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Research Article

The Relationship Between Nomophobia and Work-Related Burnout among Medical Professionals in Saudi Arabia

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Abstract

Background: Nomophobia is defined as a fear of having no mobile phone. Also, burnout is one of the most common psychological problems among medical professionals.

Objectives: This study aims to assess the aim of this study was to investigate relationships between nomophobia and work-related burnout among medical professionals in Saudi Arabia.

Material and Methods: In this cross-sectional study, 315 medical students and physicians who live in Saudi Arabia answered the study survey, which was distributed via social media platforms. The questionnaire comprised demographic questions, a nomophobia questionnaire, and Copenhagen Burnout Inventory questions adapted with modifications from a previous study. Simple linear regression, t-test, ANOVA, Mann-Whitney U test, and Kruskal-Wallis test were used to analyze the data.

Results: The total mean nomophobia score was 55.2 (SD = 18.48), and the mean of Copenhagen work-related burnout scores was 62.43 (SD = 18.88). Nomophobia dimension I (not being able to communicate) had a direct significant relationship with work-related burnout a ($p = 0.015$, $R^2 = 0.019$). However, the total scores for nomophobia dimensions II, III, and IV had no significant relationships with work-related burnout. Age had a significant relationship with the total nomophobia score ($p = 0.033$, $R^2 = 0.014$). Medical professionals in the private sector had significantly higher scores in dimension II (losing connectedness) and when comparing total nomophobia score to scores from those working in the governmental sector ($p < 0.05$).

Conclusion: Not being able to communicate (as a dimension of nomophobia) has a direct significant relationship with work-related burnout, contrary to other nomophobia dimensions. Further research and interventions should focus on addressing communication-related nomophobia to mitigate work-related burnout.

Keywords: *Nomophobia; Work-Related Burnout; Medical Professionals; Saudi Arabia*

Introduction

Today, smartphones offer individuals a number of benefits and comforts, and they make it easier to complete duty-related obligations [1]. No one can deny that technology has become integrated in everyday life through mobile phones [2]. Nonetheless, the number of issues caused by mobile phone use has increased substantially in the last few years [3].

Nomophobia is defined as a fear of having no mobile phone [4], which refers to the concomitant stress and worry [5]. The body of literature points out that mobile nomophobia is associated with the widespread use of social media [6]. According to prior studies, nomophobia has four main causes: fear or nervousness related to being unable to communicate with others, fear of not being able to connect, fear of not having immediate access to information, and fear of the renunciation of smartphone-provided comfort [7,8].

Studies have reached mixed results in relation to nomophobia's effects and excessive use of mobile phones. People who frequently use mobile phones in their workplace tend to spend less time on task and more time with interruptions [9]. Another study found that smartphone nomophobia can either improve or deteriorate duty tasks [10]. A further study found that nomophobia eases depressed mood disorder and the feeling of being alone [11]. Yet another study assessed nomophobia among university students in five Arab countries (Jordan, Lebanon, Egypt, Bahrain, and Saudi Arabia) and found that the highest mobile dependence score was among students from Egypt, and the lowest score was among students from Lebanon [12]. In the same study, a total of 24.2% of students were diagnosed with dependence syndrome (symptomatically according to ICD-10 criteria). The most common criterion was impaired control (55.6%), and the least common one was harmful use (25.1%) [12]. This may reflect nomophobia having different implications with the many variables, such as location, setting or population, and subgroups, as will be shown in the following.

Some studies have investigated nomophobia among health-care students and workers. The prevalence of nomophobia was found to be 97.3% among respiratory therapy students in Saudi Arabia [13], 38.0% among nurses in Turkey [14], 40% among professional medical physicians in Egypt [15], and 67% (moderate nomophobia) among medical students in North India [1]. In a study of nursing students in Spain, the average score on nomophobia themes was 82.39 (SD = 18.63), including the themes of not being able to access information, giving up convenience, being unable to communicate, and losing connectedness), with the highest score for not being able to communicate and the lowest for not being able to access information [16]. This supports our point that demographics can represent a variation in nomophobia prevalence.

Some studies have assessed the psychological effect of nomophobia among health-care students and workers. One indicated that nomophobia accounts for 6% of work overload among Turkish nurses, with correlation found [14]. Others study among medical residents documented a positive association between nomophobia and anxiety in Egypt [15]. This highlights the psychological burden of nomophobia among health-care professionals in other countries.

In 1969, the concept of "burnout" was introduced in scientific literature. However, the term was first used by Freudenberge in an academic manner when he described how hospital volunteers' eagerness and commitment decreased over time alongside the onset of symptoms of psychological and physical disorders [17]. Today, most researchers use the definition introduced by Masalach., *et al*. [18], under which work burnout is a long-term response to continuous stress, whether emotional, interpersonal, or both, and leads to feelings such as exhaustion, cynicism, and a sense of inefficacy [18]. A study of physicians stated that the most common causes of burnout were administrative work, paperwork for conducting regular clinical duties, and consultations with parents [19].

Although some research has been conducted regarding nomophobia and psychological problems, to the best of our knowledge, there have been no studies that examined a relationship between nomophobia and work- or study-related burnout among medical professionals.

Aim of the Study

The aim of this study was to investigate relationships between nomophobia and work-related burnout among medical professionals in Saudi Arabia.

Methods

Study design

This was a cross-sectional study using an online questionnaire to assess the relationship between nomophobia and work/study-related burnout among medical professionals (students and workers) in Saudi Arabia.

Setting

Data were collected between August and October 2023 from medical professionals from all over Saudi Arabia using social media platforms, including Twitter, WhatsApp, TikTok, Instagram, and Snapchat. A convenience sample was used. Any information that would reveal the identity of the participant was destroyed, and all data were collected without revealing any personal information.

Participants

The participants were medical professionals living in Saudi Arabia and studying or working in private or governmental institutions. The exclusion criteria was refusal to sign the informed consent for the study. The data were collected between August and October 2023.

Study size

The required sample size was determined to be around 384, calculated using $\alpha = 0.05$, 50% estimated prevalence, and 95% confidence level.

Variables and measures

The questionnaire was administered in English and consisted of 35 questions divided into three sections. The first section consisted of eight questions collecting demographic data. Section two encompassed the nomophobia scale adopted with modifications from a previous study [8], which comprised 20 questions about nomophobia with answers ranging from 1 (strongly disagree) to 5 (strongly agree). These questions were categorized into four diminutions of nomophobia: 1) not being able to communicate, 2) losing connectedness, 3) not being able to access information, and 4) giving up convenience. Each theme had four to six items, depending on the scale, and the total score was a sum of the individual theme question answers. The scale's answer total was a range of 20 to 100, lowest level of nomophobia to highest. It should be noted that the original questionnaire used a Likert scale of 1 to 7. Here, a scale of 1 to 5 was used to be comparable to a previous study with this modification [14]. The nomophobia scale had a Cronbach's alpha ranging from 0.18 to 0.94 [8]. The last section encompassed seven multiple-choice questions regarding study/work burnout adopted from the Copenhagen Burnout Inventory [20], with modifications for applicability to work or study. The available answers were as follows: always = 100, often = 75, sometimes = 50, seldom = 25, and never/almost never = 0. The Copenhagen Burnout Inventory total score was the average of seven related questions. This study was approved by Umm Al-Qura University, with institutional review board number HAPO-02-K-012-2023-09-1707.

Statistical methods

The data were collected, tabulated, and analyzed using SPSS (IBM Corp., Armonk, NY) to calculate the count, percentage, mean, and standard deviation using descriptive statistics. The data were analyzed with chi-square, t-test, ANOVA, and linear regression to determine relationships between the variables. All data were treated anonymously.

Results

A total of 315 participants completed the study questionnaire. The participant mean (m) age was 24.47, with a standard deviation (SD) of 5.17. The participants' demographic data are shown in table 1.

Variable		n	%
Gender	Male	87	27.62%
	Female	228	72.38%
Marital status	Married	42	13.33%
	Non-married	273	86.67%
Qualification	Student	217	68.89%
	Intern	26	8.25%
	Graduate (bachelor)	50	15.87%
	Specialist	13	4.13%
	Consultant	9	2.86%
Region in Saudi Arabia	Western	237	75.24%
	Central	41	13.02%
	Southern	11	3.49%
	Eastern	20	6.35%
	Northern	6	1.90%
Nationality	Saudi	305	96.83%
	Non-Saudi	10	3.17%
Current education or work sector	Governmental	294	93.33%
	Private	21	6.67%

Table 1: *Demographic data of the participants.*

The participants answered nomophobia questions differently, as shown in table 2, as well as Copenhagen work-related burnout questions, shown in table 3. The relationship between nomophobia dimensions and the Copenhagen work-related burnout average were assessed using simple linear regression. No significant relationship was found between total nomophobia score and burnout ($p = 0.159$). Also, nomophobia dimensions II, III, and IV had no significant relationships with work-related burnout, with p-values of 0.306, 0.447, and 0.702, respectively. However, there was a significant direct relationship between dimension I (not being able to communicate) and burnout with $p = 0.015$ and $R^2 = 0.019$.

Nomophobia dimension/items	Mean	SD
Dimension I: Not being able to communicate		
I would feel anxious because I could not instantly communicate with my family and/or friends.	2.78	1.21
I would be worried because my family and/or friends could not reach me.	3.03	1.25
I would feel nervous because I would not be able to receive text messages and calls.	2.79	1.25
I would be anxious because I could not keep in touch with my family and/or friends.	2.86	1.25
I would be nervous because I could not know if someone had tried to get hold of me.	2.73	1.16
I would feel anxious because my constant connection to my family and friends would be broken.	2.75	1.24
Dimension I total (range 6-30)	16.94	6.39

Dimension II: Losing connectedness		
I would be nervous because I would be disconnected from my online identity.	2.35	1.17
I would be uncomfortable because I could not stay up-to-date with social media and online networks.	2.48	1.22
I would feel awkward because I could not check my notifications for updates from my connections and online networks.	2.47	1.16
I would feel anxious because I could not check my email messages.	2.47	1.17
I would feel weird because I would not know what to do.	2.48	1.25
Dimension II total (range 5-25)	12.24	5.08
Dimension III: Not being able to access information		
I would feel uncomfortable without constant access to information through my smartphone.	3.13	1.23
I would be annoyed if I could not look up information on my smartphone whenever I wanted to.	3.21	1.33
Being unable to get the news (e.g., happenings, weather, etc.) on my smartphone would make me nervous.	2.57	1.23
I would be annoyed if I could not use my smartphone and/or its capabilities whenever I wanted to.	3.13	1.3
Dimension III total (range 4-20)	12.05	4.29
Dimension IV: Giving up convenience		
Running out of battery on my smartphone scares me.	2.86	1.31
If I were to run out of credits or hit my monthly data limit, I would panic.	2.5	1.23
If I did not have a data signal or could not connect to Wi-Fi, then I would constantly check to see if I had a signal or could find a Wi-Fi network.	2.94	1.32
If I could not use my smartphone, I would be afraid of getting stranded somewhere.	2.63	1.21
If I could not check my smartphone for a while, I would feel a desire to check it.	3.04	1.28
Dimension IV total (range 5-25)	13.97	5.18
Total nomophobia score (range 20-100)	55.2	18.48

Table 2: *Participant answers regarding nomophobia.*

Copenhagen work-related burnout items	Mean	SD
Is your work/study emotionally exhausting?	69.44	24.78
Do you feel burned out because of your work/study?	66.19	25.00
Does your work/study frustrate you?	61.11	27.20
Do you feel worn out at the end of the work/study day?	64.13	26.37
Are you exhausted in the morning at the thought of another day at work/study?	60.79	28.82
Do you feel that every work/study hour is tiring for you?	57.38	28.55
Do you have enough energy for family and friends during leisure time?	57.94	28.58
Burnout average	62.43	18.88

Table 3: *Participant answers on Copenhagen work-related burnout scale.*

When demographic data were assessed against nomophobia, simple linear regression, t-test, ANOVA, Mann-Whitney U test, and Kruskal-Wallis test were used to assess the relationship, as shown in table 4. Age had a significant relationship with nomophobia total score ($p = 0.033$, $R^2 = 0.014$). Physicians had significantly higher scores in dimension III (not being able to access information) than students

and interns. Also, those who worked/studied in the private sector had significantly higher scores in dimension II (losing connectedness) and total nomophobia score than those working/studying in the governmental sector. Other comparisons did not show any significant relationship.

Item		D.I M (SD)	D.II M (SD)	D.III M (SD)	D.IV M (SD)	Nomophobia total M (SD)
Gender	Male	17.04 (5.72)	12.07 (4.66)	12.05 (3.82)	13.54 (4.68)	54.68 (16.66)
	Female	16.9 (6.64)	12.31 (5.25)	12.05 (4.47)	14.14 (5.36)	55.4 (19.15)
Marital status	Married	16.92 (5.96)	12.02 (5.6)	12.05 (3.91)	14.1 (4.96)	55.09 (17.49)
	Non-married	16.94 (6.47)	12.28 (5.01)	12.05 (4.36)	13.96 (5.22)	55.22 (18.65)
Qualification	Student/Intern	16.71 (6.47)	12.18 (4.99)	11.78 (4.39)	13.87 (5.19)	54.55 (18.75)
	Physician	17.7 (6.11)	12.45 (5.41)	12.93 (3.86)*	14.32 (5.17)	57.41 (17.47)
Region in Saudi Arabia	Western	17.06 (6.4)	12.44 (5.15)	12.16 (4.29)	14.13 (5.07)	55.79 (18.38)
	Central	17.93 (5.33)	12.21 (4.78)	12.34 (3.71)	13.75 (4.64)	56.23 (16.08)
	Southern	15.76 (7.84)	11.73 (4.67)	11.33 (5.18)	13 (5.89)	51.82 (21.58)
	Eastern	15.07 (6.88)	10.77 (5.25)	11.17 (5.12)	13.13 (6.47)	50.13 (21.3)
	Northern	13.89 (8.17)	10.67 (5.07)	9.78 (3.86)	13.78 (8.16)	48.11 (23.63)
Nationality	Saudi	16.87 (6.38)	12.16 (5.06)	12.01 (4.28)	13.9 (5.14)	54.93 (18.41)
	Non-Saudi	19.2 (6.78)	14.87 (5.44)	13.13 (4.69)	16.2 (6.18)	63.4 (19.52)
Current education or work sector	Governmental	16.77 (6.42)	12.01 (5.01)	12.01 (4.35)	13.86 (5.2)	54.66 (18.37)
	Private	19.28 (5.71)	15.42 (5.18)*	12.54 (3.48)	15.64 (4.69)	62.87 (18.71)*

Table 4: *The relationships between participant demographic data and nomophobia.*

**p < 0.05.*

Note: Gender, qualification, and marital status were assessed using t-test. Region in Saudi Arabia was assessed with Kruskal-Wallis test. Nationality and current education/work sector were assessed via Mann-Whitney U test.

Discussion

The aim of this study was to assess the relationships between nomophobia and work-related burnout among medical professionals in Saudi Arabia. This results showed a moderate level of nomophobia, and a moderately high level of work-related burnout mean among medical students and physicians in Saudi Arabia. Nomophobia dimension I (not being able to communicate) had a direct significant relationship with work-related burnout. However, the total nomophobia score and other nomophobia dimensions had no significant relationships with work-related burnout. Age had a significant relationship with nomophobia. Participants who worked/studied in the private sector had significantly higher scores in some nomophobia dimensions than those in the governmental sector.

Most prior studies found nomophobia to be associated with psychological distress among health-care professionals. For example, nomophobia was associated with anxiety among medical residents in Egypt [15] and Portuguese nursing students [16]. Nomophobia accounted for 6% of work overload among nurses in Turkey [14] and was associated with a negative impact on medical students and doctors in India [21]. This supports our results that found one of the dimensions of nomophobia-not being able to communicate-was related to burnout. However, our results found that other nomophobia dimensions and the total score were not related to burnout. This

can lead us to conclude that, despite the negative impact of nomophobia on different psychological domains, its effect on burnout varies by dimension. More studies are needed to investigate the relationship between nomophobia and work-related burnout, as this is the first study to investigate this relationship among health-care professionals and students.

The moderate levels of nomophobia found in this study are similar to results from studies conducted among nurses and medical doctors in Egypt [15], nurses in Turkey [14], nursing students in Portugal [16] and Turkey [14], medical and nursing students in Turkey [22,23], and respiratory therapy students in Saudi Arabia [13]. This helps to give external validity to the idea that the incidence of nomophobia is moderate among health-care personnel in different countries.

In this study, we investigated the relationships of different demographic variables with nomophobia. Our results might be different from prior studies. For example, in our results, increased age had a significant relationship with increased nomophobia. This was counter to a previous study among nurses in Turkey that found decreasing nomophobia levels with increasing age and length of service in the profession [14]. Also, in our study, there was no difference in the means of married or non-married participants, which is the opposite of another study among respiratory students in Saudi Arabia that found higher nomophobia levels in single students than married ones [13]. One possible explanation for this contradiction is related to the population investigated and differences in the professional fields of respondents.

We also did not find a significant relationship between gender and nomophobia, which was the same as some studies of different populations [3,24-26]. However, this is different from finding that females had significantly higher nomophobia levels than males among respiratory therapy students in Saudi Arabia [13] and among other populations in Spain, Bahrain, India, and Turkey [4,27-30]. However, other studies found the opposite, with men having higher nomophobia scores than females [31,32]. This may indicate that the effect of gender on nomophobia might differ according to population and geographic location.

Our study showed a moderately high level of work-related burnout mean among medical students and physicians in Saudi Arabia. This is similar to a prior study conducted in the western region of Saudi Arabia among pediatricians [33] and is supported by another study among health-care students and professionals in Saudi Arabia that found considerable percentages of severe burnout (5.7%), high burnout (23.83%), and moderate burnout (35.49%) [34]. In fact, high burnout rates have been previously reported in health-care students [35-37] and physicians worldwide [35,37,38]. This again underscores repeated calls in the body of literature to help Saudi Arabian medical students and physicians find different coping strategies to improve their psychological health [33,40-42].

This study encountered some limitations, such as being conducted online using a questionnaire subject to self-reporting bias. Also, we used convenience sampling, which reduces the external validity of the research. There was also an unequal distribution of samples collected from different Saudi Arabian regions. Nevertheless, to the best of our knowledge, this study is the first to measure the relationship between nomophobia and work- or study-related burnout among medical professionals in Saudi Arabia. Future studies are needed on this topic using a random sample size to achieve more generalizable results.

Conclusion

Medical students and physicians in Saudi Arabia had a moderate level of nomophobia, and a moderately high level of work-related burnout. Only one of the nomophobia dimensions (not being able to communicate) had a direct significant relationship with work-related burnout. It is recommended that medical students and physicians be educated about coping strategies to overcome mobile phone overuse and increase their awareness of the negative consequences of such behaviors.

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