Comparative study of nomophobia among Spanish and Portuguese nursing students

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ARTICLE INFO

Keywords:
Nomophobia
Nursing students
Smartphone
Comparative study

ABSTRACT

Nomophobia is the fear of leaving the house without a mobile and being out of mobile phone contact and affects different areas of a person’s life, especially in terms of social, work and academic relationships due to a dependence on the use of smartphones. Discovering the prevalence of nomophobia among nursing students is very important, as the misuse of smartphones in clinical practice may cause distractions, affecting the quality of care and putting patient safety at risk. Furthermore, it can lead to poorer academic performance during class. The aim of this study was to compare the levels of nomophobia experienced by nursing students at the University of Almeria, Spain and the Polytechnic Institute of Bragança, Portugal. A comparative descriptive observational study was carried out. A nomophobia questionnaire adapted to the Spanish and Portuguese sociolinguistic context was employed; 258 participants comprised the subjects of study. The main results showed both Spanish and Portuguese nursing students scored higher than average regarding levels of nomophobia. However, the scores gathered from items on the questionnaire were generally higher among the Portuguese population than the Spanish one. The Portuguese students (54.7%) felt more anxious than the Spanish students (35.4%) if their battery ran out. Similarly, the Portuguese population showed a greater need for instant communication with their family and friends. In conclusion, the dimensions explored indicate significant levels of nomophobia among both nursing student populations, with higher levels among the Portuguese population than the Spanish.

1. Introduction

Information and Communication Technologies (ICTs) have become an essential part of our lives (Lee et al., 2014). Many people, particularly the younger generations, use new technologies for studying, playing, keeping in contact with friends and many other activities (Cho and Lee, 2016). ICTs can change our way of forming relationships and socializing with those around us, with both positive and negative effects; it all depends on how we use – or abuse – them (Gökçersanlan et al., 2016).

According to data from the National Statistics Institute (INE) from 2014, in Spain it was found that 97.1% of young people had a mobile phone. Several studies have shown high levels of smartphone dependency among university students (Bae, 2017; Mei et al., 2018) with higher levels among girls than boys (Bae, 2017; González et al., 2015; Leung, 2017; Mei et al., 2018). Spanish adolescents use the internet via mobile telephones in 90.4% (INE, 2014). In Portugal, the National Statistics Institute (2014) estimated that 89% of the Portuguese population has a mobile telephone. Portuguese adolescents use the internet via mobile telephones in 77% (Pontes and Patrão, 2014).

Currently, we can see that in day-to-day life, whether in private or in public, a significant number of children, adolescents, young people and adults display behaviors which can be defined as addictive (Kuss and Griffiths, 2017). For example, they spend a lot of time on videogames and social networks such as Facebook and in general on mobile phone use and new technologies, related tools and their applications (Beyens et al., 2016). Kuss and Griffiths (2017) has stated that nomophobia may be part of online social networking sites addiction. Furthermore, in the work environment, more and more people are dedicating time to this type of activities, neglecting their work-related...
duties and relationships with their coworkers, leading to loss of employment and high employee turnover (Cho and Lee, 2016).

Problematic smartphone use has alarmingly increased in developed countries in the last years. The problematic use of smartphones can affect social relationships, decreasing their quality (Vanden Abeele et al., 2016). Habuchi (2005) has stated that mobile telephones can negatively affect the quality of interpersonal relationships, furthermore, use of smartphones has also been found to produce a disconnection from one’s surroundings. Billieux et al. (2014) proposed classifying the use of mobile telephones as an abusive use rather than an addiction. There is no unanimous consensus regarding its definition, with different authors suggesting terms such as addiction, abuse use, problematic use and excessive use (Bianchi and Phillips, 2005).

In light of the aforementioned, the term nomophobia has emerged. The term nomophobia is normally used to refer to a dependence of users on their smartphones or an addiction to intelligent mobile telephones (Dixit et al., 2010). Nomophobia is described as “the fear of being out of mobile phone contact or an uncontrollable fear of leaving your house without a mobile phone” (SecurEnvoy, 2012). The term nomophobia is an abbreviation of the expression “no-mobile-phone phobia” (Yıldırım and Correia, 2015).

Various studies have revealed the presence of nomophobia in the population. A study stated that 75% of Indian medical students showed nomophobic behaviors and 83% had experienced a panic attack when they were not able to use their smartphone (Sharma et al., 2015). In another study, with a sample of 18–24 year olds, 66% displayed nomophobic behaviors (SecurEnvoy, 2012). A further study with Turkish university students indicated that 42.6% of the sample had nomophobia (Yıldırım et al., 2016). In Portugal, although internet dependence among university students indicated that 42.6% of the sample had nomophobia they were not able to use their smartphone (Sharma et al., 2015). In nomophobic behaviors and 83% had experienced a panic attack when

Ultimately, nomophobia affects different areas of a person’s life, especially in terms of social, work and academic relationships due to a dependence on the use of smartphones (Argumosa-Villar et al., 2017). More specifically, some authors have found that nursing students get distracted in clinical practice due to the use of smartphones (Aguilera-Manrique et al., 2018; Cho and Lee, 2016). It is therefore important to determine the degree of nomophobia among a population which is immersed in the digital age; such is the case of students. Hence, the main aim of the study was to compare the levels of nomophobia among nursing degree students from the University of Almeria, Spain and the Polytechnic Institute of Braganza, Portugal.

2. Method

2.1. Study design

A comparative study of the levels of nomophobia among Spanish and Portuguese nursing degree students was carried out.

2.2. Participants

The subjects of this study were 258 participants, 130 of which were from Spain and 128 of which were from Portugal. The study was carried out at the University of Almeria (Spain) and the Polytechnic Institute of Braganza (Portugal). These two universities were selected due to a joint project based on new technologies that researchers at these universities are working on. The participants had to comply with the following inclusion criteria: 1) To be enrolled on a nursing degree at the University of Almeria in the case of Spanish students or at the Polytechnic Institute of Braganza for Portuguese students, 2) To give consent to participate in the study. 3) To not be on clinical placement. Before enrolling at university, the students came from different educational backgrounds: high school, vocational training etc. Sample selection was carried out through convenience sampling, which is why students on clinical placements were not considered, as they were not attending classes at university. Therefore some years, such as 4th year in both countries, were not considered. Data collection took place during the 2017/2018 academic year.

2.3. Measures

The Nomophobia Questionnaire (NMP-Q) was developed and validated by Yıldırım and Correia (2015). The questionnaire includes 20 items valued on a Likert-type scale of 1–7, with 1 corresponding to “strongly disagree” and 7 “strongly agree”. The total score is calculated by adding up the values of each item, leading to a score of between 20 and 140 points. Higher scores reflect a more severe degree of nomophobia. Exploratory factor analysis revealed a four-factor structure for the NMP-Q, corresponding to the dimensions of nomophobia: not being able to access information (items 1–4) (range from 4 to 28 points); giving up convenience (items 5–9) (range from 5 to 35 points); not being able to communicate (items 10–15) (range from 6 to 42 points) and losing connectedness (items 16–20) (range from 5 to 35). The score for each factor was calculated by adding the items which it included. Reliability, which verifies the scale’s internal consistency, was Cronbach’s alpha value of 0.945. The NMP-Q was shown to produce valid and reliable scores.

The NMP-Q questionnaire was adapted and validated for the Spanish sociolinguistic context, with a Cronbach’s alpha value of 0.927, by Gutiérrez-Puertas et al. (2016), and used with the sample of Spanish students. The NMP-Q was also used with the Portuguese students, adapted to the Portuguese sociolinguistic context. Only two factors were obtained in the questionnaire’s adaption and validation process, with a total explained variance of 62.98%. These factors were: “not having access to information and connectivity” and “not being able to communicate”. The factor “not having access to information and connectivity” consisted of 14 items (1–9, 16–20) (range from 14 to 98 points), and the factor “not being able to communicate” of 6 items (10–15) (range from 6 to 42 points). The internal consistency of the total scale achieved very good results, with a Cronbach’s α value of 0.953. The result of the Kaiser-Meyer-Olkin (KMO) test was 0.941, the same as the result obtained in the original version.

2.4. Data collection

For data collection, students enrolled on the nursing degree at the University of Almeria (Spain) or the Polytechnic Institute of Braganza (Portugal) were invited to participate. Once their collaboration had been requested, the main researcher provided (in person) those students interested in participating with the Spanish or Portuguese version of the Nomophobia questionnaire respectively. Prior to students completing the information, the researcher explained the aim of the study together with the voluntary nature of their participation. The questionnaires were completed in a university classroom in 30–40& #x202F;min. Once finished, the researcher thanked the participants for their collaboration. The study began January to June 2016.

2.5. Ethical considerations

Regarding the ethical aspects of the study, the research project was approved by the Department of Nursing, Physiotherapy and Medicine Research Committee at the University of Almeria. The ethics approval
The sample consisted of a total of 258 participants, 128 of which were from Portugal and 130 from Spain. Of the total, 19% (n=64) were male and 81% (n=204) were female. The average age was 20.78 (SD=4.98) while women scored an average of 80.56 (SD=19.64), while men scored an average of 73.78 (SD=16.56) (range from 14 to 98 points). Considering gender, the men participants scored an average of 51.75 (SD=20.43) while the female participants scored an average of 64.69 (SD=20.15). In terms of the dimension “not being able to communicate”, the average score was 30.75 (SD=6.89) (range from 6 to 42 points). The average score for men was 27.44 (SD=6.64). In the case of women, it was 31.22 (SD=6.64).

3.3. Total nomophobia questionnaire score

In Spain, the average questionnaire score was 78.84 (SD=20.20; p<0.001) (range from 20 to 140 points). With regard to gender, the average score for men was 73.78 (SD=20.15), while women scored an average of 80.56 (SD=19.64). With regard to Portugal, the average total score of the questionnaire was 93.82 (SD=20.20; p<0.001) (range from 20 to 140 points). Male participants scored an average of 79.19 (SD=25.39), while women obtained an average score of 95.91 (SD=21.98). In Table 2, the mean and standard deviation of each item corresponding to the Nomophobia questionnaire in Portugal can be found.

3.4. Bivariate analysis

In Spain, in relation to the first dimension, (1) not being able to communicate, no statistically significant differences were found between the genders for this dimension (t(128)=0.816; p>0.05); p<0.001. With regard to the second dimension, (2) losing connectedness, statistically significant differences were found in relation to gender (t(128)=2.704; p<0.01). Considering the third dimension, (3) not being able to access information, no statistically significant differences were found between genders (t(128)=0.811; p>0.05) and (4) giving up convenience, statistically significant differences were found between genders (t(128)=2.424; p<0.01). No correlation was found in any of the dimensions with regard to age, (rs(128)=0.283) and (rs(128)=0.366) respectively.

In Portugal, for the dimension “not having access to information and connectivity” significant differences were found in relation to sex (t(126)=3.014; p<0.001). In relation to age, no correlation was found with this dimension (rs=.193).

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Spain</th>
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<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
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<tr>
<td>Sex</td>
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<td></td>
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</tr>
<tr>
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<td>33</td>
<td>25.4</td>
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<tr>
<td>Women</td>
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<td>74.6</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Third</td>
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<td>45.4</td>
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<tr>
<td>Years</td>
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<td>3.57**</td>
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</tr>
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</table>

* Chi squared.
** U Mann-Whitney.
Mean.
Standard Deviation.
Table 2
Mean and standard deviation of each item corresponding to the Nomophobia questionnaire in Portugal.

<table>
<thead>
<tr>
<th>Items</th>
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<th>D.T.</th>
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<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
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<tr>
<td>Item 20</td>
<td>12</td>
<td>9.4</td>
<td>8</td>
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</tbody>
</table>

* Answers from 1 (Strongly disagree) to 7 (Strongly agree).

4. Discussion

The aim of this study was to compare the levels of nomophobia experienced by nursing degree students from the University of Almeria.
(Spain) and the Polytechnic Institute of Braganza (Portugal). The results highlight the high scores found among Portuguese participants, despite there being more studies regarding this topic in Spain.

Few research projects carried out in this context in relation to addictive behaviors towards mobile phones can be found, despite warnings regarding the dangerous relationship between these devices and young people (Souza, 2016). In Portugal, with the exception of three empirical studies on the subject of internet dependence (Gaspar and Carvalheira, 2012; Patrao et al., 2013; Pontes et al., 2016), there have been no scientific studies regarding the topic.

An increased use of smartphones for non-work related activities among healthcare professionals has been observed in clinical settings (Cho and Lee, 2016; McBride et al., 2015; Bautista and Lin, 2016). Furthermore, nurses admit to using their smartphones for personal communication while working (McBride et al., 2015). This increased use of smartphones could be related to nomophobia behaviors (Kaur and Sharma, 2015). Finally, as there is an instrument with established validity and reliability for nursing students, (Gutiérrez-Puertas et al., 2016), it would be interesting to explore the levels of nomophobia among this population.

With respect to being in a situation where you are not able to use your smartphone, statistically significant differences were found between the countries. In Spain, the highest scores were given to “totally agree” whereas in Portugal, the highest scores corresponded to “totally disagree” – the participants could remain calm without using their mobile phone. In contrast to these results, a study carried out by Smith (2015) found that 46% of participants responded that they ‘could not live without their mobile’.

The Portuguese students felt more anxious than the Spanish students if their battery ran out. In the case of Spain, these figures are lower than those published by Dixit et al. (2010), who found that 54% of those surveyed felt anxious if they lost their phone or if it ran out of battery. In terms of the need to constantly look at one’s mobile phone, no statistically significant differences were found between the countries, as the participants showed common behavioral patterns with regards to this factor.

The Portuguese students exhibited a greater necessity to communicate instantly with their family and friends, showing a need to contact them, especially when separated from them. Nevertheless, the results of a study carried out in Portugal by Francisco and Crespo (2012) indicated that excessive use of the internet via new technologies reduces family time, thus isolating the subjects.

However, both countries awarded high scores to worrying if their family and friends could not contact them, in terms of receiving both messages and calls, potentially leading to feelings of anxiety in both cases. Similarly, a study of Smartphone users revealed that the group which showed an addictive use of their mobile phones experienced greater feelings of anxiety and depression to those who used them less frequently (Hwang et al., 2012).

The results highlighted the low scores that both countries gave to the importance of staying connected to social media. In Spain, the highest score was for the response “disagree” (28.5%) while in Portugal, the most common response was “neither agree nor disagree” (28.9%). However, studies by Park and Cho (2015) have indicated that the most common activity among university nursing students is checking their social networks. Differences were found, however, with regard to staying up-to-date with social media, as a higher number of Portuguese students felt uncomfortable if they couldn’t update it, whereas the majority of Spanish students indicated that they “neither agree nor disagree”. These same differences between countries were found in relation to the item of not being able to see notifications and updates from contacts and social media. In other words, the Portuguese students showed a greater tendency to look at social networks and update information on said networks in comparison with Spanish nursing students. This could lead to problems regarding confidentiality and privacy if considered in the context of clinical practice (Cho and Lee, 2016). It has even been found that the use of social media is a significant predictor of mobile phone addiction (Salehan and Negahban, 2013).

Similar results were found in relation to emailing. The most common response from Portuguese students was “agree” when responding to feeling anxious when not able to check their email. Various studies have shown that this is one of the most used services by students, together with social networks (Kuss and Griffiths., 2017; Park and Cho, 2015). Regarding the total score for the questionnaire, the Portuguese students obtained a higher score than the Spanish students. This also shows that both Spanish and Portuguese nursing students displayed higher than average nomophobia scores. These average scores could subsequently be identified with problems related to professional clinical practice, as indicated by Cho and Lee (2016). In line with these authors, and given the fact that these nursing students will be professionals in the future, an excessive and abusive use of smartphone during student years may indicate a higher threat towards patient safety when carrying out their nursing duties.

In relation to gender and the average questionnaire score, statistically significant differences were found; women displayed more nomophobic behaviors in the case of the Portuguese students. However, in Spain no statistically significant differences were found in relation to gender, although female participants scored slightly higher than the male participants. This contrasts with the results found in a study by Salehan and Negahban (2013), in which significant differences between the sexes were found. Previous studies have shown that women are more dependent on the services offered by the internet and are more likely to develop an addiction towards mobile telephones (Takao et al., 2009).

No statistically significant differences were found in terms of age and the total score in either country. However, in a study by Patrao et al. (2013), a relationship between internet dependence and age was found and in addition to this, Bianchi and Phillips (2005) also established that the problematic use of mobile phones is related, among other variables, to age. Younger people displayed higher levels of dependence. This difference between the two studies could be due to the small age range studied in our investigation, as all participants were aged between 17 and 38. In the Portuguese population, almost three quarters of under 25s have been found to show signs of addiction to the digital world (Patrao et al., 2013).

The use of smartphones during class reduces students’ academic performance (Mendoza et al., 2018). A study carried out with nursing students reported that the majority used their mobile phones in class, showing a moderate correlation between mobile phone use and the risk of developing nomophobia behaviors (Kaur and Sharma, 2015). Similarly, during practice the use of smartphones has been shown to distract nursing students (Cho and Lee, 2016). In this study, a high level of nomophobia was found among nursing students. Nursing professors should therefore educate this group of students on the negative impacts smartphone use can have on academic performance, together with how it can endanger patient safety and quality of care in a clinical setting. In addition to this, policies regulating smartphone use in academic and clinical environments should be established to ensure the appropriate use of mobile telephones in class and during practice.

4.1. Limitations of the study

When considering the results of this study, a set of limitations should be taken into account. Firstly, selection by convenience sampling does not allow for generalization of the results. Secondly, the results may be biased towards socially desirable responses. Authors such as Polit and Beck (2008) have found that students may hide their true responses, giving answers which reflect social values or professional expectations. Finally, the lack of research on the topic makes it difficult to carry out an adequate discussion of the findings, thus
highlighting the novel and significant nature of this research, having been little studied in depth.

5. Conclusions

This study allows us to analyze the behavior of nursing students in relation to mobile phone use. The data collected in this study have led us to conclude that in the dimensions explored, considerable levels of nomophobia were present among the student populations analyzed, although the Portuguese population - especially women - displayed more severe nomophobia than the Spanish population. Considering the results obtained, it is important not only to improve training for nursing students but also to avoid risks derived from the misuse of mobile telephones in clinical practice, as use of such devices can lead to distractions and can put patient safety at risk. In addition, academic and health institutions should develop policies that regulate the use of mobile in educational and clinical context. In forming part of a student’s education and training, nursing educators are well positioned to inform and guide regarding the importance of the appropriate use of new technologies in clinical settings. Further research is needed on the consequences of the misuse of new technologies on the patient and their care, together with how to further develop the role that nursing educators can play in encouraging appropriate smartphone use on placement.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sector.

Conflicts of interest

The authors declare no conflict of interest.

Funding Sources

Not applicable.

Ethical approval details

The research project was approved by the Department of Nursing, Physiotherapy and Medicine Research Committee at the University of Almeria. The ethics approval number is 08/2016.

Acknowledgments

This work was supported by Health Science Research Group (CTS-451).

References


