Prevalence of Nomophobia Syndrome among University Students with Disabilities

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Abstract: This study aimed to identify the prevalence of nomophobia syndrome among university students with disabilities (SWDs) at Sultan Qaboos University (SQU), Oman. A convenience sample of 63 SWDs completed an online Arabic version of the Nomophobia Questionnaire (NMP-Q), which assesses four sub-dimensions: not being able to access information, losing connectivity, not being able to communicate, and giving up convenience. Results showed a high prevalence of nomophobia among SWDs on all four sub-dimensions of the NMP-Q, with no significant differences in levels of nomophobia based on gender or disability category. These results highlight the technological challenges faced by SWDs and point to the need for universities to implement psychological, social, and academic support programs. Interventions that cultivate a healthier relationship with technology, such as workshops that include smartphone use strategies and self-assessment tools to identify personal triggers, can help SWDs manage nomophobia. Integrating nomophobia awareness into university curricula and conducting further research on its impact on academic achievement are also recommended.

Keywords: COVID-19, online learning, nomophobia, smartphones, students with disabilities.

1. INTRODUCTION

The rapid spread of the coronavirus (COVID-19) greatly impacted higher and general education systems worldwide. After the World Health Organization declared COVID-19 a global pandemic in early 2020, there was widespread uncertainty about the implications for education systems. Many governments imposed social distancing, home quarantine, and other measures to reduce the spread of the epidemic [1]. The education system was significantly impacted by social distancing measures, resulting in the closure of school and university campuses. According to a UNESCO report, over 1.5 billion learners in 165 countries were affected by school closures during the pandemic, accounting for 87% of the world's student population [2]. Universities and schools adopted online learning to ensure the continuation of student education [3]. While many universities had already integrated some form of e-learning into their programs, the shift to fully online learning and the increased use of e-applications were unprecedented and posed a number of challenges for international universities, particularly in training faculty and students in the use of technology [4] and in supporting online learning. Higher education institutions adopted various online learning methods to meet learners' needs during the pandemic. Some schools and universities offered courses through both synchronous and asynchronous learning, while other educational institutions used a blended learning approach, combining face-to-face activities with online lessons and lectures to reduce the difficulties students face when adjusting to online learning.

The high rate of COVID-related deaths and infections prompted higher education institutions to adopt online teaching, and this posed unique challenges for students with disabilities (SWDs) [5]. The transition to online teaching imposed technological demands on institutions and special education programs while disrupting essential accommodations. SWDs often rely on academic support services such as note-taking, tutoring, and extended test time. These became difficult to access in remote settings. The pandemic also exacerbated difficulties in acquiring daily living and independence skills among disabled individuals, leading to feelings of helplessness and frustration. Additionally, studies show that students with learning disabilities experienced high levels of depression and stress during the pandemic [6].

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The sudden shift to remote learning disrupted established support structures for SWDs, making them particularly vulnerable to the psychological, social, academic, and health effects of the pandemic. Increased reliance on technology for learning meant that any technological barriers, such as inaccessible online platforms, incompatibility with assistive technology, and unreliable internet connectivity, could have intensified feelings of anxiety and disconnection from peers and educators. Many SWDs depend on assistive technologies, specialized software, and alternative communication methods. These may not have been fully integrated into remote learning, which further limits their ability to engage effectively. The heightened stress from these disruptions, combined with pre-existing challenges related to accessibility and learning differences, placed SWDs at greater risk of digital overreliance as they sought alternative ways to manage their academic and social interactions.

Smartphones quickly gained importance among university students because they are accessible, support learning, and facilitate and enhance communication between students and faculty. Smartphone and Internet use also increased among SWDs as online learning became the standard mode of education during the COVID-19 pandemic. However, for SWDs, smartphones are not just a convenience but an essential tool for communication, organization, and learning. This increased dependence on mobile devices, coupled with reduced in-person interactions and difficulties accessing traditional support systems, may have increased their susceptibility to technological syndromes. The passive and excessive use of smartphones has been associated with a number of negative effects among university students. These include mental health issues, reduced physical activity, and reduced occupational performance, which have contributed to the prevalence of nomophobia, a psychological condition characterized by fear of being without a mobile phone [7]. Given that SWDs relied on smartphones as a primary means of overcoming accessibility barriers, they may have been even more affected by the psychological and behavioral consequences of excessive mobile phone use, increasing their vulnerability to nomophobia.

Nomophobia is an abbreviation for "No Mobile Phone Phobia" [8]. Phobias have become an increasing phenomenon among young people and university students. Individuals with nomophobia experience feelings of discomfort, anxiety, and nervousness when they forget their smartphone, when their phone battery is dead, or when there is no internet signal. They also constantly fear losing their smartphone. People with nomophobia frequently check for messages and missed calls, do not switch off their phones, and take their phones everywhere [9]. In clinical psychology, nomophobia is described as an irrational fear of being unable to access a smartphone [10]. Nomophobia can be considered a form of addiction because it is characterized by excessive use of mobile phones, a loss of a sense of time when engaged in smartphone use, and a tendency to socially isolate and neglect activities of daily living.

Behavioral addiction to smartphones has been defined as problematic smartphone use resulting from attachment to the mobile phone [11]. Because of this strong attachment to mobile phones, the symptoms of nomophobia have often been compared with symptoms of drug addiction. Some psychologists have classified nomophobia among situational phobias [12], while others have described it as a type of social phobia [13]. A number of authors have suggested including nomophobia in future revisions to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as one of the types of irrational anxiety disorders [14]. Studies have also shown that nomophobia is associated with problematic dependency, especially among young female users [15]. Many social networking site users have developed obsessive-compulsive disorders due to fear of missing out [16]. Such addictive behaviors can get out of control and may impact health, wellbeing, and relationships.

During the pandemic, online learning and excessive internet use led students to engage in behaviors such as social isolation, immersion in a virtual world, and increased smartphone use per day, all of which may have contributed to the development of nomophobia. A systematic review examining the effects of nomophobia on learning concluded that some university students consider mobile phone use essential for learning and productivity [17]. According to the review, students felt useless or unproductive when their phones were taken away. While mobile phones can be useful for study-related activities, they have led to work-life conflict [16].

Another review by Rodríguez-García *et al.* [18] highlights the negative physical and mental health effects of nomophobia on students, particularly on their self-esteem and academic performance. In a cross-sectional observation study investigating the relation between nomophobia levels among medical students and levels of anxiety, depression, stress, and academic

performance, it was found that about 50% reported mild levels of stress, about 20% reported severe anxiety, and about 11% reported very severe depression [19]. Because nomophobia negatively impacts the quality of life, social relationships, and academic performance, early intervention programs for university students have been recommended to reduce symptoms of depression and anxiety associated with nomophobia [20]. The use of social networking sites has been linked to several psychological disorders, including addiction, psychological distress, and even maladaptive cognitions. Fear of missing out was predictive of adult behaviors regarding social network use [21]. Several theories explain nomophobia and addiction to the Internet and smartphones, including social cognitive theory [10]. Attachment theory and uses and gratifications theory (UGT) constitute the theoretical framework of the current study. UGT is based on individuals consciously choosing the means of communication they wish to be exposed to [22]. Attachment theory explores the emotional bonds that develop between a child and caregivers [23]. The quality of these human and behavioral relationships affects children's emotional and social development. People who are attached to their smartphones feel anxious and unable to stay away from them, just as children do when away from their caregivers. Psychologically, pathological attachment develops from attachment to humans towards attachment to tablets, smartphones, and the Internet, which leads to obsessive-compulsive disorders and other types of addiction. In other words, the mechanisms behind technology addiction and the pathological fear of not having access to it result from anonymous and interactive communication on social networking sites that reduce the feeling of social isolation for people who have an abnormal attachment to their smartphones.

Despite the prevalence of nomophobia and its negative effects on academics and quality of life, there has been very limited research on nomophobia in SWDs. One study examining the relationship between nomophobia and impulsivity in the deaf and hard-of-hearing found that over 71% of the youth sampled experienced severe nomophobia, which also caused higher impulsivity behaviors as a result of online learning [24]. Another study found indications of the impact of smartphone addiction on the academic, social, and emotional aspects of students with learning disabilities [25]. It was also found that 96% of individuals with visual impairment use smartphones for social communication [26]. Moreover, a review of smartphone use among a diverse range of disability groups concluded that there were academic, social, health, and psychological negative impacts of smartphone addiction among students with special needs [27].

Despite their negative effects, smartphones can also enhance the quality of life, personal development, and educational abilities of SWDs. For some, smartphone use has become an essential part of daily life. These devices now offer applications and programs that help SWDs overcome social and educational barriers, making their integration into society easier. In other words, meeting the needs of SWDs may be closely linked to well-being [28] as smartphones enable them to access educational materials and stay connected with others more easily [29].

In the Sultanate of Oman, some studies were conducted on the prevalence of nomophobia among students without disabilities at Omani universities. Studies at SQU show that the vast majority of students suffer from moderate levels of nomophobia [30, 31]. One study showed that 31% of students at SQU had a high level of smartphone addiction [32]. This led AlBarashdi and Aldhafri [33] to emphasize the significance of activating psychological and preventive counseling programs in student counseling centers to reduce the psychological, social, and academic effects of nomophobia on Omani university students. No studies to date, however, have specifically explored nomophobia among SWDs at Omani universities. Given the high prevalence of nomophobia among students without disabilities as well as smartphone addiction, it becomes pertinent to examine levels of nomophobia in SWDs who might be more prone to developing specific phobias post-pandemic due to their disability. In other contexts, such as Saudi Arabia, learning disabilities such as dyslexia, dyspraxia, and dyscalculia were found to be significantly associated with mental health problems among university students during the pandemic [6]. Studies have yet to identify, however, the prevalence of nomophobia among students with other types of disabilities, such as physical disabilities and sensory impairments, as they tend to depend on technology for learning. Consequently, the rationale for selecting SWDs as the target sample for this study stems from the central role smartphones play in their daily lives. Beyond their traditional functions, smartphones serve as assistive devices for SWDs. They facilitate access to

information, academic participation, social interaction, and mobility, and promote independence. Therefore, excessive reliance on smartphones and the associated nomophobia can negatively impact these students' quality of life and academic performance in schools and universities. Therefore, the current study aims to identify the prevalence of nomophobia among SWDs at SQU. Specifically, this study seeks to answer the following questions:

1. What is the prevalence of nomophobia among SWDs at SQU?

2. Does the prevalence of nomophobia differ based on gender and disability category?

MATERIALS AND METHODS

Research Design

A cross-sectional design was utilized.

Sample and Setting

A convenience sampling technique was used to recruit students who (1) were aged 18 years or older; (2) were from different colleges at SQU; (3) had a health, physical, hearing, or visual disability; (4) owned a smartphone; and (5) were able to read and understand Arabic. On the other hand, the university's Disability Support Unit at SQU helped distribute the scale to students and provided all necessary facilities through the computer lab.

The total number of SWDs at SQU at the time of this study was 77. Of these students, 63 responded to the questionnaire. The response rate was approximately 82%. To determine the required sample size for the study, Slovin's formula for finite populations was used: n = N/(1 + Ne2). The formula can be explained as follows: n = the number of individuals to be included in the study, N = the total available population, and e = the margin of error, typically set at 0.05. Applying this formula: n = 77/ (1 + 77*(0.05)2) = 65. Therefore, a minimum of 65 SWDs was required for this study. To validate this further, we used G*Power to calculate the minimum sample size that would be needed to detect statistically significant correlations, assuming an alpha level of 0.05, a small effect size of 0.40 and 85% power. This analysis suggested a minimum sample of 59 participants from the total SWD population at SQU (n = 77). Both approaches indicate that the sample size in this study was sufficient to achieve adequate statistical power. Due to the small number of participants in some disability categories and to facilitate statistical analysis, the four disabilities targeted in this study were classified into two categories. Visual and hearing impairments were combined under one category (sensory impairments), while physical and health disabilities were combined into another. Figures **1** and **2** illustrate the distribution of SWDs by gender and disability category.

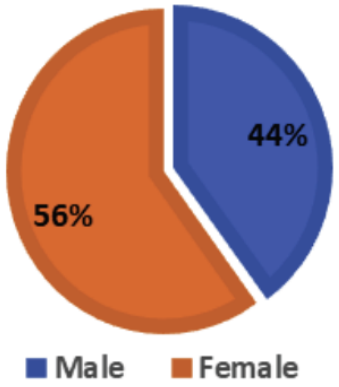

Figure 1: Distribution of SWDs by gender (n=63).

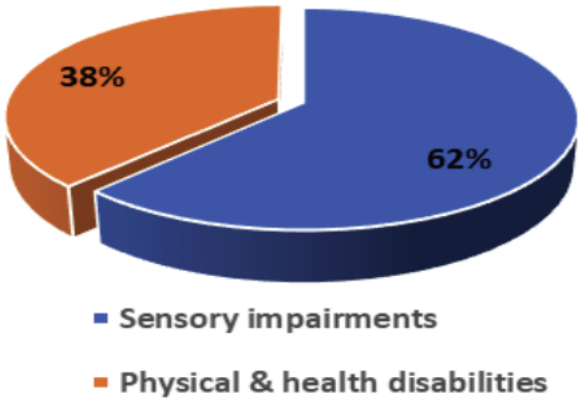

Figure 2: Distribution of SWDs by disability category.

Data Collection

The study was approved by the Research and Ethics Committee at SQU (CON/NF/2023/15) and obtained the administrative approval from the SWDs Unit at the Deanship of Student Affairs, SQU. The researchers adhered to the Helsinki Declaration (1989) at all stages of this research. An email was sent through the SWDs Unit at the Deanship of Student Affairs to potential participants, which included information about the study. Participants were assured that their responses would be kept strictly confidential and that they could choose whether to respond to the questionnaire. Students were also informed of the approximate time required to complete the

questionnaire (25-30 minutes). Participants who agreed to take part in the study were provided with a link to the online questionnaire and instructions for completing it.

Instrument

The current research adopted the Arabic version of the Nomophobia Questionnaire (NMP-Q) [30]. The NMP-Q was developed by Yildirim and Correia [10] and includes a section on demographic information (gender/type of disability) as well as one on the scale's items and dimensions. The NMP-Q consists of 20 items divided into four sub-dimensions: (1) not being able to access information (4 items), (2) losing connectivity (5 items), (3) not being able to communicate (6 items), and (4) giving up convenience (5 items). The 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree), was used for responses. Scores on the scale ranged from 20 to 140 and were classified as follows: absence of nomophobia (20), mild (21 to 59), moderate (60 to 99), and severe (100 to 140).

The psychometric characteristics of the scale were verified by Yildirim and Correia [10] through the NMP-Q, administered to undergraduate students. As the NMP-Q demonstrated strong internal consistency (Cronbach's alpha = 0.945), it was selected for the present study to measure the severity of nomophobia. After obtaining approval from the original authors, the NMP-Q was translated from English to Arabic and adapted for use in Oman. The translation was conducted by an expert in scientific translation and Omani culture, and a back-translation into English was performed by a different expert in order to verify accuracy [30]. The psychometric characteristics of the Arabic version of the NMP-Q were further validated by Qutishat *et al.* [30] in a study involving 71 students at SQU, with a Cronbach's alpha reliability of 0.923. Because of its established validity, reliability, cultural adaptability, and clarity in the Omani context, the Arabic version of the NMP-Q was deemed suitable for the current study.

The relevance of the NMP-Q for SWDs in this study is particularly notable given the questionnaire's focus on digital connectivity and accessibility. These factors are critical for individuals who rely on technology to mitigate the challenges associated with their disabilities. The scale's four sub-dimensions align with key concerns for SWDs, including access to online resources, maintaining digital connectivity for communication and support, and reliance on mobile technology for daily activities. In particular, the sub-dimension related to "not being able to communicate" directly addresses a main challenge for SWDs who depend on smartphones as assistive tools for accessibility, social interaction, and academic engagement. The NMP-Q's relatively short length (20 items) and straightforward language were also key considerations in selecting it for this study, as they make it easier for SWDs to respond to the questionnaire. As the NMP-Q was delivered online, participants could complete it at their convenience, reducing barriers related to mobility or scheduling constraints. The digital format may also have contributed to a higher response rate (82%) by allowing SWDs to participate in a familiar, accommodating environment. Moreover, online delivery likely provided respondents with greater anonymity, which may have encouraged more honest responses, thereby improving data integrity. Given these factors, the NMP-Q was considered a well-suited instrument for assessing nomophobia among Omani SWDs, both in terms of its psychometric properties and its relevance to this population's lived experiences.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 22 was used for analysis. Means and standard deviations were used to estimate the prevalence of nomophobia among SWDs and the variability across subgroups, respectively. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to assess the normality of the data for the gender and disability category variables. If the distribution is normal, parametric tests will be used to compare differences between the study's subgroups (i.e., gender and disability category) using a t-test [50]. In contrast, if the distributional normality cannot be determined, the nonparametric Mann-Whitney test will be used to compare levels of nomophobia between the subgroups [50]. To analyze the results, the following criterion was adopted to categorize participants' responses on the Arabic version of the NMP-Q: low (1:00 to 3.00), moderate (3.01 to 5.00), and high (5.01 to 7.00).

RESULTS

Research Question 1

What is the prevalence of nomophobia among SWDs at SQU?

Table **1** displays the means and standard deviations of the four dimensions of the Arabic version of the Nomophobia Questionnaire (NMP-Q). Findings reveal a high prevalence of nomophobia among SWDs at SQU, as indicated by mean scores across all four dimensions ranging from 5.26 to 5.38. The highest score was observed for the dimension "Not being able to communicate" (M = 5.38, SD = 0.262), followed closely by "Losing connectedness" (M = 5.36, SD = 0.351). These results highlight the general pervasive prevalence of nomophobia among SWDs at SQU. Figure **3** illustrates the distribution of nomophobia levels across the four dimensions. These results underscore the psychological and social impact of nomophobia on SWDs, particularly during the post-COVID-19 period when reliance on smartphones for online learning and communication was heightened.

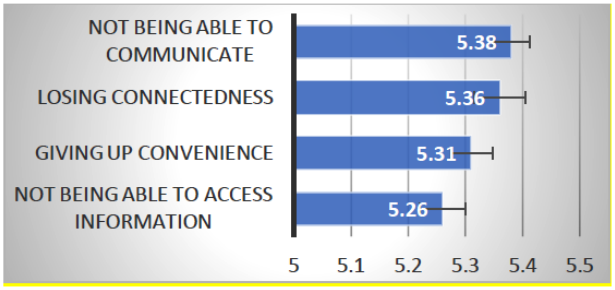

Figure 3: Nomophobia according to dimensions of NMP-Q.

Research Question 2

Does the prevalence of nomophobia differ according to gender and disability category?

Gender

The analysis of gender differences in nomophobia was conducted using the Mann-Whitney U test due to the non-normal distribution of the data (see Table **2**). Results (Table **3**) indicated no statistically significant differences in nomophobia levels between male and female SWDs across all dimensions ($p > 0.05$). For example, the dimension "Not being able to access information" showed a mean rank of 34.30 for males and 30.16 for females, with $U = 425.500$, $Z = -0.922$, $p = 0.357$. These results suggest that both male and female SWDs experience nomophobia at comparable levels.

Disability Category

The relationship between disability category and nomophobia levels was also assessed using the Mann-Whitney U test (see Table **4**). Results (Table **5**) indicated no significant differences between SWDs with sensory impairments and those with physical and health disabilities across all dimensions of the NMP-Q ($p > 0.05$). For instance, the dimension "Giving up

Table 1: Means and Standard Deviations of Prevalence Level of Nomophobia (n =63)

Dimensions	M	SD	Level
Not being able to access information	5.26	.324	High
Giving up convenience	5.31	.297	
Losing connectedness	5.36	.351	
Not being able to communicate	5.38	.262	

Table 2: Test of Normality According to Gender

Dimensions	Gender	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
1	Male	.259	28	.000	.885	28	.005
	Female	.216	35	.000	.891	35	.002
2	Male	.175	28	.027	.930	28	.062
	Female	.156	35	.030	.920	35	.014
3	Male	.186	28	.014	.913	28	.024
	Female	.186	35	.003	.910	35	.007
4	Male	.217	28	.002	.924	28	.042
	Female	.183	35	.005	.935	35	.040

a. Lilliefors Significance Correction.

Table 3: Results of the Mann–Whitney U Test Based on Gender

Dimensions	Gender	Mean Rank	Sum of Ranks	U	Z	Sig.
1	Male	34.30	960.50	425.500	-.922-	.357
	Female	30.16	1055.50			
2	Male	34.30	960.50	425.500	-.912-	.362
	Female	30.16	1055.50			
3	Male	33.48	937.50	448.500	-.586-	.558
	Female	30.81	1078.50			
4	Male	30.68	859.00	453.000	-.526-	.599
	Female	33.06	1157.00			

Table 4: Test of Normality according to Disability Category

Dimensions	Category	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
1	Sensory impairments	.260	39	.000	.878	39	.001
	Physical & health disabilities	.202	24	.013	.901	24	.023
2	Sensory impairments	.172	39	.005	.938	39	.033
	Physical & health disabilities	.206	24	.010	.880	24	.008
3	Sensory impairments	.181	39	.003	.912	39	.005
	Physical & health disabilities	.196	24	.018	.903	24	.025
4	Sensory impairments	.174	39	.004	.940	39	.037
	Physical & health disabilities	.204	24	.011	.912	24	.039

a. Lilliefors Significance Correction.

Table 5: Results of the Mann–Whitney U Test Based on Disability Category

Dimensions	Category	Mean Rank	Sum of Ranks	U	Z	Sig.
1	Sensory impairments	34.12	1330.50	385.500	-1.207-	.228
	Physical & health disabilities	28.56	685.50			
2	Sensory impairments	34.23	1335.00	381.000	-1.259-	.208
	Physical & health disabilities	28.38	681.00			
3	Sensory impairments	32.23	1257.00	459.000	-.130-	.896
	Physical & health disabilities	31.63	759.00			
4	Sensory impairments	30.77	1200.00	420.000	-.698-	.485
	Physical & health disabilities	34.00	816.00			

convenience" had a mean rank of 30.77 for sensory impairments and 34.00 for physical and health disabilities, with U = 420.000, Z = -0.698, p = 0.485. These findings suggest that nomophobia affects SWDs uniformly, regardless of disability category.

DISCUSSION

Smartphones have become a necessary accessory for daily living, imposed on us by the Fourth Industrial Revolution. An increased reliance on technology can lead to addictive behavior or feelings of anxiety when

this technology is not available [34], especially among vulnerable groups. The aim of this study was to examine the prevalence of nomophobia syndrome among university SWDs. We were also interested in whether levels of nomophobia varied based on gender or type of disability.

Prevalence of Nomophobia

The results of this study show that SWDs at SQU experience high levels of nomophobia, as measured by their responses on the NMP-Q. These elevated levels were evident across all four dimensions of the NMP-Q. These results highlight the negative consequences on the psychological well-being of SWDs. One possible explanation for the high levels of nomophobia observed in this study is the heightened vulnerability of SWDs to the mental and social challenges posed by the COVID pandemic. Public health measures such as lockdowns, quarantines, and physical distancing may have had a greater negative impact on SWDs than on students without disabilities. This is consistent with broader evidence that the pandemic had a detrimental impact on the mental health and well-being of university SWDs [35]. For example, individuals with mobility disabilities were particularly affected by restricted access to family and friends during the pandemic, exacerbating feelings of isolation [36]. Other research on adolescents with ADHD found that confinement led to high levels of state anxiety, sleep disturbances, and issues with executive functioning [37]. Students with learning disabilities were also found to experience high levels of depression and stress [6]. Furthermore, a recent review highlights how pandemic-related restrictions and disruptions to routines negatively impacted the mental health of individuals with intellectual disabilities [37], indicating the heightened vulnerability of persons with disabilities to mental health issues. The correlation between attachment theory and nomophobia can be explained by the ways in which people's needs for independence, a sense of competence, and the formation of social relationships are satisfied by smartphones that facilitate access to social media and the Internet. However, if such needs are not satisfied, people feel lost and become more attached to their smartphones, and when their smartphones are taken away, symptoms of nomophobia appear. Therefore, attachment theory can help us understand nomophobia.

The findings of this study are consistent with previous research on the impact of online learning during the pandemic on the mental health of general university student populations [38]. Results also support studies on the prevalence of nomophobia among university students without disabilities, which report varying degrees of the condition [39-41]. Social isolation, home quarantine policies, and the shift to online learning increased the use of smartphones among university students, which may have contributed to smartphone addiction and higher rates of nomophobia. For example, one study found that medical students who used smartphones for 3-6 hours per day exhibited higher levels of nomophobia [42]. As mentioned in the Introduction, both affective and cognitive factors play a role in predicting internet-based addictive behaviors, which may directly affect nomophobia levels. Moreover, smartphone addiction and nomophobia have been found to negatively affect the academic performance of school students. It is, therefore, unsurprising that more vulnerable groups, such as SWDs, experienced particularly high levels of nomophobia in the present study.

At SQU, SWDs relied on smartphones during the pandemic to attend online lectures and complete course-related activities using platforms such as Moodle, Google Meet, and Zoom. This meant prolonged smartphone use. Additionally, the limited face-to-face contact with family and friends during the pandemic likely drove students to use their phones even more for social purposes, which further exacerbates nomophobia. The results of the present study are consistent with recent research on students with visual impairments, which found high levels of nomophobia [43]. Previous studies highlight SWDs' fears of losing network coverage or having their smartphone batteries run out [10]. These fears are also aligned with the high levels of anxiety reported in this study when SWDs were not able to use their phones to access information, check messages, or connect with others.

Gender and Disability Category

The findings of this study indicate that there are no significant differences in the prevalence of nomophobia based on gender or disability categories. This suggests that nomophobia can affect all SWDs equally, regardless of their gender or type of disability. These results are consistent with previous studies that found no relationship between gender and nomophobia prevalence [44, 45]. However, other studies have reported conflicting findings: some suggest that nomophobia is more prevalent among females [37, 42, 45] while others report higher prevalence among males [45 - 47]. Some studies in special education have found no statistically significant differences by gender [48].

The absence of significant differences in this study can be explained by the Uses and Gratifications Theory, which posits that individuals across different societal groups engage equally with mass communication and social media applications to fulfill similar educational, social, and psychological needs [49]. The SWDs in this study who have hearing, visual, physical, or health-related disabilities likely share comparable needs in these domains. This commonality may explain the lack of differences in nomophobia prevalence by gender or disability category. Nonetheless, further research is needed to reconcile these conflicting findings. The sample size in the current study, while sufficient for generating statistical power, may not be large enough to fully capture subtle variations.

LIMITATIONS

This study has several limitations. First, SWDs were grouped into two broad categories (sensory impairments/physical and health disabilities), which may have overlooked differences in nomophobia levels among specific types of disabilities. Severity of disability was also not considered in the present study, which could be an important factor influencing nomophobia. Future research with more detailed classifications and consideration of disability severity could help identify groups most susceptible to developing nomophobia and inform tailored preventative and therapeutic interventions.

Second, the relatively small sample size and the use of convenience sampling (non-random) may limit the generalizability of these results to SWDs in Omani and Arab universities. Additionally, reliance on an online questionnaire as the sole data-collection method may have introduced selection bias. Due to COVID-19 pandemic restrictions, it was necessary to use an online survey. However, while this may have provided accessibility advantages for some SWDs with physical impairments, it may have excluded students with limited internet access or those less inclined to participate in online surveys. These limitations should be taken into account when interpreting the results and considering their applicability to broader populations.

CONCLUSION

This study provides valuable insights into the prevalence of nomophobia among SWDs in an Arab student population, contributing to a broader understanding of how smartphone dependency affects this vulnerable group. The findings emphasize the need for inclusive intervention programs that address the unique challenges SWDs face in maintaining healthy relationships with technology. By implementing targeted support systems, universities can help mitigate the adverse effects of nomophobia and create a more inclusive learning environment. Continued research on the intersection of technology use, mental health, and academic outcomes among SWDs is essential to inform future policies and interventions aimed at promoting digital well-being and accessibility. The use of convenience sampling in the current study may limit the generalizability of the results to students with disabilities in Omani universities. Future research should focus on conducting longitudinal and comparative studies involving students with and without disabilities.

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AUTHOR CONTRIBUTIONS

Conceptualization, S.A., M.A.-H., and I.E.; methodology, S.M., M.A-H. and M.A.; software, R.T., and K.A; validation, Z.S., and M.A.; formal analysis, S.M., M.A.-H., Z.S., and M.A; investigation, S.A., Z.S., and M.A.; resources, K.A. and S.M; data curation, S.A.; and O.A; writing—review and editing, all; visualization, I.E., and O.A; supervision and project administration, S.A.; and R.T; All authors have read and agreed to the published version of the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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