

### Nomophobia Scale

The NMP-Q is a 7-point Likert-type scale with 20 items developed by Yildirim and Correia.<sup>18</sup> The  $\alpha$  coefficient of the original NMP-Q conducted in the United States was specified as .95. The  $\alpha$  coefficient of the NMP-Q, which was adapted into Turkish by Yildirim et al,<sup>19</sup> was .92. The Portuguese  $\alpha$  coefficient of the NMP-Q was found to be .98 by Galhardo et al.<sup>20</sup> The NMP-Q consists of four subdimensions: "not being able to access information" (4 items), "losing connectedness" (5 items), "not being able to communicate" (6 items), and "giving up convenience" (5 items). According to the scores obtained from the scale, nomophobia levels of 20 and below were stated as absent, between 21 and 59 as mild, between 60 and 99 as moderate, and between 100 and 140 as severe.<sup>18-20</sup> The  $\alpha$  coefficient was calculated as .95 for the Portugal sample, .92 for the Turkey sample, and .70 for the United States sample for this study.

### Phubbing Scale

Karadağ et al<sup>21</sup> developed the scale with 10 items and a 5-point Likert-type scale. The  $\alpha$  coefficient of the original Phubbing

Scale was specified as .87 and .85 for its subdimensions. The scale consists of two subdimensions, “communication disturbances” (5 items) and “phone obsession” (5 items). Scale items are scored between 1 and 5 points, and those who score 40 or more indicate phubbing addiction.<sup>21</sup> The Portuguese  $\alpha$  coefficient of the scale was found to be .84 by Reis Silva.<sup>22</sup> Considering the validity and reliability study of the scale conducted simultaneously with 20 countries,  $\alpha$  values were found to be .84 for Turkey, .80 for Portugal, and .81 for the United States.<sup>23</sup> The  $\alpha$  coefficient was calculated as .78 for the Portugal sample, .78 for the Turkey sample, and .83 for the United States sample for this study.

### Data Collection

The data were collected through online surveys with nursing students at three universities in Turkey, Portugal, and the United States between December 2022 and May 2023. The overall response rate of the survey is 88.54%.

### Data Analysis

The IBM SPSS Statistics version 21.00 (IBM Inc, Armonk, NY, USA) package program was used for statistical analysis of the data. Number, percentage, and standard deviation values in defining data and the Kolmogorov-Smirnov test, one-way analysis of variance, Kruskal-Wallis test, and Spearman's correlation analysis were used, and  $P < .05$  level was accepted as a significant difference. For correlation analysis,  $r = 0.00-0.24$  was considered weak;  $r = 0.25-0.49$ , moderate;  $r = 0.50-0.74$ , strong; and  $r = 0.75-1.00$ , very strong. The presentation of results was made according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement.<sup>24</sup>

### Ethical Considerations

The ethics committee approval was obtained, with Decision No. 2022/10 (November 22, 2022). The participants were informed that “they are free to participate, they can leave the study for any reason, the data obtained will be published without using names for scientific purposes, their participation or not will not affect their course grades.” Participants were assured of confidentiality. The study was conducted in accordance with the Declaration of Helsinki.

## RESULTS

The study was conducted with  $n = 446$  nursing students from Turkey, Portugal, and the United States. The data on the demographic profile of the participants are presented in Table 1. The mean age of the students is  $22.04 \pm 4.08$  years, and 86.5% of them are women. Whereas 35% of the students state that they use their smartphone every 10 minutes, 31.8% state that they use their phone every 2 minutes. Also, 45.5% of the students state that the pandemic has increased their

smartphone usage too much. When the students were asked for what purpose they use their smartphones most, 38.1% answered news/social media, 32.9% communicated with others, 26.5% answered to have fun when they get bored, and 2.6% answered avoiding eye contact with others. When the students were asked what they felt when they could not use the smartphone, 60.6% answered curiosity, 14.8% answered impatience, 9.4% answered nervousness, 8.1% answered numbness, and 7.1% answered loneliness (Table 1).

Table 2 presents the NMP-Q and Phubbing Scale scores of the students. Although there was no statistically significant difference in the mean scores of the NMP-Q “not being able to access information” subdimension ( $P > .05$ ), the difference between the NMP-Q total score and the “losing connectedness,” “not being able to communicate,” and “giving up convenience” scores was statistically significant ( $P < .05$ ). In addition, it is seen that the NMP-Q mean scores of students in all countries are at a moderate level ( $60 \leq \text{NMP} \leq 99$ ). The difference between the Phubbing Scale total score and the “communication disturbances” and “phone obsession” subdimension scores was statistically significant ( $P < .05$ ) (Table 2).

The relationship between the participants' total scores on NMP-Q and Phubbing Scales by country is shown in Table 3. The total scale scores of the nursing students in Turkey were positive, significant, and moderate ( $P < .05$ ,  $r = 0.47$ ), whereas the total scale scores of the nursing students in Portugal were positive, significant, and strong ( $P < .05$ ,  $r = 0.56$ ). There is a negative, weak, and statistically insignificant relationship between the total scale scores of nursing students in the United States ( $P > .05$ ,  $r = -0.08$ ).

## DISCUSSION

Thanks to the benefits of technological opportunity, smartphones have become an indispensable part of our daily lives. Thus, it caused some changes in our habits.<sup>6</sup> Recently, the use of smartphones has increased alarmingly.<sup>14</sup> Therefore, the study purposed to evaluate the nomophobia and phubbing levels of the three countries' nursing students.

A study in Turkey shows that smartphone usage is higher than before the pandemic.<sup>25</sup> It is stated that reasons such as following the agenda and providing communication during the pandemic increase the use of smartphones.<sup>26</sup> Most of the students in our study where data were collected after the pandemic stated that the pandemic increased their smartphone usage too much and that they used the smartphone for news/social media, which supports this situation (Table 1). Considering what students feel when they cannot use the smartphone, it is seen that individuals give the most answers to curiosity, impatience, nervousness, numbness, and loneliness. It is stated that these feelings are seen in individuals with nomophobia and phubbing problems.<sup>27,28</sup>

**Table 1.** Demographic Profile of the Participants (n = 446)

Variables	Turkey	Portugal	United States	Total
Age, mean ± SD, y	21.59 ± 1.80	22.48 ± 6.44	23.29 ± 2.69	22.04 ± 4.08
Sex				
n (%)				
Female	232 (90.6)	123 (82.6)	31 (75.6)	386 (86.5)
Male	24 (9.4)	26 (17.4)	10 (24.4)	60 (13.5)
Nursing course				
First year	111 (43.4)	62 (41.6)	—	173 (38.8)
Second year	2 (0.8)	36 (24.2)	—	38 (8.5)
Third year	30 (11.7)	31 (20.8)	21 (51.2)	82 (18.4)
Fourth year	113 (44.1)	20 (13.4)	20 (48.8)	153 (34.3)
Smartphone usage				
Every minute	15 (5.9)	11 (7.4)	1 (2.4)	27 (6.1)
Every 2 min	22 (8.6)	110 (73.8)	10 (24.4)	142 (31.8)
Every 5 min	77 (30.1)	26 (17.4)	18 (43.6)	121 (27.1)
Every 10 min	142 (55.5)	2 (1.3)	12 (29.3)	156 (35.0)
Pandemic effect in smartphone usage				
Increased a lot	112 (43.8)	69 (46.3)	22 (53.7)	203 (45.5)
Slightly increased	123 (48.0)	58 (38.9)	13 (31.7)	184 (43.5)
Unchanged	17 (6.6)	22 (14.8)	5 (12.2)	44 (9.9)
Decreased	4 (1.6)	—	1 (2.4)	5 (1.1)
Total	256 (100)	149 (100)	41 (100)	446 (100)

In this study, it was concluded that there was no difference only in the NMP-Q “not being able to access information” subscale scores in the cross-country comparison (Table 2). The fact that there is no difference between the nomophobia subscale “not being able to access information” is thought to exist in various ways such as the Internet, radio, television, and social media to access information today, and therefore there is no difference between them.

There is a difference in NMP-Q total and other subscale scores between countries in our study (Table 2). According to the studies' results conducted in Portugal and Turkey before

the pandemic, it is seen that the NMP-Q score averages obtained in our study are higher.<sup>20,29</sup> When the average scores are examined in detail, it is seen that the students in the United States have the highest scores. Studies show that Americans complain of nomophobia, and 91% of them use phones even in the toilet.<sup>30,31</sup> This situation explains the difference. It is now clear that smartphones are changing people's interactions, communication, and relationships.<sup>15,32</sup> However, these developments may be a distracting factor for future nurses who will provide care by communicating with the patient face-to-face.<sup>15,32</sup> Distractions such as smartphones may cause

**Table 2.** NMP-Q and Phubbing Scale Scores of Students (n = 446)

Scores of Scale	Turkey	Portugal	United States	P	Test
	Mean ± SD	Mean ± SD	Mean ± SD		
NMP-Q					
Not being able to access information	17.53 ± 5.50	16.08 ± 6.60	17.07 ± 2.33	.18	3.42 <sup>a</sup>
Giving up convenience	20.03 ± 6.62	16.46 ± 7.46	25.02 ± 2.77		58.11 <sup>a</sup>
Not being able to communicate	27.87 ± 8.99	26.46 ± 10.67	33.87 ± 3.16		72.21 <sup>a</sup>
Losing connectedness	14.71 ± 6.89	13.28 ± 7.43	23.68 ± 2.92		22.47 <sup>b</sup>
Total	80.15 ± 21.96	72.29 ± 28.09	99.65 ± 6.11		72.21 <sup>a</sup>
Phubbing					
Communication disturbances	11.25 ± 3.37	10.59 ± 2.81	20.09 ± 1.71		109.21 <sup>a</sup>
Phone obsession	16.11 ± 3.86	14.08 ± 3.69	18.73 ± 2.34		52.77 <sup>a</sup>
Total	27.36 ± 6.06	24.67 ± 5.63	38.82 ± 2.29		111.10 <sup>a</sup>

<sup>a</sup>Kruskal-Wallis,  $\chi^2$  test statistics.

<sup>b</sup>One-way analysis of variance, *F* test statistics. *P* value < .05.

**Table 3. Correlation Analysis Between Scales**

NMP-Q Total/Phubbing Total	Turkey	Portugal	United States
Correlation coefficient <sup>a</sup>	<b>0.47</b>	<b>0.56</b>	-0.08
P	<b>0.00</b>	<b>0.00</b>	0.60

<sup>a</sup>Spearman's  $\rho$ .  
P value < .05.

important information to be missed, deteriorate the communication between nurse and patient, and negatively affect nursing care.<sup>33</sup>

In our study, there is a difference according to the phubbing total and subscale scores of students between countries. It can be said that nursing students in Portugal, Turkey, and the United States have a moderate fear of exposure to smartphones, the highest scores are among nursing students in the United States, and similarly, they prefer their smartphones instead of communicating with people in the community. Nomophobia and phubbing are negative concepts associated with the spread of smartphones.<sup>34</sup> Studies have shown that nursing students have high levels of nomophobia and phubbing.<sup>1,17</sup> In a few studies, nursing students report numerous benefits of smartphones in the clinical setting, including better access to educational materials, improvements in knowledge and confidence, and reduced levels of anxiety about learning in practice.<sup>35,36</sup> However, an integrative literature review which included studies from Turkey, Portugal, and the United States regarding the effect of smartphones on nursing students reported that smartphone use was distracting in clinical and classroom learning, and was discourteous and unprofessional behavior. Smartphones were often used for entertainment purposes, such as social networking, rather than professional purposes. In addition, studies have found high levels of nomophobia and smartphone addiction, which cause stress, anxiety, and decreases in sleep, learning, and academic performance.<sup>5</sup> The results of a study also show that the academic performance of nursing students who do not have access to a smartphone is higher.<sup>17</sup> Another study conducted with nursing students shows that there is a negative relationship between smartphone addiction and care-related behaviors.<sup>37</sup> Considering that the majority of nursing students do not use applications that assist clinical practice,<sup>35</sup> using applications that restrict the duration of use will prevent students from benefiting from it and also prevent them from being disconnected from the clinical environment.

When the relationship between NMP-Q and Phubbing Scale total scores is examined between the countries, it is seen that while the NMP-Q scores of nursing students in Turkey and Portugal increase, phubbing scores also increase (Table 3). Studies conducted with university students show that there is a relationship between nomophobia and phubbing.<sup>34,38</sup>

In this case, it is seen as an expected result that nomophobic individuals show phubbed behavior. The negative relationship among US students with high scores for all scales and subscales is thought to be due to the low number of students. In this case, it is expected that nomophobic individuals who need to constantly check their smartphones should pay attention to their smartphones while communicating in the social environment.<sup>9,21,32</sup>

There are many advantages to using smartphones in nursing theoretical and clinical education, such as interpretation of medications and laboratory results, and communication with other healthcare personnel and faculty staff. However, excessive use of smartphones can cause physical and psychological harm, and can negatively affect success while negatively affecting attention and learning in the clinical and classroom.<sup>5</sup> The excessive use of smartphones may also prevent nursing students from establishing therapeutic relationships with patients as future nurses.<sup>39</sup> It is thought that this situation may disrupt patient care and communication. In a systematic review examining nurses' smartphone use in the acute care setting, it was observed that smartphones caused nurses to be distracted at work and perceived as unprofessional.<sup>40</sup> For such reasons, educators should implement policies regarding the excessive use of smartphones in the classroom and clinical environment to reduce the potential negative impact on students. There is a need for studies conducted with nursing students and nurses examining the behavioral changes of smartphone use in the clinical environment.

### Limitations

The results cannot be generalized since the data of the study were not randomized and were collected by convenience sampling method. It represents only nursing students in the sample of the study. For this reason, it is recommended to conduct studies involving staff nurses, nursing administrators, and other groups of nursing. Another limitation of this study is that the nursing students in the United States were included in the nursing department in the third year; therefore, the first- and second-year students were not included.

### CONCLUSIONS

According to the results obtained from the study, it is seen that the nursing students' nomophobia scores were moderate ( $60 \leq \text{NMP-Q} \leq 99$ ) and phubbing scores ( $<40$ ) were below the level indicating addiction in Turkey, Portugal, and the United States.

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