Research

Smartphone-use addiction among nursing students: A cross-sectional study

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Background. Smartphone use for educational purposes has become a common practice among students, including those in nursing. While it offers numerous benefits in education, concerns about addiction to its use have also been noted.
Objectives. To investigate smartphone use addiction among nursing students in Nigeria.
Methods. A descriptive cross-sectional survey was conducted among undergraduate nursing students in Nigeria. A sample of 462 students was drawn from a population of 1 338 across five nursing education institutions. Data were collected using a self-administered questionnaire, which included the validated and reliable Smartphone Addiction Scale-Short version (α=0.844). A descriptive analysis of addiction-related statements was performed, and the likelihood of addiction was calculated. Associations with sex were analysed using Mann-Whitney U and χ^2.
Results. Most respondents (*n*=319, 86.0%) used smartphones daily for educational purposes, and 326 (85.6%) met the criteria for likely smartphone use addiction. No significant association was found between the likelihood of smartphone addiction and sex.
Conclusion. Smartphone use for educational purposes is high, with a concomitant high likelihood of smartphone use addiction.

Keywords. Educational purposes, nursing students, smartphone addiction, smartphone use.

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The use of smartphones has surged worldwide,[1] driven by rapid technological advancements and further fuelled by the COVID-19 pandemic.[2] Globally, over 3 billion people now use smartphones,[3] with more than 50% of users located in the Western[4] and Eastern[2] countries. In Africa, similar trends are evident: for example, Nigeria currently has over 40 million smartphone users,[5] a number projected to rise to 140 million by 2025.[5]

Smartphones have sparked growing interest in their application in education.[5] Evidence highlights their effectiveness in supporting learning through platforms such as Google Meet and Zoom,[1,6] enabling collaborative learning and networking via social media and providing access to educational resources across different geographical locations.[3,4] However, usage levels among students vary,[6] and concerns have emerged regarding their impact. Concerns include reports of excessive and indiscriminate use, negatively impacting students' daily routines[2] and encroaching on academic programmes. Reports indicate that 80% of students sleep with their smartphones, and 70% frequently revisit various apps or websites.[5,7]

Smartphone addiction is defined as the problematic use of smartphones, accompanied by an irresistible urge to use the phone.[1] Described as a disorder of the present millennium, it arises from maladaptive responses to smartphone use.[5] A typical example of techno-addiction includes four behavioural components: the compulsion to use the phone; techno-tolerance; withdrawal ability and impairment of function.[6] Excessive smartphone use is often accompanied by compulsive behaviours and addiction.[5,6] Smartphone addiction is an emerging concept of global interest,[1] with higher rates noted among women.[1] Contributing factors include difficulty regulating usage, freely available internet access,[1] and the use of smartphones as a stress-relief mechanism.[6] Among students, high smartphone addiction rates have been associated with reduced concentration, negatively impacting academic performance[1-3,8] as well as adverse effects on psychological health.[6]

Awareness of smartphone addiction is not widespread.[9] Although Nigeria has a high proportion of internet subscribers and smartphone users among students, research on smartphone addiction in this population is scarce.[5] Most studies have been conducted among university students in high-income countries,[10] with no studies among nursing students.[5,11] This study aims to investigate smartphone addiction among nursing students in Nigeria.

Methods

Study design and setting

A descriptive cross-sectional survey was conducted for this study in the southwest geopolitical zone of Nigeria, which comprises six states. The majority of the indigenous population of these states share a common language and similar cultural practices. This region is known for its strong adoption of Western education compared with other parts of the country. The zone is home to numerous tertiary institutions, both publicly and privately owned, including several nursing education institutions.

Study population and sample

The study population consists of 1 388 student nurses from five nursing institutions in southwest Nigeria, including three university departments of nursing and two colleges of nursing. A sample size of 462 was calculated based on a 5% margin of error, 95% confidence interval (CI), 50% proportion and an additional 10% allowance for attrition or non-response. Exclusion criteria included students below the age of consent (<18 years) and class representatives involved in data collection.

Instrument

A self-administered questionnaire including the Smartphone Addiction Scale-Short version (SASSV) scale by Luk *et al.*,[9] was used for data collection. The SASSV is widely validated for measuring smartphone addiction among students,[6,8,12,13] with reported high internal consistency (α=0.844[14] and α=0.815 in the present study). The SASSVs consist of 10 self-rated items scored on a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (6). For the present study, the scale was adapted to a 4-point Likert scale by excluding the weakly disagree and weakly agree options from the original version. The addiction threshold was set at >21.3/40, equivalent to >32/60 in studies using the original Likert scale.[9,14]

Data collection

After obtaining permission and ethics approval, the researcher, with assistance from a class representative, distributed the questionnaires. Participation was based on an individual's volition, and completed questionnaires along with consent forms were collected by the class representatives. Data collection across the institutions spanned 6 weeks.

Data analysis

Data capture and analysis were performed using SPSS software version 29 (IBM Corp., USA). Mean scores were calculated for each statement, and a total score out of 40 was calculated. Respondents with a score ≥21.3 were classified as likely to have smartphone addiction. Associations with sex were analysed using the Mann-Whitney U and χ^2 tests.

Ethical considerations

Ethical clearance was obtained from the Humanities and Social Science Research Ethics Committee (HSSREC) (Ref no.: HS22/3/10) along with institutional approval from each participating institution. Participation was voluntary, and all respondents provided written informed consent.

Results

Demographics and smartphone usage

A total of 434 of the 462 respondents completed the questionnaire, yielding a 93.9% response rate. Of these, 409 (94.2%) reported using smartphones. Of the 409 smartphone users, 387 completed the SASSV and were included in the analysis. Most respondents were female (*n*=336, 88.2%), with sex information missing for six participants. The average age of the sample was 21.38 (standard deviation (SD) 3.36) years, with male respondents being significantly older (22.05 (2.41) v. 21.29 (3.46); U=2.7, p=0.007) (Table 1).

Daily smartphone usage was high, with 349 (90.2%) respondents using their phones for general purposes and 322 (83.2%) respondents using them for educational purposes. Female respondents reported higher daily smartphone use, particularly for educational purposes (*n*=287, 87.2% v. 32, 76.2%; χ^2 6.0, *p*=0.015) (Table 1).

Likelihood of smartphone addiction

The average addiction score was 26.55/40 (SD 5.36), with 331 (85.5%) respondents meeting the criteria for a likelihood of addiction. While male respondents had higher addiction scores than female respondents (mean 28.3 (SD 5.47) v. 26.4 (5.30)), U 1.95, *p*=0.050), no significant difference was observed between the proportions of male and female respondents meeting the addiction criteria (*n*=41, 91.1% v. *n*=285, 84.8%, χ^2 1.3, *p*=0.260).

The highest rated statement depicting addictive behaviour was 'I won't be able to cope not having a Smartphone' (mean 3.08 (0.91)), followed by 'I do spend time using my Smartphone longer than I had intended' (mean 2.97 (SD 0.83)). The lowest-rated statement depicting addictive behaviour was 'The people around me tell me that I use my Smartphone too much' (mean 2.40 (SD 0.95)) (Fig. 1 and Table 2).

Male respondents rated the statement 'Feeling impatient and fretful when I am not holding my Smartphone' higher than female respondents (mean 2.73 (SD 0.89) v. 2.43 (0.89), respectively, U 2.10, *p*=0.037). Similarly, males rated the statement 'The people around me tell me that I use my Smartphone too much' higher than female respondents (mean 2.89 (0.80) v. 2.32 (0.94); U 3.82, *p*<0.001) (Table 2).

Discussion

Smartphone use for educational purposes

With the increased use of technology and the impact of COVID-19, smartphone use for educational purposes is growing, alongside a higher likelihood of addiction. The present study found high smartphone usage for education, with 90.2% of the respondents using their phones daily for general use and 83.2% using them daily for educational purposes. The daily educational use in our study surpassed the 68% reported among undergraduate students at the University of Botswana using their smartphones to retrieve course materials online.[3] Both this present study and Özdil *et al.*[3] show that female respondents reported significantly higher smartphone usage. This trend is also supported by a meta-analysis of medical students in Asia.[1] However, male and female students tend to use smartphones differently. For instance, a study on university/college students in Bangladesh reported that women were more likely to use their smartphone cameras, while men preferred making phone calls and using phone-specific apps.[15]

Smartphone addiction

With increased phone usage, particularly the shift to educational use, high levels of smartphone addiction are expected.[1] In this study, the calculated addiction score was 26.55 (equivalent to 39.8/60), higher than the 25.71/60 (7.49) reported among university nursing students in Turkey.[10] In our study, 80% of respondents met the criteria for a likelihood of addiction, slightly lower than the 95.8% prevalence reported among nursing students in India.[7] However, our findings show a higher likelihood of addiction compared with studies among Saudi Arabian students (70%),[2] medical students across Asia (42%),[1] Saudi university students during the COVID-19 pandemic (37.4%)[2] and Saudi postgraduate students (51% reporting smartphone over-indulgence).[6] Notably, a previous study of female Nigerian undergraduate students reported that only 20% meet the criteria for smartphone addiction.[11]

The high likelihood of smartphone addiction may be linked to increased smartphone use following the COVID-19 pandemic. Other factors influencing smartphone addiction include the duration of smartphone use and the specific functions used,[1] which were not examined in this study. Sex has also been identified as a potential factor, with Luk *et al.*,[9] reporting higher smartphone addiction tendencies among female adults in Hong Kong (*p*<0.005). Although we observed higher phone use among women in our study, consistent with Zhong *et al.*,[1] no significant difference in smartphone addiction likelihood was found between male and female respondents (*p*>0.500).

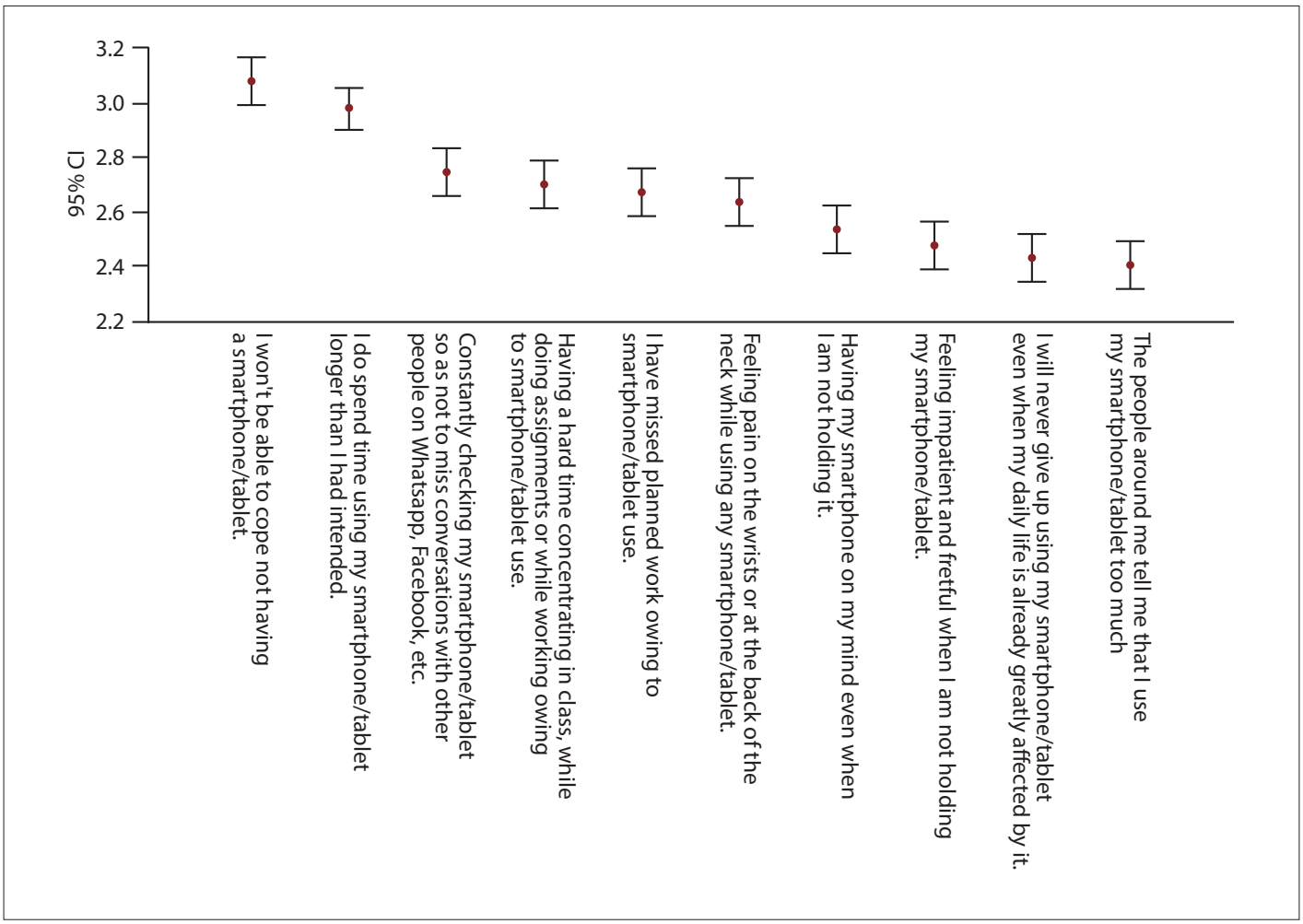

Fig. 1. Addiction-related activities.

Table 1. Demographics and characteristics of respondents (*n*=381)

Items	Male (*n*=45)	Female (*n*=336)	Total (*n*=381)**	Test	*p*-value
Age (years), mean (SD)	22.05 (2.41)	21.29 (3.46)	21.38 (3.36)	U=2.7	0.007*
College (*n*, %)	16 (35.6)	76 (22.8)	92 (24.3)	χ^2=3.5	0.060
University (*n*, %)	29 (64.4)	258 (77.2)	287 (75.7)		
Internet at school (*n*, %)	29 (64.4)	181 (53.9)	210 (55.1)	χ^2=1.8	0.180
Internet at home (*n*, %)	33 (73.3)	245 (72.9%)	278 (73.0)	χ^2=.003	0.953
Daily general use of smartphone (*n*, %)	37 (82.2)	308(91.7%)	349 (90.2)	χ^2=4.1	0.042*
Daily educational use of smartphone (*n*, %)	32 (76.2)	287 (85.4)	322 (83.2)	χ^2=6.0	0.015*
Likelihood of addiction, mean (SD)	28.3 (5.47)	26.4 (5.30)	27.4 (5.39)	U=1.95	0.050
Likelihood of addiction (*n*, %)	41 (91.1)	285 (84.8)	326 (85.6)	χ^2=1.3	0.260

*Significant $p<0.05$.
**n=6 missing sex information.
SD = standard deviation.

Limitations

The study was conducted in the southwest region of Nigeria, and the results may not be representative of the diverse ethno-cultural orientations in Nigeria or the rest of Africa. We recommend that the study be repeated with the original scale for accurate comparison with other studies.

Conclusion

The increased use of smartphones for educational purposes may be accompanied by a concomitant high likelihood of smartphone addiction among the users. However, this should be explored in more detail with specific attention to factors influencing smartphone addiction.

Table 2. Addiction to smartphone statements (*n*=387)

Statements	Male (*n*=45)	Female (*n*=336)	Total (*n*=381)**	U statistic	*p*-value
I won't be able to cope with not having a smartphone.	3.11 (0.80)	3.10 (0.91)	3.08 (0.91)	0.21	0.832
I do spend time using my smartphone longer than I had intended.	3.16 (0.82)	2.95 (0.83)	2.97 (0.83)	1.70	0.091
Constantly check my smartphone so as not to miss conversations between other people on WhatsApp, Facebook, etc.	2.87 (0.84)	2.71 (0.91)	2.73 (0.90)	0.94	0.349
Having a hard time concentrating in class while doing assignments or while working due to smartphone use.	2.71 (0.79)	2.69 (0.86)	2.69 (0.85)	0.03	0.976
I have missed planned work due to smartphone use.	2.89 (0.78)	2.63 (0.85)	2.66 (0.85)	1.75	0.079
Feeling pain in the wrists or at the back of the neck while using any smartphones.	2.78 (0.95)	2.61 (0.90)	2.62 (0.90)	1.14	0.253
Having my smartphone in my mind, even when I am not holding it.	2.53 (0.87)	2.53 (0.86)	2.53 (0.86)	0.09	0.931
Feeling impatient and fretful when I am not holding my smartphone.	2.73 (0.89)	2.43 (0.89)	2.46 (0.89)	2.10	0.037*
I will never give up using my smartphone even when my daily life is already greatly affected by it.	2.64 (1.03)	2.38 (0.93)	2.41 (0.94)	1.78	0.076
The people around me tell me that I use my smartphone too much.	2.89 (0.80)	2.32 (0.94)	2.40 (0.95)	3.82	<001*

*Significant $p<0.05$.
**n=6 missing sex information.

Declaration. None.

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Data availability statement. The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request

Conflict of interest. None.

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