TEXTO & CONTEXTO ENFERMAGEM

TEXT & CONTEXT NURSING TEXTO & CONTEXTO ENFERMERÍA

FACTORS ASSOCIATED WITH SMARTPHONE ADDICTION IN NURSING STUDENTS

Laynara Maria das Graças Alves Lobo[1]
Yolanda Dora Martinez Évora[2]
Ana Maria Ribeiro dos Santos[1]
Marcia Teles de Oliveira Gouveia[1]
Elaine Maria Leite Rangel Andrade[1]

[1]Universidade Federal do Piauí, Programa de Pós-graduação em Enfermagem. Teresina, Piauí, Brasil.
[2]Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto, Departamento de Enfermagem Geral e Especializada. Ribeirão Preto, São Paulo, Brasil.

ABSTRACT

Objective: to analyze the factors associated with smartphone addiction in nursing students.

Method: a descriptive, correlational and quantitative study, conducted in two public universities in the Northeast of Brazil, from April to June 2019. Four instruments were used for the purpose of data collection: sociodemographic characterization, Alcohol Use Disorder Identification Test (AUDIT), Pittsburgh Sleep Quality Index (PSQI) and the Smartphone Addiction Inventory (SPAI) scale.

Results: the majority of nursing students were female, 239 (80.2%), and had an average age of 22 years. One hundred and sixty-five (55.4%) declared themselves brown, 236 (79.2%) only studied and 11 (37.2%) had one to two minimum wages as family income. Regarding marital status, 277 (93.0%) were single and 168 (56.4%) lived with their parents. Two hundred and two (67.8%) did not practice physical activity and 269 (90.3%) had never smoked or smoked for less than one month. The overall prevalence of smartphone addiction in nursing students was 142 (47.7%). The factors associated with smartphone addiction in nursing students were: AUDIT (p=0.036), overall PSQI score (p <0.001), sleep quality (p=0.008), sleep latency (p=0.001), medication use (p=0.050) and daytime dysfunction (0.000).

Conclusion: there is a need to develop educational interventions for rational use of the smartphone inside and outside universities and to develop public policies for health promotion and prevention of related comorbidities.

DESCRIPTORS: Students. Nursing. Smartphone. Addictive behavior. Risk factors.

FATORES ASSOCIADOS À ADICÇÃO AO *SMARTPHONE* EM UNIVERSITÁRIOS DE ENFERMAGEM

RESUMO

Objetivo: analisar os fatores associados à adicção ao *smartphone* em universitários de Enfermagem.
Método: estudo descritivo, correlacional e quantitativo, realizado em duas Universidades públicas do Nordeste do Brasil, no período de abril a junho de 2019. Para coleta de dados, foram utilizados quatro instrumentos: caracterização sociodemográfica, *Alcohol Use Disorder Identification Test (AUDIT), Pittsburgh Sleep Quality Index (PSQI) e a escala Smartphone Addiction Inventory (SPAI).*
Resultado: a maioria dos universitários de Enfermagem era do sexo feminino, 239 (80,2%), e tinha idade média de 22 anos. Cento e sessenta e cinco (55,4%) se autodeclararam pardos, 236 (79,2%) apenas estudavam e 11 (37,2%) tinham de um a dois salários-mínimos como renda familiar. Em relação ao estado civil, 277 (93,0%) eram solteiros e 168 (56,4%) moravam com os pais. Duzentos e dois (67,8%) não praticavam atividade física e 269 (90,3%) nunca fumaram ou estavam fumando há um período menor que um mês. A prevalência global da adicção ao *smartphone* nos universitários de Enfermagem foi de 142 (47,7%). Os fatores associados à adicção ao *smartphone* em universitários de Enfermagem foram: AUDIT (p=0,036), pontuação global do PSQI (p <0,001), qualidade do sono (p=0,008), latência do sono (p=0,001), uso de medicamentos (p=0,050) e disfunção durante o dia (0,000).
Conclusão: há necessidade de se construir intervenções educativas para uso racional do *smartphone* dentro e fora das Universidades e desenvolver políticas públicas de promoção da saúde e prevenção de comorbidades relacionadas.

DESCRITORES: Estudantes. Enfermagem. *Smartphone*. Comportamento aditivo. Fatores de risco.

FACTORES ASOCIADOS CON LA ADICCIÓN A *SMARTPHONE* EN ESTUDIANTES DE ENFERMERÍA

RESUMEN

Objetivo: analizar los factores asociados a la adicción al smartphone en estudiantes de enfermería.
Método: estudio descriptivo, correlacional y cuantitativo, realizado en dos universidades públicas del Nordeste de Brasil, de abril a junio de 2019. Para la recolección de datos se utilizaron cuatro instrumentos: caracterización sociodemográfica, Prueba de Identificación de Trastornos por Uso de Alcohol (AUDIT), Índice de calidad del sueño de Pittsburgh (PSQI) y la escala del Inventario de adicciones a teléfonos inteligentes (SPAI).
Resultados: la mayoría de los estudiantes de enfermería eran mujeres, 239 (80,2%) y tenían una edad promedio de 22 años. Ciento sesenta y cinco (55,4%) se declararon morenos, 236 (79,2%) sólo estudiaron y 11 (37,2%) tenían de uno a dos salarios mínimos como ingreso familiar. En cuanto al estado civil, 277 (93,0%) eran solteros y 168 (56,4%) vivían con sus padres. Doscientos dos (67,8%) no practicaban actividad física y 269 (90,3%) nunca habían fumado ni fumado durante menos de un mes. La prevalencia general de adicción a teléfonos inteligentes en estudiantes de enfermería fue de 142 (47,7%). Los factores asociados con la adicción a los teléfonos inteligentes en estudiantes de enfermería fueron: AUDIT (p=0.036), puntaje general del PSQI (p<0.001), calidad del sueño (p= 0.008), latencia del sueño (p=0.001), uso de medicación (p=0.050) y disfunción diurna (0,000).
Conclusión: es necesario desarrollar intervenciones educativas para el uso racional del teléfono inteligente dentro y fuera de las universidades y desarrollar políticas públicas de promoción de la salud y prevención de las comorbilidades relacionadas.

DESCRIPTORES: Estudiantes. Enfermería. Smartphone. Comportamiento adictivo. Factores de riesgo.

INTRODUCTION

The latest advance in mobile phones is the smartphone that have operating systems such as Android and the iPhone Operating System (iOS). Access to information is an important strategy for the development ofcitizenship[1], however, the uncontrolled use of the smartphone suggests technological dependence and can cause smartphone addiction, known as "Nomophobia" or irrational fear of being without the cell phone, usually fueled by the problem of excessive use of the Internet or addiction disorder[2].

Smartphone addiction involves compulsive behaviors that occur through repeated verification of messages; tolerance verified by long-term use and more intense use of the device; feelings of agitation or distress in the absence of the device; and functional impairment caused by the interference of the device in other life activities and social relationships[3].

Smartphone addiction may be associated with loneliness[4], stress, anxiety and sleep quality[5–6], decreased practice of physical activity, increased fat mass and reduction of muscle mass, accidents and academic losses of university students related to distraction by constant checking of text messages, social media and e-mails[7].

Previous studies on factors associated with smartphone addiction in university students were conducted mainly abroad[4–7]. In Brazil, these studies are still few in number considering that one of the scales that enable the tracking of smartphone addiction was recently translated and culturally adapted for Brazil by Khoury *et al*[8]., and no other study on smartphone addiction in nursing university students has been carried out.

It is relevant to conduct studies that identify the factors associated with smartphone addiction in nursing university students nationally. These studies will enable the identification of these factors and contribute to reflections in academia on the subject in Brazil and in practice for the construction of educational interventions, with the implementation of actions that can prevent and treat factors related to smartphone addiction.

In view of the above, to guide the present investigation, the following research question was elected: What are the factors associated with smartphone addiction in nursing university students? In order to answer this question, this study was carried out with the objective of analyzing these factors.

METHOD

This descriptive, correlational, quantitative study was carried out in two public universities (A and B) in the Northeast region of Brazil, from April to June 2019, after approval by a Research Ethics Committee.

The population was composed of all nursing university students (n=481) from the two Universities (A and B). The sample was obtained by convenience and consisted of 298 nursing students who met the following inclusion criteria: being 18 years of age or older at the time of data collection and having a smartphone. Exclusion criteria included: not filling in all the items of the data collection instruments.

Data were collected by the researcher in the Nursing Courses that were located in the health centers of universities A and B, in the morning and afternoon shifts. For the purpose of data collection, the researcher went to the classrooms, at times authorized by the Course Coordination and the professors of Universities A and B, to invite the university students to participate in the study and instruct them on ethical aspects and the completion of data collection instruments. Concerning the university students who voluntarily consented to participate, two signatures of the Informed Consent Form (ICF) were requested and then the data collection instruments were applied. After the university

students signed the Informed Consent and filled out the instruments, they received an individual envelope to place the Informed Consent and the answered instruments, which were sealed by the participant and left on a table in the data collection room. The completion of the instruments lasted on average 20 minutes.

Participants answered four instruments: sociodemographic characterization and lifestyle habits, adapted from Araújo *et al*[9]., Alcohol Use Disorder Identification Test (AUDIT)[10], Pittsburgh Sleep Quality Index (PSQI)[11] and Smartphone Addiction Inventory (SPAI)[8].

The AUDIT was developed by the World Health Organization (WHO) in 1989 and subsequently updated[12]. It aims to identify excessive alcohol consumption and propose interventions to reduce or cease this consumption. In Brazil, the instrument was validated by Méndez and[10] collaborators in 1999 and has 10 items ranging from 0 to 4 points, with a minimum score of 0 and a maximum of 40. After counting the total amount of points, the participants were classified into zones: Zone I (low risk) - from 0 to 7 points; Zone II (risk use) - from 8 to 15 points; Zone III (harmful use) - from 16 to 19 points; Zone IV (probable dependency) – from 20 to 40 points[10].

The PSQI assesses the quality and sleep disorders compared to the previous month. It was validated in Brazil in 2008 and consists of 19 questions grouped into seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disorders, use of sleeping medications and daytime dysfunction, with values distributed on a scale of 0 to 3 points that are added to produce an overall score ranging from 0 to 21 in which the higher the score the worse the quality of sleep[11].

SPAI was developed by Lin and[3] collaborators in Taiwan, based on Internet addiction tracking questionnaires. Translated and culturally adapted to Brazil, it has 26 items subdivided into four categories called: compulsive behavior, functional impairment, abstinence syndrome and tolerance syndrome. It has at least nine positive responses as its cut-off point[8].

The data obtained were coded to create a data dictionary and double-entered into Excel spreadsheets. After that, the data were validated to detect possible errors and, when detected, were corrected and then exported to the Statistical Package for Social Sciences (SPSS) software, version 22.0 and analyzed. Sociodemographic characteristics and lifestyle habits were analyzed using descriptive statistics, consisting of frequencies, maximum, minimum, means and standard deviations. The overall prevalence and items of the categories that make up the SPAI (compulsive behavior, functional limitation, abstinence and tolerance) was calculated based on the number of nursing students with smartphone addiction divided by the total number of university students. The Shapiro-Wilk test was used to test the normality of the global PSQI, AUDIT and SPAI scores in the groups. The distributions were not normal and, therefore, nonparametric tests were used for study analysis. The Chi-Square test and fisher's exact test were used to verify an association between independent sociodemographic variables and life habits with smartphone addiction. The Mann Whitney test compared the overall PSQI classification and subcategories with smartphone addiction. A 5% significance level was adopted.

RESULTS

Among the 298 nursing students who participated in the study, the highest number was in the sixth semester, 43 (14.4%), and the lowest in the seventh, 12 (4.0%).

Most nursing students were female, 239 (80.2%), and the mean age was 22 years (standard deviation of 3). Regarding race, 165 (55.4%) declared themselves brown. Two hundred and thirty-six (79.2%) reported only studying. One hundred and eleven (37.2%) had one to two minimum wages as their family income. Regarding marital status, 277 (93.0%) were single and 168 (56.4%) lived with their parents. It was observed that 202 (67.8%) nursing university students did not practice physical

activity and 269 (90.3%) reported never having smoked or had been smoking for less than one month. In the sleep quality classification, 183 (61.4%) presented a presence of sleep disorder. Regarding the level of alcohol consumption, 242 (81.2%) were identified in Zone I of audit classification, which represents those who use alcohol at low risk or those who do not use alcohol at all.

The overall prevalence of smartphone addiction in nursing students at Universities A and B was 142 (47.7%). Regarding the category compulsive behavior, 186 (62.4%) university students reported having a willingness to use a smartphone even when tired. The physical aspect prevailed in the category of functional limitation, when it was identified that 139 (46.6%) of the university students presented pain or discomfort in their backs or discomfort in their eyes due to excessive use of a smartphone. The idea of using a smartphone as a first thought when waking up in the morning was presented as a major factor in the abstinence category, being represented by 160 (53.7%) of the university students. Regarding tolerance, 204 (68.5%) university students said they were singled out, more than once, as those who spend too much time on their smartphones.

There was no statistically significant association of sociodemographic characteristics with smartphone addiction. Among the life habits of university students, there was a statistically significant association between AUDIT (p=0.036) with smartphone addiction. The overall score (p=0.000) and four of the seven subcategories of the PSQI, subjective sleep quality (p= 0.008), sleep latency (p=0.001), medication use (p= 0.050) and dysfunction during the day (p=0.000) also showed a statistically significant association with smartphone addiction (Tables 1, 2 and 3).

Table 1 - Association of smartphone addiction with sociodemographic characteristics of nursing students from Universities A and B of Piauí. Teresina, Brazil, 2019. (n=298)

	SPAI Rating*				p-value
	Not addicted		Addicted		
	N	%	N	%	
Sex					0,797‡
Female	126	52,7	113	47,3	
Male	30	50,8	29	49,2	
Age group					0,068‡
Young people (≤19 years)	29	42,6	39	57,4	
Adults (20/-40 years)	127	55,2	103	44,8	
Race					0,982‡
White	32	52,5	29	47,5	
Black	35	53,8	30	46,2	
Yellow	4	57,1	3	42,9	
Brown	85	51,5	80	48,5	
Employment situation					0,274‡
Study only.	118	50,0	118	50,0	
Studies and works formally.	16	59,3	11	40,7	
Studies and works informally.	22	62,9	13	37,1	

	SPAI Rating*				p-value
	Not addicted		Addicted		
	N	**%**	**N**	**%**	
Income (SM)†					0,719‡
< 1 SM	12	63,2	7	36,8	
1/-2 SM	61	55,0	50	45,0	
2/-3 SM	27	49,1	28	50,9	
3/-4 SM	15	45,5	18	54,5	
≥ 4 SM	41	51,3	39	48,8	
Marital status					0,423§
Married	9	45,0	11	55,0	
Single	147	53,1	130	46,9	
Widower	-	-	1	100,0	
Who they live with					0,563§
Parents	95	56,5	73	43,5	
Family	37	48,7	39	51,3	
Friends	11	44,0	14	56,0	
Companion	6	46,2	7	53,8	
Alone	7	43,8	9	56,3	

Smartphone Addiction Inventory (SPAI); †Minimum Wage (SM);
‡ Chi-square test; §Fisher's Exact Test

Table 2 - Association of smartphone addiction with life habits of nursing university students from Universities A and B of Piauí. Teresina, Brazil, 2019. (n=298)

	SPAI Rating*				P-value
	Not Addicted		**Addicted**		
	N	**%**	**N**	**%**	
Physical activity					0,072‡
Yes	43	44,8	53	55,2	
No	113	55,9	89	44,1	
Smoking					0,924§
Smokes one cigarette a day for at least a month.	1	33,3	2	66,7	
Does not smoke every day.	13	52,0	12	48,0	
Quit smoking at least a month ago.	1	100,0	0	0,0	
Never smoked or have smoked for less than a month.	141	52.4	128	47.6	

	SPAI Rating*				P-value
	Not Addicted		Addicted		
	N	%	N	%	
AUDIT[‖]					0.036[§]
Zone I	135	55.8	107	44.2	
Zone II	20	40.0	30	60.0	
Zona III	1	20.0	4	80.0	
Zone IV	0	0.0	1	100.0	

[*]*Smartphone Addiction Inventory* (SPAI); [‖] *Alcohol Use Disorder Identification Test* (AUDIT); [‡]Chi-square test; [§]Fisher's Exact Test

Table 3 - Association of the PSQI[¶] global and subcategories with smartphone addiction in nursing university students of Universities A and B of Piauí. Teresina, Brazil, 2019. (n=298)

	SPAI Rating*		P-value
	Not addicted	Addicted	
	Average ± SD	Average ± SD	
1. Subjective quality of sleep	1,35(1,24-1,46)	1,57(1,46-1,69)	0,008[**]
2. Sleep latency	1,82(1,57-2,06)	2,46(2,19-2,73)	0,001[**]
3. Sleep duration	1,67(1,54-1,80)	1,76(1,63-1,88)	0,287[**]
4. Habitual sleep efficiency	61,73(56,06-67,399)	60,00(53,87-66,13)	0,650[**]
5. Sleep disorders	1,30(1,22-1,39)	1,33(1,25-1,42)	0,761[**]
6. Use of medicines	0,13(0,052-0,2171)	0,26(14-0,38)	0,050[**]
7. Dysfunction during the day	2,44(2,19-2,69)	3,30(3,06-6,54)	0,000[**]
PSQI Overall Score	9,71(9,15-10,28)	11,40(10,85-11,94)	0,000[**]

[*]*Smartphone Addiction Inventory* (SPAI); [¶]Pittsburgh *Sleep Quality Index* (PSQI);[**] Mann Whitney U test

DISCUSSION

The mean age of the university students who composed the sample was 22 years and the female gender predominated with 239 (80.2%). Results of another study confirmed that the nursing workforce is relatively young and nine out of 10 nursing professionals worldwide are female[13]. Regarding race, 165 (55.4%) declared themselves as brown, 65 (21.8%) black and 61 (20.5%) white. The prevalence of single people in the sample can be explained by the young age of university students as well as by their main focus on academic training. The single marital status was also present as a majority in another literature[6].

Physical activity was not practiced by 202 (67.8%) university students, a result similar to that of another study[14], which may be related to academic demand and consequently reduced time available to perform other activities. The majority of university students, 269 (90.3%), had not smoked or had been smoking for less than a month. Another study conducted with 261 nursing students found that few participants, 11 (6%), were smokers[15].

The prevalence of smartphone addiction in nursing students in this study was 142 (47.7%) individuals. In other studies, smartphone addiction was lower[16–17]. These discrepancies may have been motivated by differences between participants and the context in which they live. However, the prevalence identified in this study may represent a potential public health problem in the context investigated.

In the category compulsive behavior, 186 (62.4%) university students answered "being willing to use the smartphone even when tired". A study with university students in Brazil found that the group positively screened for smartphone addiction and facebook addiction presented, among other negative consequences, greater impulsivity[17]. Regarding the functional limitation category, 139 (46.6%) university students answered "feeling back pain or discomfort or eye discomfort due to excessive smartphone use". The body position adopted to use the smartphone, such as inadequate postures and muscle overload, was related to the occurrence of pain[18]. Regarding eye discomfort, a previous study highlighted vision-related symptoms after prolonged smartphone reading, such as "blurry vision when viewing texts", "blurred distance vision after the task", "irritated or burning eyes", "dry eyes", "eye fatigue", "sensitivity to bright lights", among others[19]. The Brazilian Council of Ophthalmology showed that 70% to 90% of the world population feels visual discomfort after many hours in front of the screen, and eye fatigue is considered a health problem. In the tolerance category, 204 (68.5%) university students said "that they pointed out that they spend too much time on the smartphone". In the same perspective, another study showed people who indicated that they, or someone close, thought they used the cell phone a lot. Most reported that it should be accessible via smartphone all day, not considering this accessibility as harmful[20].

The AUDIT (p=0.036) showed a statistically significant association with smartphone addiction. Audit Zone I had the highest prevalence of university students with 242 individuals (81.20%). This may have occurred because the majority of the participants in this study were female. Being female is a protective factor against alcohol consumption[21]. The increase in alcohol consumption was associated with smartphone addiction due to the role of alcohol in social interaction. This was the substance most consumed by university students with smartphone addiction, indicating a particularly unique relationship between smartphone addiction and alcohol consumption problems. However, it is unlikely that this addiction alone will lead the individual to a disorder related to alcohol use, unless it is influenced by a third mediating variable, such as social isolation, depression or anxiety, because those who have one or more of these disorders are more prone to excessive smartphone and alcohol use[22].

The overall PSQI score (p <0.001), sleep quality (p=0.008), sleep latency (p=0.001), medication use (p=0.050) and dysfunction during the day (0.000) also showed a statistically significant association with smartphone addiction. Other studies have also found that this addition to the smartphone was associated with poor sleep quality[6,23]. The sleep time of college students can be impaired due to the constant messaging, since they spend a lot of time on the smartphone before bed, playing and socializing on social networks[24]. College students with smartphone addiction are more likely to have sleep disorders when compared to the population that does not use the smartphone as much. The causes and consequences of these disorders are confusing, and it is not understood whether the disorder appears as a risk factor for the development of smartphone addiction or if this addition could increase the development of psychological disorder with drug therapy, almost always, as an outlet for solving the problem[25]. A study conducted with 261 nursing students found that the consumption of psychoactive medication, without a medical prescription, among them, is large, 144 (79.2%). Among these, 38 (29.9%) used this form of medication in the last year, 68 (47.4%) with monthly frequency, 19 (13.2%) weekly and 14 (9.5%) daily[26]. Among the psychoactive drugs consumed without a prescription, tranquilizers prevailed, 19 (50%), amphetamines, 8 (21%), anabolic, 4 (10.5%), anticholinergics, 5 (13.1%), and opiates, 2 (5.3%)[26]. In the long term, the consumption of psychoactive drugs can culminate

in health damage, with an impact on the professional, personal and social life of this population. Future nurses should be encouraged to engage in healthy behaviors related to self-care, so that they can encourage the community in which they are inserted[26]. Insufficient sleep time due to smartphone addiction can affect daytime activities and academic performance of university students[27]. The use of electronic devices that emit light (computer, smartphone and tablet),before bedtime, can delay the onset of sleep, suppress melatonin secretion and impair alertness the next day[28]. In an intervention study with 76 university students, the same population was compared when using the smartphone normally and after not using it, one hour before bedtime, within a period of 15 days. Significant changes were observed in the PSQI results ($p<0.01$), with an improvement in sleep quality in 65.7% of the participants and a decrease in daytime sleepiness in 85.5% of the cases[27]. Thus, abstinence from smartphones for at least one hour before bedtime promoted an improvement in sleep quality and a reduction in daytime sleepiness, among the university students in the aforementioned study[27].

CONCLUSION

In this study, the factors associated with smartphone addiction in nursing students were: AUDIT ($p=0.036$), overall PSQI score ($p <0.001$), sleep quality ($p=0.008$), sleep latency ($p=0.001$), medication use ($p=0.050$) and dysfunction during the day ($p=0.000$).

These data reinforce the need to build educational interventions and develop public policies to promote health and prevent smartphone addiction and related comorbidities in nursing university students. The influence of Nursing in the recognition of variables associated with smartphone addiction in the university routine is highlighted, as well as in the development of strategies that promote health and well-being and prevent smartphone addiction in university students, even in academia. The COVID-19 pandemic is another aspect to be observed in future studies on smartphone addiction in nursing university students. This variable needs to be investigated, as it may have increased the exposure of nursing university students to smartphones, interfering in the prevalence and consequences of this problem in this target audience.

The limitations of this study were the cross-sectional design, which limits the ability to make causal inferences, and the fact that the participants were all undergraduate nursing students, which may limit the possibility of generalizing the results to other groups.

REFERENCES

1.   Galindo Neto NM, Sá GGM, Barbosa LU, Pereira JCN, Henriques AHB, Barros LM. Covid-19 and digital technology: mobile applications available for download in smartphones. Texto Contexto Enferm [Internet]. 2020 [cited 2021 Jun 17];29:e20200150. Available from: https://doi.org/10.1590/1980-265X-TCE-2020-0150

2.   Smith M, Robinson L, Segal J. Tips for breaking free of compulsive smartphone and internet use [Internet]. Help Guide org; 2018. [updated Oct 2021; cited 2021 Jan 10]. Available from: https://www.helpguide.org/articles/addictions/smartphone-addiction.htm

3.   Lin Y-H, Chang L-R, Lee Y-H, Tseng H-W, Kuo TBJ, Chen S-H. Development and validation of the smartphone addiction inventory (SPAI). PloS One [Internet]. 2014 Jun 4 [cited 2021 Jan 10];9(6):e98312. Available from: https://doi.org/10.1371/journal.pone.0098312

4.   Sönmez M, Kısacık ÖG, Eraydın C. Correlation between smartphone addiction and loneliness levels in nursing students. Perspect Psychiatr Care [Internet]. 2021 Jan [cited 2021 Jan 10];57(1):82-7. Available from: https://doi.org/10.1111/ppc.12527

5. Sadoughi M. The relationship between problematic mobile use and sleep quality among nursing students: the mediating role of perceived stress. Adv Nurs Midwifery [Internet]. 2018 Jan 6 [cited 2021 Jan 10];27(3):15-20. Available from: https://journals.sbmu.ac.ir/en-jnm/article/view/17152

6. Al Battashi N, Al Omari O, Sawalha M, Al Maktoumi S, Alsuleitini A, Al Qadire M. The relationship between smartphone use, insomnia, stress, and anxiety among university students: a cross-sectional study. Clin Nurs Res [Internet]. 2021 Jul [cited 2021 Jan 10];30(6):734-40. Available from: https://doi.org/10.1177/1054773820983161

7. Fiorinelli M, Di Mario S, Surace A, Mattei M, Russo C, Villa G, et al. Smartphone distraction during nursing care: Systematic literature review. Appl Nurs Res [Internet]. 2021 Apr [cited 2021 Jan 10];58:151405. Available from: https://doi.org/10.1016/j.apnr.2021.151405

8. Khoury JM, Freitas AAC, Roque MAV, Albuquerque MR, Neves MDCL, Garcia FD. Assessment of the accuracy of a new tool for tracking smartphone dependency. PloS One [Internet]. 2017 May 17 [cited 2021 Jan 10];12(5):e0176924. Available from: https://doi.org/10.1371/journal.pone.0176924

9. Araújo MFM, Freitas RWJF, Lima ACS, Pereira DCR, Zanetti ML, Damasceno MMC. Health indicators associated with poor sleep quality of university students. Rev Esc Enferm USP [Internet]. 2014 Dec [cited 2021 Jan 10];48(6):1085-92. Available from: https://doi.org/10.1590/S0080-623420140000700017

10. Mendez EB, Lima MS, Olinto MT, Farrell M. The AUDIT (Alcohol Use Disorders Identification Test) in Portuguese: a Brazilian version. In: Epidemiology Asia Pasific Conference. Shah Alam, Malaysia: Mental Health, epidemiology and service needs; 2001.

11. Bertolazi AN, Fagondes SC, Hoff LS, Pedro VD, Barreto SSM, Johns MW. Portuguese-language version of the epworth sleepiness scale: validation for use in Brazil. J Bras Pneumol [Internet]. 2009 Sep [cited 2021 Jan 10];35(9):877-83. Available from: https://doi.org/10.1590/S1806-37132009000900009

12. Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG, orgs. The alcohol use disorders identification test: guidelines for use in primary care [Internet]. 2nd ed. Genebra (CH): World Health Organization; 2001. 40 p. [cited 2021 Jan 10]. Available from: https://apps.who.int/iris/bitstream/handle/10665/67205/WHO_MSD_MSB_01.6a.pdf;jsessionid=87CFE929739EC9E0C520BCBD5AB60345?sequence=1

13. Pan American Health Organization. Nursing photography in Brazil [Internet]. Brasília, DF(BR): World Health Organization; 2020. 144 p. [cited 2021 Jan 10]. Available from: https://apsredes.org/fotografia-da-enfermagem-no-brasil/

14. Morais BX, Dalmolin GL, Andolhe R, Dullius AIS, Rocha LP. Musculoskeletal pain in undergraduate health students: prevalence and associated factors. Rev Esc Enferm USP [Internet]. 2019 [cited 2021 Jan 10];53:e03444. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342019000100443&lng=en

15. Sousa BOP, André LTS, Souza J, Santos SA, Santos MA, Pillon SC. Nursing students: medication use, psychoactive substances and health conditions. Rev Bras Enferm [Internet]. 2020 [cited 2021 Jan 10];73 Suppl 1:e20190003. Available from: https://doi.org/10.1590/0034-7167-2019-0003

16. Lopez-Fernandez O. Short version of the smartphone addiction scale adapted to Spanish and French: towards cross-cultural research in problematic mobile phone use. Addict Behav [Internet]. 2017 Jan [cited 2021 Jan 10];64:275-80. Available from: https://doi.org/10.1016/j.addbeh.2015.11.013

17. Khoury JM, Neves MCL, Roque MAV, Freitas AAC, Costa MR, Garcia FD. Smartphone and Facebook addictions share common risk and prognostic factors in a sample of undergraduate students. Trends Psychiatry Psychother [Internet]. 2019 Oct-Dec [cited Sep 29];41(4):358-68. Available from: https://doi.org/10.1590/2237-6089-2018-0069

18. Guterres JL, Schmitt FS, Oliveira LC, Simon CDS, Lopes AR. Main complaints related to excessive use of mobile devices. Pleiade [Internet]. 2017 Jan-Jun [cited 2021 Jan 10];11(21):39-45. Available from: https://core.ac.uk/download/pdf/267029322.pdf

19. Antona B, Barrio AR, Gascó A, Pinar A, González-Pérez M, Puell MC. Symptoms associated with reading from a smartphone in conditions of light and dark. Appl Ergon [Internet]. 2018 Apr [cited 2021 Jan 10];68:12-7. Available from: https://doi.org/10.1016/j.apergo.2017.10.014

20. Simó-Sanz C, Ballestar-Tarín ML, Martínez-Sabater A. Smartphone Addiction Inventory (SPAI): translation, adaptation and validation of the tool in Spanish adult population. PloS One [Internet]. 2018 Oct 17 [cited 2021 Jan 10];13(10):e0205389. Available from: https://doi.org/10.1371/journal.pone.0205389

21. Nunes BSM, Barbosa GC, Domingos TS. Associations between alcohol use and sociodemographic profile of nursing and nutrition university students. SMAD, Electr J Ment Health Alco Drugs [Internet]. 2021 [cited 2021 Jan 10];17(2):72-81. Available from: https://doi.org/10.11606/issn.1806-6976.smad.2021.162031

22. Grant JE, Lust K, Chamberlain SR. Problematic smartphone use associated with greater alcohol consumption, mental health issues, poorer academic performance, and impulsivity. J Behav Addict [Internet]. 2019 Jun 1 [cited 2021 Jan 10];8(2):335-42. Available from: https://doi.org/10.1556/2006.8.2019.32

23. Selçuk KT, Ayhan D. The relationship between smartphone addiction risk and sleep duration and psychosocial comorbidities in health professional candidates. Perspect Psychiatr Care [Internet]. 2020 Jul [cited 2021 Jan 10];56(3):541-6. Available from: https://doi.org/10.1111/ppc.12465

24. Kaya F, Daştan NB, Durar E. Smart phone usage, sleep quality and depression in university students. Int J Soc Psychiatry [Internet]. 2021 Aug 1 [cited 2021 Jan 10];67(5):407-14. Available from: https://doi.org/10.1177/0020764020960207

25. Finotti MB, Barros JMM, Toledo ALS, Faria FS, Ferreira JKS, Mata ATH, et al. Correlation between smartphone dependence in adolescence and some psychiatric disorders - literature review. Braz J Surg Clin Res [Internet]. 2019 Feb [cited 2021 Jan 10];25(2):128-34. Available from: https://www.mastereditora.com.br/periodico/20190103_213817.pdf

26. Sousa BOP, Souza ALT, Souza J, Santos SA, Santos MA, Pillon SC. Nursing students: medication use, psychoactive substances and health conditions. Rev Bras Enferm [Internet]. 2020 [cited 2021 Jan 10];73(Suppl 1):e20190003. Available from: https://doi.org/10.1590/0034-7167-2019-0003

27. Freitas CCM, Gozzoli ALDM, Konno JN, Fuess VLR. Relationship between cell phone use before bed, sleep quality and daytime sleepiness. Rev Med (Sao Paulo) [Internet]. 2017 Jan-Mar [cited 2021 Jan 10];96(1):14-20. Available from: https://doi.org/10.11606/issn.1679-9836.v96i1p14-20

28. Chinoy ED, Duffy JF, Czeisler CA. Unrestricted evening use of light-emitting tablet computers delays self-selected bedtime and disrupts circadian timing and alertness. Physiol Rep [Internet]. 2018 May [cited 2021 Jun 17];6(10):e13692. Available from: https://doi.org/10.14814/phy2.13692

NOTES

CONTRIBUTION OF AUTHORITY

Study design: Lobo LMGA, Andrade EMLR.
Data collection: Lobo LMGA.
Data analysis and interpretation: Lobo LMGA, Andrade EMLR.
Discussion of results: Lobo LMGA, Andrade EMLR.
Writing and/or critical review of the content: Andrade EMLR, Évora YDM, Santos AMR, Gouveia MTO.
Review and final approval of the final version: Andrade EMLR, Évora YDM, Santos AMR, Gouveia MTO.

APPROVAL OF ETHICS COMMITTEE IN RESEARCH

Approved by the Ethics Committee in Research of the *Universidade Federal do Piauí*, opinion no. 116345/2018, Certificate of Presentation for Ethical Appreciation 99722518.5.0000.5214.

CONFLICT OF INTEREST

There is no conflict of interest.

EDITORS

Associated Editors: Bruno Miguel Borges de Sousa Magalhães, Ana Izabel Jatobá de Souza.
Editor-in-chief: Roberta Costa.

CORRESPONDING AUTHOR

Laynara Maria das Graças Alves Lobo
laynara_cx@hotmail.com