Research Paper

Analysis of the Relationship Between Social Networking Site (SNS) Addiction and Nomophobia in Iranian Higher Education Students

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Citation Hashemi Y, Borhani K, Heidari M, Esfahani M, Zarani F. Analysis of the Relationship Between Social Networking Site (SNS) Addiction and Nomophobia in Iranian Higher Education Students. Iranian Journal of Health Sciences. 2023; 11(2):117-126. http://dx.doi.org/10.32598/ijhs.11.2.927.1

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ABSTRACT

Background and Purpose: Smartphones offer easy access to the Internet and a good platform for all kinds of Internet activities. This study analyzed the relationship between social networking site (SNS) addiction and nomophobia among Iranian higher education students.

Materials and Methods: This is a cross-sectional study. The participants were selected through a stratified sampling approach: the questionnaire comprised demographic information, Nomophobia Questionnaire, and Bergen Social Media Addiction Scale. The impact of SNS addiction on nomophobia was assessed using structural equation modeling. Then, the relations between SNS addiction and the 4 dimensions of nomophobia were examined using regression coefficients.

Results: A total of 418 SNS users (279 females) took part in this work. SNS addiction showed a significant positive correlation with nomophobia and its 4 dimensions. A model with SNS addiction predicting nomophobia showed an adequate fit. The results showed that SNS addiction has a significant positive relationship with all dimensions of nomophobia. Among dimensions of nomophobia, SNS addiction was related to giving up convenience at the highest level, followed by losing connectedness and inability to access information and communicate.

Conclusion: Therefore, SNS addiction explains nomophobia successfully. This study has important implications for health and education providers. Taking into account the efforts to enhance students' mental health through educational interventions regarding responsible uses of the SNSs and making healthy online habits in policymaking is recommended.

Keywords: Social networks, Addictive behaviors, Anxiety, Health education, Survey

Article info:
Received: 13 Sep 2022
Accepted: 17 Dec 2022
Available Online: 01 Apr 2023

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Introduction

Smartphones provide easy access to the Internet and a good platform for all kinds of Internet activities. However, their ubiquity is another notable feature that has led to a significant change in human life. It is described as always-on smartphone lives [1]. About 67 million Iranian people will use smartphones in 2022 [2]. Moreover, among various technology devices, the smartphone has been the most popular device among Iranian students [3]. Therefore, some researchers have been interested in understanding the patterns and consequences of students' smartphone use [4-6]. Among psychological and behavioral problems related to mis/overusing smartphones are dependency, related behavioral addictions [7, 8], and mood and anxiety disorders [9, 10]. Nomophobia (NO MObile PHOne phoBIA) is another negative impact of the pervasive use of smartphones [11] which refers to the fear of detachment or being away from the mobile phone [12]. Also, nomophobia is described by some researchers as an anxiety disorder caused by the unavailability of internet-based communication devices [13].

In addition, it is essential to consider that different types of behavioral addictions, like internet addiction (IA), are among other potentially negative effects of the prevalent use of technology in students' lives [14]. The decisive role of different online activities in addiction formation has been emphasized in the literature frequently [15-17]. Social networking sites (SNSs) are virtual communities that have become an important element of youth's social lives, with a growing impact on students [18, 19]. Therefore, increasing empirical studies have focused on the potential addictive usage of SNSs [18, 20-22].

Amongst the aforementioned types of student smartphone use, social usage is a more facilitating factor that may lead to pathological smartphone use [23]. Kuss and Griffiths [24] have considered nomophobia a potential part of SNS addiction through forming vulnerable habits. On the other hand, based on the literature, smartphones' vast capacity and features have led to increased use and, as a result, an increase in the prevalence of nomophobia [15]. Given that online SNS applications are one of the most attractive features of smartphones [25], SNS use could be a major factor affecting nomophobia. People with online addictive behaviors might feel that they cannot live without smartphones because of developing attachments to their devices [8]. In this sense, some researchers reported internet-behavior addictions, especially SNS dependency, as a basis for nomophobia and a higher level of nomophobia for individuals with dependency on SNSs [13]. However, there is no study exploring this potential relationship between nomophobia and SNS dependency particularly among students. In the current study, we explain why this subject is important to be studied and how.

While in smartphone addiction, excessive, uncontrollable use occurs [26], in nomophobia, we observe the fear of not using the smartphone [27]. However, the characteristics of both disorders mutually interact; a constant desire to be near the smartphone could lead to smartphone addiction, and excessive mobile phone use could also result in nomophobia in the same way [28]. Likewise, nomophobia and SNS addiction have recently been considered together in relation to other clinical conditions [29]. Given that providing easy access to SNSs has been reported as one of the most absorbing functions of smartphones [30], it is crucial to investigate the interaction between this specific type of IA (SNS addiction) and nomophobia. Although a positive relationship is reported between nomophobia and SNS use level [31] and addiction [29], the impact of SNS addiction (as a specific type of IA) on nomophobia is still unclear.

In addition, relationships between SNS addiction and the main dimensions of nomophobia have not been explored. There are four dimensions or causes for nomophobia: fears of losing communication, connectedness, immediate access to information, and the comfort of smartphones [32]. While social needs are considered the foremost reasons for SNS use, they can embrace many other purposes, like information sharing and seeking [20]. In other words, with the expansion of SNS use in students' lives, increasing functions and convenience have been provided through them [33]. Thus, we assumed addiction to SNS could be distinctly related to every dimension of nomophobia. This study explores how SNS addiction affects nomophobia and, in the following, how it relates to the 4 dimensions of nomophobia among Iranian university students.

Materials and Methods

Study participants and procedure

In this cross-sectional study, 488 undergraduate students of Shahid Beheshti University in Tehran, Iran, were recruited to voluntarily participate (April and June 2019); they all had smartphones and were SNS users. They majored in different sub-jects such as philosophy, law, business administration, social and behavioral sci-

ences, mathematics, natural sciences, and computer science. The participants were selected through a stratified sampling approach (the total number of students in different departments was considered). Those with missing responses were removed from the dataset, and 418 question-naires were used in the analysis (response rate: 86%). The age ranged from 18 to 25 years (Mean±SD= 20.09±1.63 years). Table 1 outlines the other demographic information.

The participants were briefed about the study and its objective and consented. Ethical approval was secured from the Re-search Ethics Committee of Shahid Beheshti University.

Study measures

The questionnaire consisted of 30 items to examine the following information:

Demographic information was covered by 4 questions (1-4) about age, sex (female/male), marital status (single/married/other), and part-time job (yes/no).

Nomophobia was assessed using the Nomophobia Questionnaire (NMP-Q) [27]. It was adapted to Persian by Lin et al. [34]. The tool contains 20 items and 4 dimensions: not being able to communicate (6 items), losing connectedness (5 items), not being able to access information (4 items), and giving up convenience (5 items). All items are scored on a 7-point Likert-type scale (1 = "strongly disagree" to 7="strongly agree"). The total score ranges from 20 to 140, and a greater level of no-mo-phobia is represented by higher scores [27]. A good reliability coefficient of the original scale and its dimensions was reported as 0.95, 0.94, 0.87, 0.83, and 0.81, respectively [27]. The Cronbach alpha was obtained equal to 0.92 for the overall scale, 0.89 for not being able to communicate, 0.84 for losing connectedness, 0.79 for not being able to access information, and 0.83 for giving up convenience. Based on confirmatory factor analysis (CFA), the comparative fit index (CFI) was equal to 0.93, $\chi 2$ was equal to 4.04, and root means square error of approximation (RMSEA) was equal to 0.07.

SNS addiction was assessed using the Bergen Social Media Addiction Scale (BSMAS) [35]. The BSMAS is a modified version of the validated Bergen Facebook Addiction Scale [36]. The modification comprises a change in wording so that 'Facebook' is replaced by 'social networking sites' and social networking sites are "Facebook, Twitter, Instagram, etc." The BSMAS compris-es 6 items according to basic addiction symptoms: mood modification, withdrawal, salience, tolerance, relapse, and conflict [36]. All items concern experiences occurring in the past 12 months and are rated on a 5-point Likert scale (1="very rarely" to 5="very often"). The total score ranges from 5 to 30; the higher the score, the higher the level of social media addiction. It was adapted to Persian by Lin et al. [37]. The BSMAS was reported as a valid scale psychometrically [38]. The Cronbach al-pha was 0.78, and CFA found that χ^2=4.03, RMSEA = 0.08, and CFI=0.95.

Data analysis

First, descriptive statistics were computed for all variables using SPSS, version 26.0. Afterward, correlation analysis was em-ployed to study the relationship between SNS addiction (the independent variable) and nomophobia (the dependent varia-ble).

Furthermore, structural equation modeling (SEM) was conducted using AMOS version 26.0. SNS addiction and nomophobia are not directly observed but are modeled using latent variables represented by ovals, which are related to their observable variables represented by rectangles. Therefore, observable variables have specific error variables. To examine research questions, two models were designed.

The first model was intended to find how SNS addiction affects nomophobia (overall). In this respect, SNS addiction was assumed to be exogenous, and nomophobia was assumed to be endogenous. The following adjustment indicators were used as criteria: CFI, the goodness of fit index (GFI), Tucker Lewis index (TLI) with values 0.90, and RMSEA with a value less than 0.08 [39].

The second model was designed to find how SNS addiction was related to every dimension of nomophobia separately. Therefore, SNS addiction was taken as an exogenous, four dimensions of nomophobia were taken as endogenous variables, and the path diagrams indicated the regression coefficients (standardized estimates).

Results

Descriptive analysis

Nomophobia scores ranged from 20 to 135, with a mean of 79.78±21.98. The mean score for nomophobia dimensions were 25.52±8.50 for not being able to communicate, 15.23±6.51 for losing connectedness, 17.47±5.17 for not being able to access information,

Table 1. Demographic information of study participants (N=418)

Demographic Characteristics		No. (%)
Gender	Female	279(67)
	Male	139(33)
Marital status	Single	408(97)
	Married	9(2)
	Other	3(0.7)
Part-time job	Yes	88(21)
	No	332(79)

and 21.5±6.77 for giving up convenience. SNS addiction scores ranged from 6 to 29, with a mean of 14.73±4.46.

Correlation analysis

Table 2 presents the intercorrelations between the study variables. Based on an assessment of the bivariate correlation, all correlations are significant and positive.

Structural equation modeling analysis

A model with SNS addiction predicting nomophobia showed an adequate fit (χ^2= 736.346, df = 294, P= 0.001; CMIN/df = 2.50; GFI= 0.90; CFI = 0.92; TLI = 0.90; IFI = 0.92, and RMSEA = 0.06). The loadings are depicted in Figure 1.

Table 2. Correlations between social networking site (SNS) addiction and nomophobia (N=418)

Variables	1	2	3	4	5
SNS addiction	–				
Nomophobia	0.44**	–			
Not being able to communicate	0.28**	0.84**	–		
Losing connectedness	0.41**	0.77**	0.49**	–	
Not being able to access information	0.34**	0.75**	0.47**	0.45**	–
Giving up convenience	0.42**	0.88**	0.64**	0.58**	0.64**

**P<0.01

Table 3. Regression weights (N=418)

Predictive Paths		Standardized Estimate	Unstandardized Estimate	SE
Social networking site addiction	---> Nomophobia (model 1)	0.54	1.00	0.10***
	---> Not being able to communicate (model 2)	0.59	1.30	0.14***
	---> Losing connectedness (model 2)	0.71	1.27	0.13***
	---> Not being able to access information (model 2)	0.66	1.20	0.13***
	---> Giving up convenience (model 2)	0.76	1	-

SE: standard error; ***P<0.001

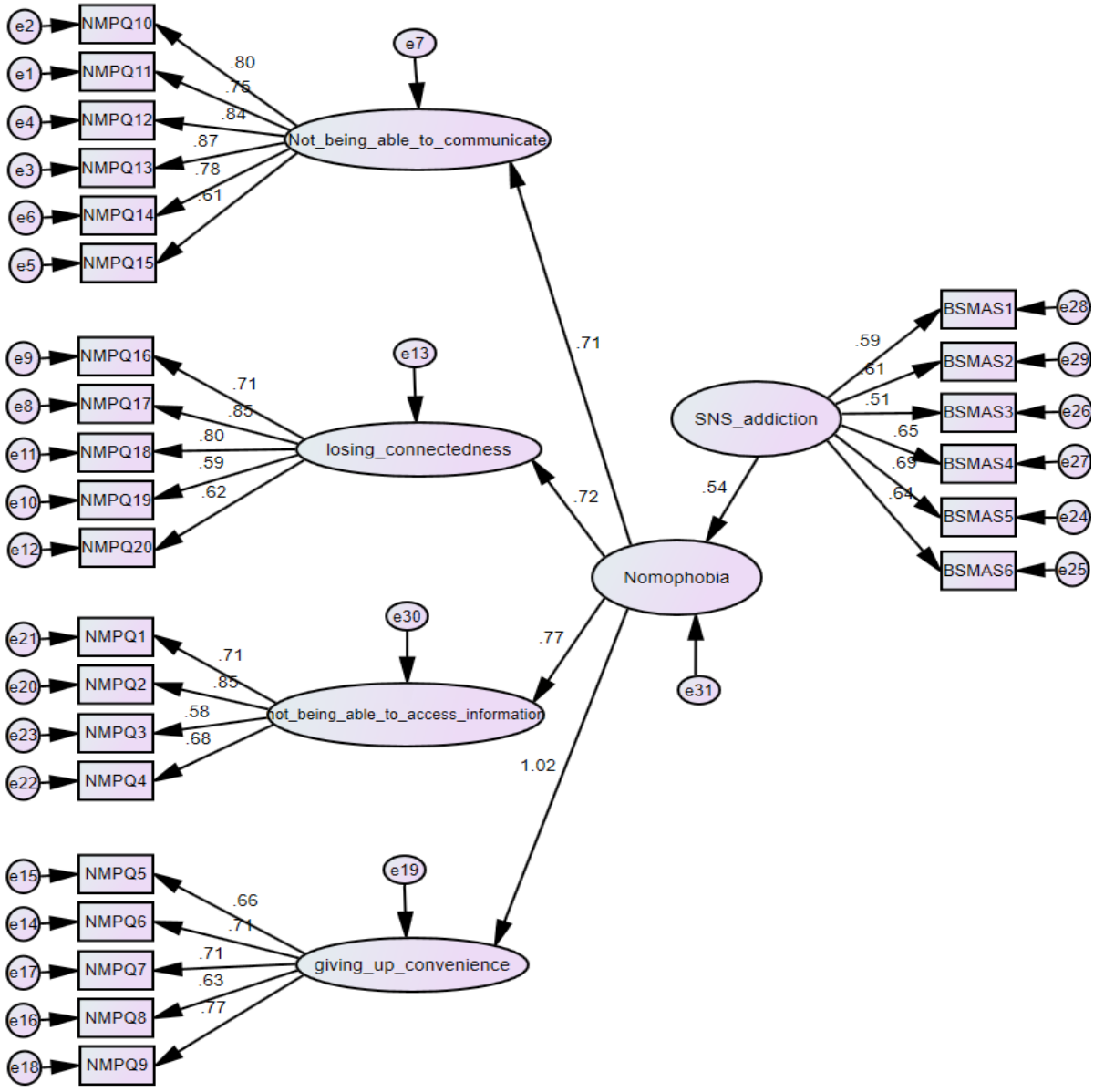

Figure 1. Modeling and interconnectedness estimation of social networking site (SNS) addiction and nomophobia

Weights and coefficients analysis

The path diagrams (Figures 1 & 2) and Table 3 indicate the regression weights (and the significance levels) of SNS addiction on the whole nomophobia (0.54) and its dimensions; not being able to communicate (0.59), losing connectedness (0.71), not being able to access information (0.66), and giving up convenience (0.76).

Discussion

Findings revealed that SNS addiction significantly correlates with nomophobia and its four dimensions. Subsequently, our structural model with SNS addiction predicting nomophobia was adjusted appropriately. Therefore, SNS addiction did explain nomophobia in a positive direction. These findings are consistent with several previous studies that reported a higher level of nomophobia for individuals with dependency on SNS [13, 31]. Ayar et al. [31] found that SNS dependency is an important factor affecting nomophobia. They showed a 0.25 times higher nomophobia level for individuals with a high level of SNS dependency. Also, Lin et al. [29] reported a moderate correlation between nomophobia and addictive use of SNS in Iranian adolescents. In this line, it is essential to take into consideration that smart-

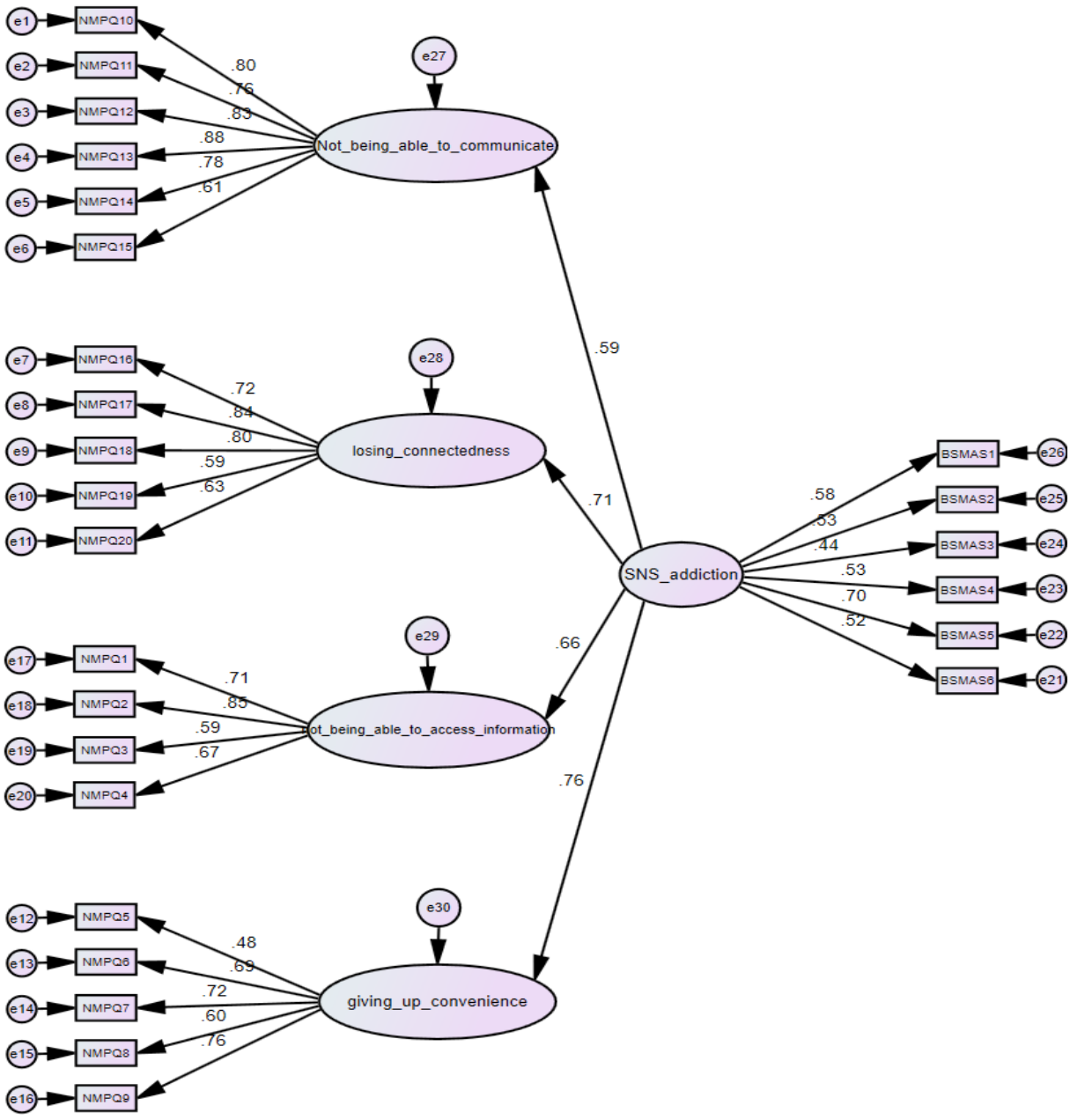

Figure 2. Modeling and interconnectedness estimation of social networking site (SNS) addiction and four dimensions of nomophobia

phones provide easy access to SNSs. Thus, they are the major instrument used for SNS usage for most addicted users [30]. Also, frequent usage of mobile social networking applications [40], making more phone calls, and sending more text messages [41] were reported in students with mobile phone addiction. Likewise, nomophobia people were characterized by the urge to constantly look at their smartphone's screen to check notifications and updates with SNS events [42]. In addition, other related variables to SNS use have been found to significantly influence nomophobia over the past years, like fear of missing out (FOMO) [13]. Individuals with FOMO constantly stay online because they fear missing or losing something on SNS [43].

Considering nomophobia has been known with different dimensions related to various features and functions of smartphones. Another advantage of this work is examining how SNS addiction was related to every dimension of nomophobia among Iranian university students. Findings showed that SNS addiction significantly positively influences all dimensions of nomophobia, al-

though this influence is not at the same level for all of them. Thus, nomophobia seems to have some aspects beyond SNS addiction, and this finding could contradict some previous views in the research literature that considered nomophobia as a potential part of SNS addiction [24].

Among dimensions of nomophobia, SNS addiction influences giving up convenience with the highest level, followed by losing connectedness, not being able to access information, and not being able to communicate, respectively (Figure 2). However, most research stressed the dimensions of fear of losing communication and connectedness, especially through internet-based applications [13, 27]. Based on our result, SNS addiction could be more related to other dimensions of nomophobia, like fear of giving up convenience and not being able to access information. These findings are in accordance with the definitions of nomophobia's dimensions; the dimension of not being able to communicate concerns feelings of loss of contact and instant communication with other people, whereas the dimension of losing connectedness concerns feelings of losing ubiquitous connectivity and connectedness to one's online identity mainly provided by SNSs [27]. Also, giving up convenience refers to the sense of comfort in students who are sure to have access to their smartphones by being in control of the battery and connectivity [44]. Similarly, the increasing role of SNSs in providing various functions and conveniences has been confirmed in students' lives [33]. Likewise, in respect of the significant relationship between SNS addiction and the dimension of not being able to access information, there is some consistent evidence in the literature. Previous work showed that the possibility of sharing information via multimedia devices could lead to the growing pathological use of the media [11]. Our findings added to previous findings that SNS addiction could affect the dimension of not being able to access information strongly and even more than the dimension of not being able to communicate in nomophobia. Also, this finding can shed light on that part of literature highlighting the importance of other needs alongside social ones to embrace SNSs, such as information seeking [22]. However, more studies are required to understand better the relations between SNS addiction and the dimensions of nomophobia.

There were some limitations to this study. First, the models were only examined among university students, who reported as notable users of SNSs and at risk of SNS addiction [18]. Therefore, the generalization of the results cannot be warranted to other populations. Future studies would aid in investigating the current models among other vulnerable groups. Second, to investigate the impact of SNS addiction on nomophobia, our models were designed based on the unidirectional relationship between SNS addiction and nomophobia. Future studies could consider the bidirectional relation between nomophobia and SNS addiction. In addition, they should examine the potential mediating role of other relevant variables in relation to SNS addiction and nomophobia and its dimensions, such as FOMO and the different purposes of SNS use in students (like recreational and social purposes [45].

Conclusion

Recent scientific evidence has emphasized the seriousness of the risks of excessive use of internet features and the crucial need to promote responsible use and make healthy online habits in students [46]. In this regard, we found that SNS addiction did explain nomophobia successfully. Then, the relations between SNS addiction and the four dimensions of nomophobia were examined using regression coefficients. The results showed that SNS addiction has a significant positive relationship with all dimensions of nomophobia, although this relationship is not on the same level for all. Among dimensions of nomophobia, SNS addiction was related to giving up convenience at the highest level, followed by losing connectedness, not being able to access information, and not being able to communicate. There are key implications for health and education providers in the findings. Taking into account the efforts to enhance students' mental health through educational interventions regarding responsible uses of the SNSs and making healthy online habits in policymaking is recommended.

Ethical Considerations

Compliance with ethical guidelines

All procedures performed in the study involving human participants were in accordance with the 1964 Helsinki Declaration. The study procedures were approved by the Ethics Committee of Shahid Beheshti University (Ethics Code: IR.SBU.ICBS.97/1043).Written formed consent was obtained from all individual participants included in the study.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors contributions

Conceptualization: Yasaman Hashemi; Supervision: Fariba Zarani; Methodology and Analysis: Mahmood Heydari; Data collection: Yasaman Hashemi and Maryam Esfahani; Investigation: Yasaman Hashemi, Khatereh Borhani; Writing- original drafts, and Writing- review and editing: All authors.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgements

The authors thank all students of Shahid Beheshti University who participated in this study.

References

[1] Chen BX. Always on: How the iPhone unlocked the anything-anytime-anywhere future--and locked us in. New York: Da Capo Press; 2011. [Link]

[2] Statista. Forecast of The number of smartphone users in Iran from 2010 to 2025 (in millions) [Internet]. 2022. [Updated 2021 May 25]. Available from: [Link]

[3] Sheikhtaheri A, Kermani F, et al. Use of mobile apps among medical and nursing students in Iran. Studies in Health Technology and Informatics. 2018; 248:33-39. [PMID]

[4] Amiri M, Dowran B. Smartphone overuse from Iranian university students' perspective: A qualitative study. Addiction and Health. 2020; 12(3):205-15. [DOI:10.22122/ahj.v12i3.271] [PMID]

[5] Mahboudi HR, Hosseinnejad S. Smartphones and our students: a case of undergraduate students in an EFL context. The Journal of Applied Linguistics and Applied Literature: Dynamics and Advances. 2020; 8(2):39-60. [DOI:10.22049/JALDA.2020.26700.1154]

[6] Mohammadbeigi A, Mohammadsalehi N, Moshiri E, Anbari Z, Ahmadi A, Ansari H. The prevalence of phantom vibration/ringing syndromes and their related factors in Iranian' students of medical sciences. Asian Journal of Psychiatry. 2017; 27:76-80. [DOI:10.1016/j.ajp.2017.02.012] [PMID]

[7] Karki S, Singh JP, Paudel G, Khatiwada S, Timilsina S. How addicted are newly admitted undergraduate medical students to smartphones?: A cross-sectional study from Chitwan medical college, Nepal. BMC Psychiatry. 2020; 20(1):95. [DOI:10.1186/s12888-020-02507-1] [PMID] [PMCID]

[8] Singh MKK, Samah NA. Impact of smartphone: A review on positive and negative effects on students. Asian Social Science. 2018; 14(11):83-9. [DOI:10.5539/ass.v14n11p83]

[9] Desouky DE-S, Abu-Zaid H. Mobile phone use pattern and addiction in relation to depression and anxiety. Eastern Mediterranean Health Journal. 2020; 26(6):692-9. [DOI:10.26719/emhj.20.043] [PMID]

[10] Višnjić A, Veličković V, Sokolović D, Stanković M, Mijatović K, Stojanović M, et al. Relationship between the manner of mobile phone use and depression, anxiety, and stress in university students. International Journal of Environmental Research and Public Health. 2018; 15(4):697. [DOI:10.3390/ijerph15040697] [PMID] [PMCID]

[11] Rodríguez-García AM, Moreno-Guerrero AJ, López Belmonte J. Nomophobia: An individual's growing fear of being without a smartphone-a systematic literature review. International Journal of Environmental Research and Public Health. 2020; 17(2):580. [DOI:10.3390/ijerph17020580] [PMID] [PMCID]

[12] Bhattacharya S, Bashar MA, Srivastava A, Singh A. Nomophobia: No mobile phone phobia. Journal of Family Medicine and Primary Care. 2019; 8(4):1297-300. [DOI:10.4103/jfmpc.jfmpc_71_19] [PMID] [PMCID]

[13] Yildirim C, Sumuer E, Adnan M, Yildirim S. A growing fear: Prevalence of nomophobia among Turkish college students. Information Development. 2015; 32(5):1322-31. [DOI:10.1177/0266666915599025]

[14] Seki T, Hamazaki K, Natori T, Inadera H. Relationship between internet addiction and depression among Japanese university students. Journal of Affective Disorders. 2019; 256:668-72. [DOI:10.1016/j.jad.2019.06.055] [PMID]

[15] Adnan M, Gezgin DM. [A modern phobia: Prevalence of nomophobia among college students (Turkish)]. Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi. 2016; 49(1):141-58. [DOI:10.1501/Egifak_0000001378]

[16] Kuss DJ, Griffiths MD. Online social networking and addiction-a review of the psychological literature. International Journal of Environmental Research and Public Health. 2011; 8(9):3528-52. [DOI:10.3390/ijerph8093528] [PMID] [PMCID]

[17] Su W, Han X, Yu H, Wu Y, Potenza MN. Do men become addicted to internet gaming and women to social media? A meta-analysis examining gender-related differences in specific internet addiction. Computers in Human Behavior. 2020; 113:106480. [DOI:10.1016/j.chb.2020.106480]

[18] Aparicio-Martínez P, Ruiz-Rubio M, Perea-Moreno AJ, Martínez-Jiménez MP, Pagliari C, Redel-Macías MD, et al. Gender differences in the addiction to social networks in the Southern Spanish university students. Telematics and Informatics. 2020; 46:101304. [DOI:10.1016/j.tele.2019.101304]

[19] Chaleshgar M, Naghibi A, Eshkevar Kiayi Z, Kor V. Evaluation of media literacy in students of Mazandaran university of medical sciences. Iranian Journal of Health Sciences. 2023; 11(1):37-46. [DOI:10.32598/ijhs.11.1.834.1]

[20] Müller KW, Dreier M, Beutel ME, Duven E, Giralt S, Wölfling K. A hidden type of internet addiction? Intense and addictive use of social networking sites in adolescents. Computers in Human Behavior. 2016; 55:172-7. [DOI:10.1016/j.chb.2015.09.007]

[21] Wegmann E, Stodt B, Brand M. Addictive use of social networking sites can be explained by the interaction of internet use expectancies, internet literacy, and psychopathological symptoms. Journal of Behavioral Addictions. 2015; 4(3):155-62. [DOI:10.1556/2006.4.2015.021] [PMID] [PMCID]

[22] Torkian S, Malek Mohammadi N, Mohammadizadeh M, Shahesmaeili A. Virtual social networks addiction and high-risk group among health science students in Iran: A latent class analysis. Iranian Journal of Health Sciences. 2022; 10(1):1-9 [DOI:10.18502/jhs.v10i1.9105]

[23] van Deursen AJ, van Dijk JA. The first-level digital divide shifts from inequalities in physical access to inequalities in material access. New Media & Society. 2018; 21(2):354-75. [DOI:10.1177/1461444818797082] [PMID] [PMCID]

[24] Kuss DJ, Griffiths MD. Social networking sites and addiction: Ten lessons learned. International Journal of Environmental Research and Public Health. 2017; 14(3):311. [DOI:10.3390/ijerph14030311] [PMID] [PMCID]

[25] Roberts J, Yaya L, Manolis C. The invisible addiction: Cell-phone activities and addiction among male and female college students. Journal of Behavioral Addictions. 2014; 3(4):254-65. [DOI:10.1556/JBA.3.2014.015] [PMID] [PMCID]

[26] Bian M, Leung L. Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use to social capital. Social Science Computer Review. 2015; 33(1):61-79. [DOI:10.1177/0894439314528779]

[27] Yildirim C, Correia AP. Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. Computers in Human Behavior. 2015; 49:130-7. [DOI:10.1016/j.chb.2015.02.059]

[28] Buctot DB, Kim N, Kim SH. The role of nomophobia and smartphone addiction in the lifestyle profiles of junior and senior high school students in the Philippines. Social Sciences & Humanities Open. 2020; 2(1):100035. [DOI:10.1016/j.ssaho.2020.100035]

[29] Lin CY, Potenza M, Slander M, Brostrom A, Ohayon M, Chattu V, et al. Longitudinal relationships between nomophobia, addictive use of social media, and insomnia in adolescents. Healthcare. 2021; 9:1201. [DOI:10.3390/healthcare9091201] [PMID] [PMCID]

[30] Khumsri J, Yingyeun R, Manwong M, Hanprathet N, Phanasathit M. Prevalence of facebook addiction and related factors among thai high school students. Journal of the Medical Association of Thailand. 2015; 98:S51-60. [PMID]

[31] Ayar D, Gerçeker GÖ, Özdemir EZ, Bektas M. The effect of problematic internet use, social appearance anxiety, and social media use on nursing students' nomophobia levels. CIN: Computers, Informatics, Nursing. 2018; 36(12):589-95. [DOI:10.1097/CIN.0000000000000458] [PMID]

[32] Lee S, Kim M, Mendoza JS, McDonough IM. Addicted to cellphones: Exploring the psychometric properties between the nomophobia questionnaire and obsessiveness in college students. Heliyon. 2018; 4(11):e00895. [DOI:10.1016/j.heliyon.2018.e00895] [PMID] [PMCID]

[33] Kircaburun K, Alhabash S, Tosuntaş ŞB, Griffiths MD. Uses and gratifications of problematic social media use among university students: A simultaneous examination of the big five of personality traits, social media platforms, and social media use motives. International Journal of Mental Health and Addiction. 2020; 18(3):525-47. [DOI:10.1007/s11469-018-9940-6]

[34] Lin CY, Griffiths MD, Pakpour AH. Psychometric evaluation of persian nomophobia questionnaire: Differential item functioning and measurement invariance across gender. Journal of Behavioral Addictions. 2018; 7(1):100-8. [DOI:10.1556/2006.7.2018.11] [PMID] [PMCID]

[35] Andreassen CS, Pallesen S, Griffiths MD. The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. Addictive Behaviors. 2017; 64:287-93. [DOI:10.1016/j.addbeh.2016.03.006] [PMID]

[36] Andreassen CS, Torsheim T, Brunborg GS, Pallesen S. Development of a Facebook addiction scale. Psychological Reports. 2012; 110(2):501-17. [DOI:10.2466/02.09.18.PR0.110.2.501-517] [PMID]

[37] Lin CY, Broström A, Nilsen P, Griffiths MD, Pakpour AH. Psychometric validation of the Persian Bergen social media addiction scale using classic test theory and Rasch models. Journal of Behavioral Addictions. 2017; 6(4):620-9. [DOI:10.1556/2006.6.2017.071] [PMID] [PMCID]

[38] Bányai F, Zsila Á, Király O, Maraz A, Elekes Z, Griffiths MD, et al. Problematic social media use: Results from a large-scale nationally representative adolescent sample. Plos One. 2017; 12(1):e0169839. [DOI:10.1371/journal.pone.0169839] [PMID] [PMCID]

[39] Brown TA. Confirmatory factor analysis for applied research. New York: Guilford Publications; 2015. [Link]

[40] Salehan M, Negahban A. Social networking on smartphones: When mobile phones become addictive. Computers in Human Behavior. 2013; 29(6):2632-9. [DOI:10.1016/j.chb.2013.07.003]

[41] Hong FY, Chiu SI, Huang DH. A model of the relationship between psychological characteristics, mobile phone addiction and use of mobile phones by Taiwanese university female students. Computers in Human Behavior. 2012; 28(6):2152-9. [DOI:10.1016/j.chb.2012.06.020]

[42] Bragazzi NL, Del Puente G. A proposal for including nomophobia in the new DSM-V. Psychology Research and Behavior Management. 2014; 7:155-60. [DOI:10.2147/PRBM.S41386] [PMID] [PMCID]

[43] Dossey L. FOMO, digital dementia, and our dangerous experiment. Explore: The Journal of Science and Healing. 2014; 10(2):69-73. [DOI:10.1016/j.explore.2013.12.008] [PMID]

[44] Moreno-Guerrero AJ, López-Belmonte J, Romero-Rodríguez JM, Rodríguez-García AM. Nomophobia: Impact of cell phone use and time to rest among teacher students. Heliyon. 2020; 6(5):e04084. [DOI:10.1016/j.heliyon.2020.e04084] [PMID] [PMCID]

[45] Kim Y, Sohn D, Choi SM. Cultural difference in motivations for using social network sites: A comparative study of American and Korean college students. Computers in Human Behavior. 2011; 27(1):365-72. [DOI:10.1016/j.chb.2010.08.015]

[46] Moreno-Guerrero AJ, Gómez-García G, López-Belmonte J, Rodríguez-Jiménez C. Internet addiction in the web of science database: a review of the literature with scientific mapping. International Journal of Environmental Research and Public Health. 2020; 17(8):2753. [DOI:10.3390/ijerph17082753] [PMID] [PMCID]

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