

Prevalence of Nomophobia and Its Impact on Academic Performance Among Respiratory Therapy Students in Saudi Arabia

Abdulelah M Aldhahir¹, Heba M Bintalib^{2,3}, Rayan A Siraj⁴, Jaber S Alqahtani⁵, Omar A Alqarni⁶, Abdullah A Alqarni⁷, Hanin S Alghamdi⁸, Mohammed M Alyami⁹, Abdallah Y Naser¹⁰, Alaa I Fatani¹¹, Hassan Alwafi¹¹

¹Respiratory Therapy Department, Faculty of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia; ²Department of Respiratory Care, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia; ³King Abdullah International Medical Research Centre, Jeddah, Saudi Arabia; ⁴Department of Respiratory Care, College of Applied Medical Sciences, King Faisal University, Al-Ahsa, Saudi Arabia; ⁵Department of Respiratory Care, Prince Sultan Military College of Health Sciences, Dammam, Saudi Arabia; ⁶Clinical Technology Department, Respiratory Care Program, Faculty of Applied Medical Sciences, Umm Al-Qura University, Makkah, Saudi Arabia; ⁷Department of Respiratory Therapy, Faculty of Medical Rehabilitation Sciences, King Abdulaziz University, Jeddah, Saudi Arabia; ⁸Department of Respiratory Therapy, King Fahad General Hospital, Jeddah, Saudi Arabia; ⁹Respiratory Therapy Department, Batterjee Medical College, Khamsi Mushait, Saudi Arabia; ¹⁰Department of Applied Pharmaceutical Sciences and Clinical Pharmacy, Faculty of Pharmacy, Isra University, Amman, Jordan; ¹¹Faculty of Medicine, Umm Al-Qura University, Mecca, Saudi Arabia

Correspondence: Abdulelah M Aldhahir, Respiratory Therapy Department, Faculty of Applied Medical Sciences, Jazan University, Saudi Arabia, Tel +96657775561, Email Aldhahir.abdulelah@hotmail.com

Background: Nomophobia has been highly prevalent among health discipline students. However, there is no available data on the prevalence of nomophobia among respiratory therapy (RT) students in Saudi Arabia.

Methods: A cross-sectional survey using the nomophobia questionnaire (NMP-Q) was conducted and distributed using a convenience sample of RT students through an online platform (Survey Monkey) between September and November 2022.

Results: Overall, 1428 RT students, with males accounting for 773 (54%), responded to the online survey. The prevalence of nomophobia among RT students was 97.3% (1390). The mean ($\pm$ SD) of the total NMP-Q items scores was 62 ($\pm$ 22), indicating a moderate level of nomophobia among the RT students. Female RT students had significantly higher nomophobia scores than male RT students (63 (47–80) vs 59 (43–75); $p < 0.001$). Single RT students had significantly higher nomophobia scores than married RT students (62 (46–78) vs 46 (37–64); $p < 0.001$). RT students who were living outside the family home had significantly higher nomophobia scores than RT students who were living with their family (66 (54–78) vs 60 (44–77); $p = 0.001$). RT students with a GPA of 4.50 to 5.00 had the highest nomophobia score (63 (46–79); $p = 0.005$). RT students who were in their third year had the highest nomophobia score (66 (48–80); $p < 0.001$). RT students who reported no academic warnings had the highest nomophobia score (63 (48–80); $p < 0.001$). RT students who spent $\geq$ five hours studying per week had the highest nomophobia score (64 (51–80); $p < 0.001$).

Conclusion: Nomophobia is common among RT students, with the majority experiencing a moderate level. Being female, single, living outside the family home, and having a higher academic performance were risk factors associated with higher nomophobia levels.

Keywords: nomophobia, respiratory therapy, NMP-Q

Introduction

Despite the benefits that smartphones offer, substantial problems have resulted from the recent worldwide increase in smartphone dependence. Overuse of smartphones can ultimately lead to psychological and physical consequences, including poor concentration,¹ change in body weight,² cognitive function impairment,³ dizziness,⁴ and nomophobia.⁵

Nomophobia, commonly assessed using the four factors in the nomophobia questionnaire (NMP-Q),⁶ is a psychological disorder in which people experience unreasonable fear and anxiety when their phone is inaccessible.¹

The prevalence of nomophobia among adults and adolescents in Saudi Arabia and worldwide remains high.^{7,8} In addition, studies have shown that nomophobia is also prevalent among undergraduate health discipline students⁹ such as medical,^{10,11} pharmacy,¹² and nursing students.¹³ In addition, a positive correlation has previously been demonstrated between the use of smartphones and the total score of nomophobia among nursing students during their clinical practicum.¹⁴ More importantly, although smartphone use can be helpful in the clinical setting as it enables medical and health discipline students to search for drug references and professional guidelines, excessive use of smartphones may distract students during their clinical training, leading to a lack of attention and reduced ability to remember clinical information.¹⁴ These observations suggest that excessive use of smartphones, particularly during clinical training as students advance with their academic levels, can lead to nomophobia and that policies aiming to reduce smartphone use should be implemented in order to enhance academic achievement.

Although studies worldwide have demonstrated that nomophobia is prevalent among the general population and undergraduate health discipline students, the prevalence of nomophobia among RT students and the extent to which nomophobia affects the students' academic performance has not been investigated. In addition, the association between nomophobia and variables (eg, smoking status and living arrangements) among RT students is unknown. Therefore, this study aimed to determine the prevalence of nomophobia and assess the impact of nomophobia on academic performance among RT students in Saudi Arabia.

Methods

Study Design

A cross-sectional survey was conducted and distributed through an online platform (Survey Monkey) between September and November 2022.

Questionnaire

The questionnaire consisted of 12 multiple-choice closed questions for socio-demographic information and the nomophobia questionnaire (NMP-Q).⁶ The NMP-Q is composed of 20 statements that have been formulated and validated by Yildirim and Correia,⁶ with statements using a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. The NMP-Q is composed of four main dimensions: not being able to access information, which includes the first four statements; giving up convenience, which includes the second five statements; not being able to communicate, which includes the third six statements, and losing connectedness, which includes the last five statements. The NMP-Q provides a score ranging from 20 to 140, where a higher score corresponds to a higher severity of nomophobia.¹⁵ A score of 20 represents the absence of nomophobia; a score between 21 and 59 represents mild nomophobia; a score between 60 and 99 indicates moderate nomophobia, and a score between 100 and 140 represents severe nomophobia. This study used the Cronbach alpha reliability test, which was 0.935, indicating excellent internal consistency of the NMP-Q.

Before participants started to answer the questionnaire, the purpose of the study was made clear to them, they were assured of the confidentiality of the obtained data, and they were provided with the contact details of the lead investigator in case any questions arose. Additionally, no personal information was recorded, and voluntary participation was ensured by asking if the participants were happy to complete the survey or not. An additional statement was provided in the survey: "By answering "yes" to completing the survey questionnaire, you voluntarily agree to participate in this study and give your consent to use your anonymous data for research purposes". The time required to complete the survey was approximately three to five minutes.

Sampling Strategy

A convenient sampling technique was utilized to approach all governmental and private respiratory therapy (RT) programs across the Kingdom of Saudi Arabia. Additionally, faculty members of respiratory therapy programs across the Kingdom of Saudi Arabia distributed the questionnaire to undergraduate RT students.

Sample Size

A convenience sampling technique was used to recruit the study participants. Sample size calculation was not required, as this was an exploratory study.

Ethical Approval

Institutional Review Board approval for the study was obtained from King Abdulaziz University, reference number (435-22). All procedures comply with the principles of Helsinki Declaration.

Statistical Analysis

Data were collected and analyzed using the Statistical Package for Social Sciences (SPSS software, Version 28). The normality of distributions of quantitative variables was tested using the Kolmogorov–Smirnov test and histogram. As the variables were not normally distributed, Mann–Whitney *U*-test and the Kruskal–Wallis test were used to examine the difference between the median nomophobia score among participants from different demographic groups. The categorical variables were reported and presented in percentages and frequencies. Statistical significance was considered if the $p < 0.05$ with a 95% confidence interval.

Results

Overall, 1428 respiratory therapy students responded to the online survey. Male RT students accounted for 773 (54%) of the respondents. The mean $\pm$ SD of age was 21 $\pm$ 2 years old, with the majority being single 1280 (90%). Respondents were distributed across the Kingdom of Saudi Arabia regions as follows: 438 (31%) were from the central region, 352 (25%) were from the western region, 333 (23%) were from the eastern region, 263 (18%) were from the southern region and 41 (3%) were from the northern region. The majority of RT students were non-smokers 1127 (79%), lived with their families 1175 (82%), and studied at public universities 1027 (72%). Almost half of RT students 679 (47.55%) had a GPA of (4.50–5.00); only 479 (33.54%) reported no absences during the last semester, and 1030 (72.13%) reported no academic warnings. Only 5% of the students were in their first academic year, while 28%, 34%, 26%, 7%, and 1% were in their second, third, fourth, intern, and bridging year, respectively. Full sociodemographic and academic descriptive data are presented in Table 1.

Table 1 Demographic Data of Respiratory Therapy Students (N= 1428)

Demographics	Frequency (%), M $\pm$ SD
Gender n (%)	
Male	773 (54%)
Female	655 (46%)
Age (mean, $\pm$ SD)	21 $\pm$ 2
Geographic Location n (%)	
Central region	438 (31%)
Western region	352 (25%)
Eastern region	333 (23%)
Southern region	263 (18%)
Northern region	41 (3%)
Marital Status n (%)	
Single	1280 (90%)
Married	148 (10%)

(Continued)

Table 1 (Continued).

Demographics	Frequency (%), M $\pm$SD
Smoking Status n (%)	
Non-smoke	1127 (79%)
Had smoked or current	301 (21%)
Living arrangement n (%)	
Living with family	1175 (82%)
Not living with family	252 (18%)
University sector n (%)	
Governmental	1027 (72%)
Private	401 (28%)
Cumulative GPA n (%)	
4.50–5.00	679 (47.55%)
3.50–4.49	625 (43.77%)
< 3.49	124 (8.68%)
Academic level n (%)	
First year	71 (4.97%)
Second year	395 (27.66%)
Third year	486 (34.03%)
Fourth year	367 (25.70%)
Intern	99 (6.93%)
Bridging	10 (0.70%)
Absences during last semester n (%)	
No absence	479 (33.54%)
1–2 days	516 (36.13%)
3–4 days	282 (19.75%)
≥ 5 days	151 (10.58%)
Academic warnings n (%)	
No warning	1030 (72.13%)
1 warning	250 (17.51%)
≥ 2 warnings	148 (10.36%)
Hours of studying per week n (%)	
< 1 hr.	136 (9.52%)
1–2 hrs.	262 (18.35%)
3–4 hrs.	332 (23.25%)
≥ 5 hrs.	698 (48.88%)

Note: Data are presented as frequency and percentage or mean (standard deviation (SD)).

Abbreviation: GPA, Grade Point Average.

The Prevalence of Nomophobia Among Respiratory Therapy Students

The prevalence of nomophobia among RT students was 97.3% (1390). The mean ($\pm$ SD) of the total NMP-Q item scores was 62 ($\pm$ 22), indicating a moderate level of nomophobia among the RT students. The data from the nomophobia questionnaire scores showed that 630 (44.10%) had mild nomophobia, while 690 (48.30%) and 70 (4.90%) of the students had moderate and severe nomophobia, respectively (Table 2). The median and interquartile range (IQR) scores of each subscale of nomophobia are reported in Table 3.

Table 2 Prevalence of Nomophobia Among Respiratory Therapy Students (N= 1428)

Level of Nomophobia	Frequency (%)
Absence (≤ 20)	38 (2.70%)
Mild (21–59)	630 (44.10%)
Moderate (60–99)	690 (48.30%)
Severe (≥ 100)	70 (4.90%)

Note: Data are presented as frequency and percentage.

Table 3 Students' Scores for Each NMP-Q Subscale (N= 1428)

Nomophobia Subscales	Median (IQR)
1: Not being able to communicate	13 (13.8–14.5)
2: Losing connectedness	12 (11.9–12.4)
3: Not being able to access information	18 (18.0–18.7)
4: Giving up convenience	17 (16.8–17.6)

Note: Data are presented as median and interquartile range (IQR).

Nomophobia and Sociodemographic Variables Among RT Students

Female RT students had significantly higher nomophobia scores than male RT students (female: 63 (47–80) vs male: 59 (43–75); $p < 0.001$). Single RT students had significantly higher nomophobia scores than married RT students (single: 62 (46–78) vs married: 46 (37–64); $p < 0.001$). Non-smoker RT students had significantly higher nomophobia scores than smoker RT students (non-smoker: 62 (46–78) vs smoker: 58 (42–74); $p = 0.008$). The RT students who were living outside the family home had significantly higher nomophobia scores than RT students who were living with their family (live outside the family home: 66 (54–78) vs live with family: 60 (44–77); $p = 0.001$). Our data showed that RT students from the northern region had the highest nomophobia score out of all the regions (northern region: 70 (50–81), central region: 67 (53–80), eastern region: 62 (45–79), southern region 62 (39–64), and western region: 59 (46–76); $p < 0.001$).

Nomophobia and Academic Performance Among RT Students

There were significant differences between NMP-Q scores and GPA ($p = 0.005$), academic level ($p < 0.001$), number of warnings ($p < 0.001$), and studying hours per week ($p < 0.001$).

The RT students with a GPA of 4.50 to 5.00 had the significantly highest nomophobia score among all groups (GPA 4.50 to 5.00: 63 (46–79), GPA 3.50 to 4.49: 58 (43–75), and GPA < 3.49 : 61 (47–78); $p = 0.005$). The RT students who were in their third year had the highest nomophobia score of all the year groups (first year: 59 (45–76), second year: 57 (40–74), third year: 66 (48–80), fourth year: 59 (46–74), intern: 63 (47–84), and bridging: 54 (41–74); $p < 0.001$). The RT students who reported no warnings had the highest nomophobia score out of all the groups (no warnings: 63 (48–80), one warning: 50 (39–70), and $\geq$ two warnings: 58 (46–74); $p < 0.001$). The RT students who spent $\geq$ five hours studying per week had the highest nomophobia score out of all the groups (less than an hour: 51 (37–77), one to two hours: 57 (40–83), three to four hours: 60 (46–75), more than and equal to five hours: 64 (51–80); $p < 0.001$).

Discussion

To the best of our knowledge, this is the first study to determine the prevalence of nomophobia and its impact on the academic performance of RT students in Saudi Arabia. Our study revealed that nomophobia is prevalent among RT students, with the majority experiencing a moderate level of nomophobia. Moreover, nomophobia was more prevalent in female, single, third-year

RT students who live outside the family home, had no academic warnings, spent more time studying, and had the highest academic performance.

Recently, smartphones have become an essential tool and an important part of everyone's lives.¹⁶ Several studies have reported widespread cell phone dependency throughout several populations, particularly among young individuals.^{16–19} Higher utilization of smartphones was linked with higher anxiety in male and female adults.^{17,18}

Notwithstanding the benefits of social networking and productivity gains from using mobile phones – smartphones in particular – a growing body of research indicates that many individuals abuse their phones in ways that interfere with their everyday lives.²⁰ Problematic mobile phone usage is related with health risks, such as texting while driving, which may result in injury and death,²¹ and psychopathology, such as anxiety and depression.²² Smartphone use commonly co-occur with the mental disorder constructs of depression, anxiety, and also with stress.²³

Our study findings reported that around 98% of RT students experienced nomophobia, with the majority experiencing a moderate level of nomophobia, which is similar to the findings of several other studies. According to a systematic review in 2023 conducted by Tuco et al, that investigated the prevalence of nomophobia among university students. The prevalence nomophobia among university students globally is 100%.²⁴ Jilisha et al conducted a study in 2019 among Indian undergraduate students and reported that around 98% of undergraduate students experienced nomophobia, with the majority experiencing moderate nomophobia.²⁵ Additionally, Qutishat et al reported that out of 740 university students in Oman, 99% experienced nomophobia, with 65% experiencing moderate nomophobia.²⁶ Among medical students, Sharma et al reported that around 75% were nomophobic, whereas the reported prevalence among dental students was 24%, with 41% susceptible to nomophobia.²⁷ Among pharmacist students and nurses, nomophobia is prevalent according to several studies.^{12,28} In general, university students in several countries such as Poland, Korea, and Spain have experienced nomophobia and have reported it as an uncontrolled behavioral disorder.^{4,29,30} Nomophobia has been recently growing among university students since most educational systems globally have switched to online teaching, especially during the COVID-19 pandemic.

In this study, female RT students demonstrated higher nomophobia than male RT students, which suggests that women may be more susceptible to smartphone addiction due to several factors such as social interaction and quick communication. This is similar to a study conducted by Moreno-Guerrero et al among 1743 students in Spain, which reported that female students experienced nomophobia more than male students.³¹ Additionally, Yildirim et al revealed that female Turkish college students experienced high nomophobia scores than male students.³² Other studies in Bahrain, India, and Turkey discovered similar findings concerning female students being more nomophobic.^{33–36} However, this is inconsistent with the findings of several other studies as it showed that males experience more nomophobia than females.^{8,37} Thus, conflicting findings have been reported about gender differences and further research is needed to address this.

Our results indicated a significant finding that single RT students experienced higher nomophobia levels compared to married RT students. Furthermore, RT students who were living outside the family home had significantly higher nomophobia levels than students who were living with their family, which could be due to loneliness, as several studies have established the relationship between higher nomophobia levels and being lonely.^{38–40} Ezoe and Tode examined the relationship between cell phone dependence and loneliness among 105 Japanese medical students and revealed that being lonely was associated with cell phone addiction.³⁹ Additionally, Gezgin et al reported that being lonely is a predictive factor for higher nomophobia scores among adults.³⁸ In the Gulf Cooperation Council, the same result was related to loneliness, with being single, younger, and living in small accommodation being associated with greater loneliness.⁴⁰

Previous studies have suggested that excessive smartphone use among college students was considered a distractor in academic settings.^{41,42} However, smartphones are currently an integrated part of education due to their rapid development. Our study reported that RT students with the highest academic performance measured by GPA and academic warnings had the significantly highest nomophobia scores among all groups. Moreover, RT students who spent more hours studying had the highest nomophobia scores among all groups. This could be due to the usefulness of smartphones in learning, especially for online education. A study conducted in London showed that mobile learning (mLearning) is increasingly part of the clinical environment. The results suggest that mLearning devices have a positive effect on students' perceived efficiency.⁴³ Unlike our findings, a study in the United States among college students found that increased cell phone use was associated with decreased academic performance.⁴¹ Many studies revealed that a smartphone addiction risk was negatively related to academic performance, but the latter was positively related to satisfaction with life.⁴⁴

Strength and Limitations

The strength of our study is that it is the first and only national study conducted in Saudi Arabia to identify the prevalence of nomophobia among respiratory therapy students. Using a large sample, the study aimed to identify whether there is an association between nomophobia and academic performance among RT students. However, this study has some limitations. A convenience sample technique was used in the study, which may impose a selection bias. The exact number of RT students in Saudi Arabia is unclear; therefore, the sample of our study may not be representative, although respondents were from 16 different universities across Saudi Arabia.

Conclusion

Nomophobia is highly prevalent among RT students, with the majority experiencing a moderate level. Moreover, higher academic performance indicated by the absence of academic warnings, increased studying time, and cumulative GPA were associated with higher nomophobia levels. More mental and psychological support should be directed towards high risk population including students who are female, single, or who were living outside the family home. Further research is needed to identify effective intervention to prevent and decrease the prevalence of nomophobia across university students.

Disclosure

The authors report no conflicts of interest in this work.

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