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The association between nomophobia and loneliness among the general population in the Kingdom of Saudi Arabia

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Abstract

Background: Nomophobia progresses through phases (initiation, affirmation, need, and dependency), similarly to addiction, and manifests in a variety of ways, including socially, physiologically, and physically. The objective of the study is to examine the association between nomophobia and feelings of loneliness among a sample of the general population from the KSA. Data were gathered between 5 March and 5 April 2022 using a descriptive, cross-sectional survey design. Five hundred twenty-six participants make up the sample for this study. The information is gathered using a sociodemographic data sheet, Internet usage profiles, a nomophobia questionnaire, and the Loneliness Scale.

Results: The majority of people in the study sample use the Internet for between 4 and 9 h, most immediately in the morning, on waking, for gaming, and for social communication. For nomophobia levels among the study population, the highest percentage is for a moderate level of nomophobia, with the highest means being for factor 1 (unable to communicate), followed by factor 4 (giving up convenience). They also have a moderate level of loneliness.

Conclusions: The multivariate analysis shows that the total loneliness score is strongly and positively correlated with the total nomophobia score and its four factors and the duration of daily mobile Internet use. There are also negative correlations with age and education level. Additionally, the overall nomophobia score has an inverse relationship with income level and age, but a high relationship with the frequency of daily mobile Internet use. The study suggests that there is a need for psychoeducation for a variety of sociodemographic groups to raise awareness about the psychological repercussions of nomophobia, practices that will help to reduce the time spent online for arbitrary reasons, to discover new and entertaining ways of communicating with each other.

Keywords: Nomophobia, Loneliness, Saudi Arabia, General Population

Background

The advent of new information and communication technologies (ICTs) in the digital era has offered a means for rapid communication, effective data retrieval, and access to the Internet, the world's largest global communication network [1]. This era is characterized by the extensive and pervasive use of smartphones and mobile devices [2], which are mostly used due to

their smaller dimensions that promote portability [3], to access the internet, contact friends and family, and quest for anything [4]. A preoccupation with up-to-date mobile apps can definitely generate an environment in which people spend more time with technology than with their peers [5]. Regardless, portable phones have become an integral tool of our everyday lives [6]. The use of smartphones has resulted in major issues and societal ramifications. Due to the effect that mobile technology has had on society and the dependence that its use has created among residents, nomophobia (non-mobile dread) is a contemporary illness [7, 8]. The incapability to contact or be telephoned by others, as

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well as the loss of quick access to information and one's network of contacts, all contribute to the emergence of this phobia and make it worse [9, 10]. Nomophobia is characterized by sensations of discomfort, worry, nervousness, or anguish that occur when a mobile phone is not in use and can even lead to suicide ideation and attempts [11].

Nomophobia is currently associated with the scare of not being able to communicate, one's connection being lost, suffering loneliness, and losing one's comfort [12]. In other circumstances, nomophobia is strongly, positively, and significantly associated with difficulty using the Internet, worry over one's social media profile, and reliance on using social media [13]. In other studies, it has been discovered that people with nomophobia exhibit incorrect stress-coping techniques [14], and those with high degrees of nomophobia are more likely to seek memory, self, and proximity [15]. Three symptomatic elements have been linked to this condition in past studies: anxiety, the obsessive use of smartphones, and panic sensations [16]. Furthermore, nomophobia has been proven to cause stress as a result of social threats, particularly when there is uncertainty or a deficit of control [17].

The concept of nomophobia is linked to problematic Internet use [13, 18], as well as the rise in time consumed online, and refers to the unreasonable fear that develops when someone is separated from their mobile telephone [9, 10].

Therefore, similarly to addictions, nomophobia progresses through phases (initiation, affirmation, need, and dependency) and manifests in a variety of ways, including socially, physiologically, and physically [7]. This significant dependency, which causes anxiety, worry, and/or panic when one's smartphone is unavailable [8], is caused by four primary elements [10, 12]: (I) fear or apprehension about losing the ability to speak with others; (II) Fear of disconnecting; (III) fear of losing prompt access to information; and (IV) fear of giving up the comfort offered by mobile devices. Therefore, the loss of information and one's network of acquaintances, as well as the inability to contact or be contacted by others, creates a phobia that interferes with the person's advance in everyday life [10].

Loneliness is defined as an unwelcome and disagreeable experience that is frequently accompanied by worry, anger, despair, and other negative emotions. Although it is more common among teenagers and young adults, it can affect anyone at any age. Individuals who are lonely tend to isolate themselves from time-bound personal and public duties, associations, and social interactions [19]. Loneliness is the psychological result of failing to meet social and emotional expectations in human interactions [20].

The nature of human contact in the age of contemporary technology has led to decreased social relationships among members of society and the individual's deprivation of many aspects necessary to form a normal personality. Therefore, technological growth and progress are seen as sources of psycho-loneliness and occasional insecurity. Furthermore, this has resulted in the proliferation of complicated forms of social communication with others, such as through the media and the Internet. As a result, the individual acquires values that may conflict with those of their family, as well as losing the values and traits that make them unique [21].

Originally, mobile phones were intended to be used for communication. Thus, it seems sensible that loneliness would be linked to the use of mobile phones. Loneliness is a strong predictor of mobile phone use choices [22]. For example, Yıldız Durak [23] discovered a strong link between loneliness and nomophobia, with loneliness predicting nomophobia. People also try to compensate for loneliness and social anxiety by using their phones [24].

Significance of the study

According to previous studies, individuals who are lonely may be vulnerable to the excessive use of Internet technology, and if they are unable to use a mobile phone, they are more likely to experience embarrassment [25]. Moreover, through the intermediating impact of the escape motive, loneliness may lead to the disproportionate use of mobile phones [26]. Regardless, this is a relatively novel problem characteristic of the digital age that is being exacerbated by the increasing use of mobile technology in people's daily lives. Therefore, it is thought to be required to examine if nomophobia and loneliness are associated in a sample of Saudi Arabia's general population.

Aim of the study

This study intends to investigate the relationship between nomophobia and feelings of loneliness in a sample of Saudi Arabia's general population. The research hypothesis states that nomophobia and feelings of loneliness scores are significantly and positively inter-correlated.

Subjects and methods

Research design and setting

These associations were examined in the study using a descriptive, cross-sectional study design. Additionally, the Kingdom of Saudi Arabia was selected due to the convenience, accessibility, and availability of the researcher in Saudi Arabia.

Sample size

The target population in Saudi Arabia (about 13,300,000) and the prevalence of severe nomophobia (21.9%) [27], were used to determine the sample size. Using a confidence level of 95%, test power of 80%, and design effect 2. Thus, the sample size was determined to be 526 subjects using the Open-Epi version 3.0 software package [28]. Those that are enthusiastic to join in the research and those who are older than 18 years old are the inclusion criteria. Individuals under the age of 18 are excluded.

Data collection tools

A self-administered questionnaire form was used to gather the data. This questionnaire included two valid standardized tools, in addition to a section inquiring about respondents' demographic information and their profiles on Internet use, including inquiries on their age, gender, marital status, level of education, income, and whether they feel good about relationships with others, the duration of their daily mobile Internet use, the time at which they use the Internet most, and their purpose for using the Internet.

The first tool

The *nomophobia survey* (NMP-Q) was developed by Yildirim and Correia [10], and without any modifications, the Arabic version was used to carry out the current investigation [29]. It contains 20 items rated on a Likert scale from 1 to 7, with 1 indicating *robustly disagree* and 7 indicating *strongly agree* (or *totally agree*). The four dimensions identified in this questionnaire are separated into questions inquiring about the inability to obtain information (items 1–4): dissatisfaction caused by the inability to look for information on the Internet using a smartphone or access information at any time; giving up convenience (items 5–9): the convenience and comfort that smartphones bring, particularly in terms of battery, coverage, and credits; the inability to communicate (items 10–15): feelings about failing to communicate immediately and being unable to use instant communication services; the inability to communicate (items 10–15): feelings about being unable to use instant communication services; feelings about losing connectedness (items 16–20): the emotions associated with a loss of ubiquitous connectivity. A higher score denotes a more severe case of nomophobia, and the total score ranges from 20 to 140. Specifically, a score of 20 or lower indicates no nomophobia; a score of at least 20 but not more than 60 is considered mild; a nomophobia score of at least 60 but not more than 100 indicates a moderate level; An extreme level is indicated by a score of greater than or equal to 100. Further, the ideal Cronbach's alpha

coefficient of 0.88 was discovered in previous research [30]. The tool, therefore, had strong internal consistency in the current investigation, with a Cronbach's alpha of 0.949.

The second tool

In this study, the brief form of the Revised UCLA Loneliness Scale (ULS-6) was used. It is one of the most extensively used scales for assessing social isolation and loneliness [31]. The original scale has 20 statements; however, the ULS-6 only has 6 [32]. Responses are given on a four-point Likert scale, with 1 meaning *never* and 4 meaning *often*. A higher score indicates greater loneliness. As per the suggestion of a previous study, the Arabic form of the ULS-6 was used for this study without any amendment [33]. In their study, Cronbach's standardized alpha was 0.76, signifying that the translated scale was reliable [33]. In the current study, the alpha coefficient was 0.703.

Pilot study

Beforehand the main investigation, a pilot study was conducted on 10% of the calculated study sample to determine the lucidity of the scales, the practicality of the study, and the applicability of the data collection tools. It was also used to assess the scales' reliability. According to the results of this pilot study, the typical time essential to answer the tools ranged from 10 to 15 min, based on the respondent's level of knowledge and cooperation. The questionnaire was finalized using the findings of the pilot study, and the participants were excluded from the main study population.

Study procedure

The researcher uses social networks to electronically invite potential respondents to participate in the pilot and main investigations. An electronic questionnaire was used to collect data, which took about 10–15 min to complete. The online survey was created using Google Forms and was sent to participants through various social media sites (WhatsApp, Messenger, Facebook, and Imo). All applicable national data protection standards were followed during the data handling operations. There was no deceit in this study, and contributors received a debriefing at the end of the questionnaire. Additionally, only non-personally identifiable information was collected for the study. Finally, the data were collected over one month (5th March to 5th April 2022).

Ethical considerations

Participants were not pressured into participating in this study, and they did not receive any type of financial remuneration for participating. Before answering the

questionnaire, participants were required to read and sign an informed consent form. Subjects were also told about the type of study being conducted, as well as its objective, before participating. In addition, subjects were given the researcher's contact information and affiliations, and they were knowledgeable of their right to decline to participate in or discontinue it at whatever time. By using questionnaire identification numbers, potential breaches of confidentiality were mitigated; nonetheless, no identifying information, such as names, email addresses, or cell phone numbers, was collected from the participants, and their responses were fully nameless. No injury or risk, other than discomfort or inconvenience, to the subjects, was anticipated.

Statistical analysis

All data were gathered, processed, and statistically examined utilizing 2015's IBM Corp. (IBM SPSS Statistics for Windows, version 23.0, Armonk, NY: IBM Corp.). The mean, standard deviation, and range were used to communicate quantitative data, whereas a percentage was used to represent qualitative data. To evaluate the correlation between the different study variables, Spearman's correlation coefficient was determined. In this case, a + sign denoted a positive correlation, but a (-) sign denoted a negative correlation. A strong association was also suggested by values close to 1, while a weak correlation was shown by values close to 0. As multiple linear regression is used to describe data and explain the link between one dependent continuous variable and one or more independent variables, it was employed as predictive analysis. All tests were two-sided and were deemed to be negligible statistically. Last but not least, a p value of 0.05 or higher was regarded as statistically significant, whereas a p value of 0.05 or below was regarded as statistically insignificant.

Results

Table 1 demonstrates that approximately one-third of the study sample was aged 40 years and older (33.5%), while 30.6% of them were younger than 20 years old. Moreover, the highest percentages in the studied population were for the female gender, the single marital status, a university-level education, an average level of income, and feeling good about their relationship with others (60.1%, 52.7%, 46.8%, 91.3%, and 87.5%, respectively). Regarding the pattern of mobile Internet use, the results show that the majority of the study sample use the Internet for between four and nine hours (60.3%), usually immediately in the morning upon waking up (65.4%), and for gaming (67.5%) and social communication (66.9%).

Table 2 demonstrates that the highest means of nomophobia factors were for being unable to communicate

(20.5 ± 9.2), followed by giving up convenience (17.7 ± 7.9).

According to Fig. 1, the level of nomophobia that had the highest percentage in the study sample was the moderate level (46.2%).

According to Fig. 2, the level of feelings of loneliness with the highest percentage among the participants was the moderate level of loneliness, at 36%.

The multivariate analysis (Table 3) shows that the total loneliness score was strongly and positively correlated with the total nomophobia score and its four factors and the duration of daily mobile Internet use, with a p value of 0.01, but it was negatively correlated with age and education level. On the other hand, the total nomophobia score was inversely correlated with income level and age but was strongly correlated with the duration of daily mobile Internet use.

According to Table 4, the nomophobia score, education level, and daily time spent on mobile Internet were significant predictors of loneliness scores among the studied population.

Discussion

Nomophobia is a modern phobia that arose in the digital age [17, 34] and is growing in prevalence as the smartphone becomes more integrated into society [35]. Many studies investigating nomophobia have reported that it promotes the development of mental diseases and personality disorders [36], as well as self-esteem issues, loneliness, and happiness issues [37]. Therefore, a sample of the Saudi Arabian general population was used in this study to investigate the association between nomophobia and feelings of loneliness.

The findings of the current research demonstrate that the highest percentages for the demographic characteristics of the study sample were for the female gender, the single marital status, and the university education level. A statistically significant inverse correlation was observed between the nomophobia score and age, and income levels scores. This indicates that younger individuals and those with insufficient income exhibit higher levels of nomophobia.

The findings of this study are consistent with those of preceding studies done in India, England, and Spain, which showed that various population groups, particularly young people, can be affected by nomophobia, whether they are university students [38, 39] or are at another education level [40]. Other evidence has also indicated that nomophobia is common in a variety of populations, particularly among young people and teenagers [7]. Furthermore, this issue has been viewed as a risk among all teenagers, not just university and high-school students [41].

Table 1 Demographic characteristics and profiles on Internet use of study sample ($n = 526$)

Variable		No.	Percentage
Age in years	< 20	161	30.6
	20–29	93	17.7
	30–39	96	18.3
	> 40	176	33.5
Sex	Male	210	39.9
	Female	316	60.1
Marital status	Single	277	52.7
	Married	228	43.3
	Divorced/Widowed	21	4.0
Education level	Read and write	23	4.4
	Basic education	55	10.5
	Secondary education	67	12.7
	Technical diploma	48	9.1
	University	246	46.8
Income level	Postgraduate studies	87	16.5
	Good	24	4.6
	Average	480	91.3
	Poor	22	4.2
Feeling good about relationships with others	Yes	460	87.5
	to some extent	66	12.5
Duration of daily mobile Internet use	≤ 3 h	110	20.9
	4–6 h	166	31.6
	7–9 h	151	28.7
	> 9 h	99	18.8
The time at which I use the Internet most	Morning/immediately upon waking up	344	65.4
	Afternoon and evening	140	26.6
	Midnight	42	8.0
Purpose for using the Internet	Search for information	318	60.5
	Study	335	63.7
	Communication	352	66.9
	Work	202	38.4
	Gaming	355	67.5

Table 2 Frequency distribution of nomophobia factors ($n = 526$)

Factors of nomophobia	Mean \pm SD	Range
Unable to communicate	20.5 \pm 9.2	5–42
Loss of connectedness	16.5 \pm 7.6	4–35
Unable to access information	14.7 \pm 5.5	5–28
Giving up convenience	17.7 \pm 7.9	5–35
Total	69.4 \pm 27.5	21–140

However, these results were inconsistent with those of Moreno-Guerrero and colleagues [18], they conveyed, in their study in Spain, that because levels of nomophobia are comparable across all age groups, age has no bearing. As a result, there are no notable differences [18].

Furthermore, the verdicts of the current study were at odds with those of an earlier Australian study that found no significant relationship between income and education and levels of nomophobia [42].

Regarding the pattern of mobile Internet use, the results indicate that the majority of the study sample use the Internet for between 4 and 9 h, immediately in the morning after waking up, and for gaming and social communication, which indicates that the participants use the Internet for longer periods than intended. These findings agree with those of Hussien [43]. In their study conducted in Saudi Arabia, it was reported that the majority of participants spend four to nine hours each day on the Internet, primarily at night, and primarily for social purposes. In this regard, the outcomes

Nomophobia level

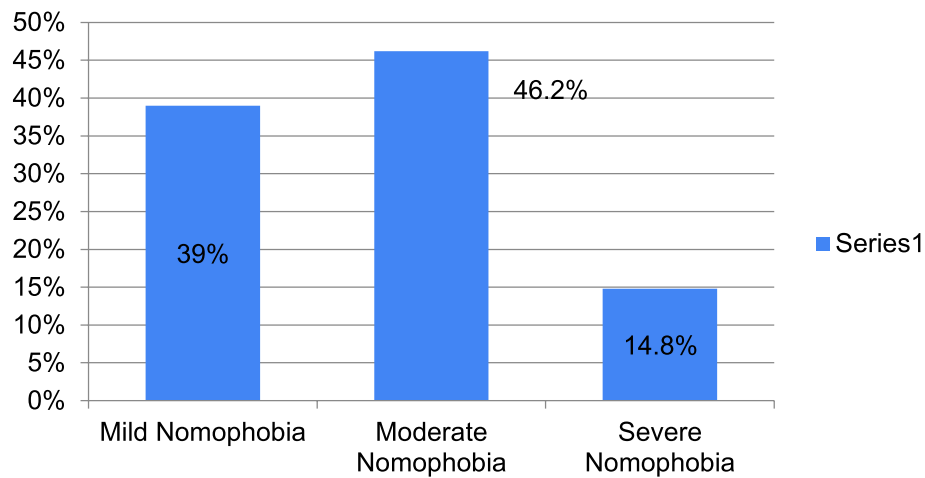


Fig. 1 Percentage distribution of feelings of nomophobia levels in the studied population. Mild: 20 to < 60, moderate: 60 < 100, severe: 100 and beyond

Feeling of Loneliness Level

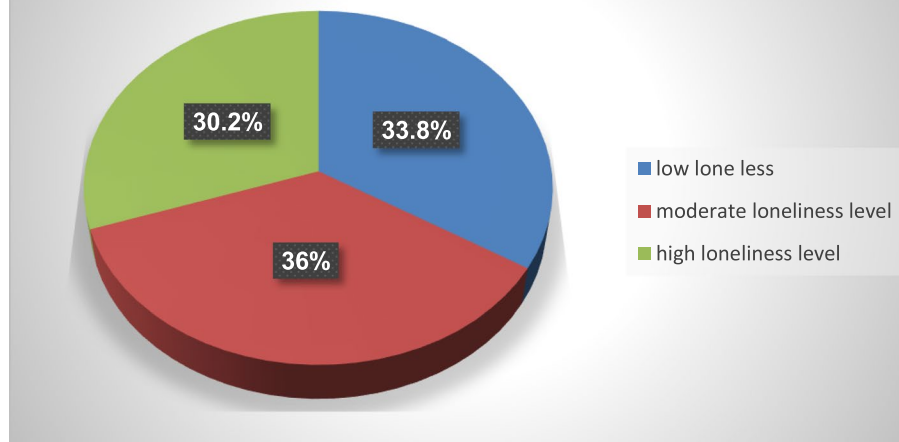


Fig. 2 Percentage distribution of the feelings of loneliness levels in the studied population ($n = 526$)

of this study are parallel to those of earlier studies conducted in Saudi Arabia and Egypt, with the majority of participants saying that they frequently spend more time online than they anticipate [44]. Similarly, another study conducted in China delineated that the quantity of time spent online has progressively increased recently. Therefore, despite its numerous benefits, Internet use can be dangerous if not adequately governed [45].

As reported in the present study, the participants had varying degrees of nomophobia, with the highest percentage of them having a moderate level of nomophobia. Further, the highest means of nomophobia factors were found for factor 1 (unable to communicate), followed by factor 4 (giving up convenience). From this, it can be understood that the study participants' main issues are the inability to communicate immediately or frequently and the fear of their smartphone's battery dying. These

Table 3 Correlation matrix of the loneliness score, the nomophobia score and its factors, age in years, education level, income level, and duration of daily mobile Internet use

Variable	Loneliness score		Nomophobia score	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Loneliness score	1	.		
Nomophobia score	.567**	0.0001		
Unable to communicate score	.445**	0.0001		
Loss off connectedness score	.573**	0.0001		
Unable to access information score	.626**	0.0001		
Giving up convenience score	.461**	0.0001		
Age in years	− 0.214 **	0.0001	− 0.103 *	0.018
Education level	− 0.142 **	0.001	0.075	0.087
Income level	0.053	0.221	− .207**	0.0001
Length of everyday mobile Internet usage	.402**	0.0001	.254**	00.0001

Correlative index (*r*) Correlation is significant at the 0.05 level (2-tailed) for * and the 0.01 level for **, (2-tailed)

Table 4 Multiple linear regression model for the loneliness scores of the studied population (*n* = 526)

Predictor	Regression coefficient		<i>t</i>	Sig.	<i>r</i>	<i>R</i> ²
	β	Std. error				
(Constant)	7.150	.706	10.134	.0001		
Nomophobia score	0.074	.005	14.742	.0001		
Education level	− 0.529	.104	5.081	.0001	0.649	0.422
Duration of daily mobile Internet use	1.084	.154	7.062	.0001		

β = regression coefficient, R^2 = 42.2% of predictors, ANOVA model = 95, p = 0.0001

results correlate with those found in the study conducted in Arab regions of Saudi Arabia and Kuwait that disclosed the prevalence of a moderate level of nomophobia among their studied populations [29, 46]. Similarly, another study reported that the highest nomophobia scores were for the nervousness or anxiety induced by being unable to communicate [47]. In addition, a study in Spain investigated nomophobia and reported that the highest scores were for factor 1 (being unable to communicate) among their sample [48]. Likewise, notably, the studied sample's greatest worry was for their smartphone's battery dying, as mentioned in a study conducted in Turkey [41].

The results indicate that in terms of loneliness levels, the highest percentage among the participants was for a moderate level of loneliness, with the nomophobia score and the daily time spent on mobile Internet being significant positive predictors of loneliness scores. This may be interpreted as lonely people favor to use the Internet for social connection, and they are more inclined to utilize the Internet to replace time spent on offline social activities. These results agree with those of a previous study indicating that people who are addicted to the Internet may experience loneliness and social isolation as a result of their excessive use of the Internet, which can lead to

depression [49]. Similarly, another study found that the more time one spends online, the more likely one is to experience loneliness [50].

Additionally, there was a strong link found between smartphone intemperance, nomophobia, and Internet addiction according to a Malaysian study [51]. That is, individuals are motivated to spend more time on the Internet due to their fear of losing connection to the online world to the point where they become addicted to the Internet. Since many smartphone operations are accomplished via the Internet, and with smartphones being utilized more often, higher levels of Internet addiction can be expected. Furthermore, psychosocial issues such as anxiety, despair, and loneliness contribute to high levels of Internet addiction.

The multivariate analysis shows that the total loneliness score was strongly and positively correlated with the total nomophobia score and its four factors. This could indicate that those who be unable to find access to their smartphones experience loneliness as a result of their worry about being unable to socialize and communicate with others. This result correlates with that of a study conducted in Turkey that reported a substantial positive association between nomophobia and loneliness [52]. In

another study on the Turkish general population, Kayis et al. [53], discovered a low but significant link between loneliness and smartphone addiction. Finally, the research hypothesis stated that nomophobia and feelings of loneliness scores are significantly and positively inter-correlated, which was accepted.

The current study's findings revealed a statistically significant negative correlation between loneliness and education, which is regarded as an independent predictor of loneliness and indicates that feeling lonely was associated with having a low level of education. However, this finding contradicted findings from earlier studies conducted in Kuwait and Poland [33, 54], which found that education had no statistically significant impact on loneliness.

Conclusions

This research concluded that the majority of the examined population has a moderate level of nomophobia, especially due to being unable to communicate and giving up convenience, in addition to a moderate level of loneliness. Further, the multivariate analysis shows that the total loneliness score was strongly and positively correlated with the total nomophobia score and its four factors, as well as with the duration of daily mobile Internet use. However, there were negative correlations with age and education level. On the other hand, the total nomophobia score was inversely correlated with income level and age, while it was strongly correlated with the duration of daily mobile Internet use. Lastly, the nomophobia score, education level, and interval of everyday mobile Internet usage were significant predictors of loneliness scores among the studied population. The study suggests that there is a need for more research to raise awareness about the psychological ramifications of nomophobia through psychoeducation. Counseling sessions that could teach parents about practices that will help them reduce the time that their children and teenagers spend online for arbitrary reasons, aside from time spent on the Internet for homework and exams, and that could guide them toward new and entertaining ways of communicating with each other could also be helpful.

Limitations

The primary restrictions and threats to study generalization were randomizations and cross-sectional design; hence, similar future studies should be carried out utilizing longitudinal research methods, with the inclusion of a random sample and employing a larger sample size. Cluster sampling could be utilized to recognize a district/state-wise viewpoint.

Abbreviations

KSA: Kingdom of Saudi Arabia; SPSS: Statistical Package for Social Sciences.

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Author's contributions

HR designed the study, gathered and analyzed the data, and authored and updated the report. The author also read and agreed on the final manuscript.

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Availability of data and materials

All data are accessible via the Internet, as stated in the "References" section.

Declarations

Ethics approval and consent to participate

The researchers submitted an official letter issued from the scientific Research Ethics Committee to Qassim University, to conduct the study. All subjects electronically provided their informed consent prior to registration. On the screen requesting informed consent, there were only two options: yes or no. Only those who clicked "yes" were taken to the survey page, where they were informed that they could leave the study whenever they wanted without providing a reason.

Consent for publication

Not applicable.

Competing interests

The author declares no competing interests.

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