

PREVALENCE AND PATTERNS OF MALADAPTIVE USE OF DIGITAL DEVICES AMONG NURSING STUDENTS IN SOUTH PUNJAB

Asma Bibi¹, Shabana Parveen², Yasmeen Habib², Sadia Parveen³, Shahid Nadeem⁴,
Nadia Iqbal⁵, Habib Ullah Riaz⁶

¹Nursing Officer, DHQ Hospital Lodhran, Pakistan.

^{2,2a}Nursing Officer, Sahiwal Teaching Hospital Sahiwal, Pakistan.

³Nursing Officer, Bahawal Victoria Hospital Bahawalpur, Pakistan.

⁴Nursing Officer, College of Nursing, Allama Iqbal Medical College, Jinnah Hospital Lahore, Pakistan.

⁵MSN Scholar, Islamia University Bahawalpur, Pakistan.

⁶Assistant Professor, Nursing Officer, Bahawal Victoria Hospital Bahawalpur, Pakistan.

¹xarakashif786@gmail.com, ²shabanaparveen8296@gmail.com, ²yasmeenhabib249@gmail.com,

³sadiapeen199@gmail.com, ⁴shahidnadeem65@gmail.com, ⁵nadiaiqbal332@gmail.com,

⁶jabtakhaijan786786@gmail.com

DOI: <https://doi.org/10.5281/zenodo.20119510>

Keywords

Problematic digital device use, nursing students, compulsive behavior, loss of control, smart phone addiction.

Article History

Received on 16 March 2026

Accepted on 24 April 2026

Published on 11 May 2026

Copyright @Author

Corresponding Author: *

Habib Ullah Riaz

Abstract

Background: The increasing integration of digital devices into academic and personal life has raised concerns regarding problematic usage patterns among university students. Nursing students, due to academic demands and clinical responsibilities, may be particularly vulnerable to compulsive and uncontrolled digital device use, which can negatively affect their academic performance, psychological well-being, and daily functioning.

Objective: The study aimed to determine the prevalence and patterns of problematic digital device use among nursing students in south Punjab.

Methodology: A descriptive cross-sectional study design was employed. A total of 37 nursing students from 2nd, 3rd, and 4th years were selected through convenient sampling. Data were collected using a structured questionnaire consisting of socio-demographic characteristics and a 26-item Likert scale assessing compulsive behavior and loss of control related to digital device use. Data were analyzed using descriptive statistics, including frequencies, percentages, and mean scores.

Results: Findings revealed a high prevalence of problematic digital device use among participants. In the compulsive behavior domain, the mean score was 4.19/5, indicating strong emotional dependency and habitual device use. Similarly, the loss of control domain showed a mean score of 4.06/5, reflecting impaired self regulation and difficulty limiting usage. A large proportion of students reported constant device possession, excessive scrolling, inability to reduce usage, and negative impacts on sleep, academics, and physical activity. Overall, the composite mean score (4.12/5) indicated a high level of problematic digital engagement.

Conclusion: The study concluded that nursing students exhibit a high prevalence of problematic digital device use characterized by compulsive behavior and loss of control. These findings highlight the need for targeted awareness programs, including digital detox interventions, to promote healthy digital habits and improve students' academic and psychological well-being.

1. INTRODUCTION:

The fast growth of digital technologies has changed our way of life today, especially for young adults and students. Handheld computers, tablets and other digital devices have become essential tools of communication, education and entertainment. However, the excessive and uncontrolled use of these devices has raised serious concerns about behavioral dependency and its related consequences. Problematic use of digital devices means unhealthy ways of using them. This includes compulsive behavior, loss of control and continuing to use them even when there are negative consequences (1).

Student nurses are vulnerable because they have heavy workloads, clinical placements and often use digital technologies to support their learning and communication. While digital devices offer educational benefits, their overuse has been associated with a variety of adverse outcomes, including poor academic achievement, sleep problems, decreased physical activity, and impaired interpersonal relationships (2, 3). Studies show that students use screens for long periods and without regulation, which can lead to psychological problems and decreased self-regulation (4).

Compulsive device use is a core feature of problematic digital behavior, characterized by a persistent urge to check devices and engage in mindlessly scrolling or extended usage periods. Such behaviors are often reinforced by digital content that is designed to capture attention, which in turn leads to habitual and automatic patterns of use (5). Moreover, digital devices can be used as coping mechanisms for stress, boredom or loneliness, thereby reinforcing dependency and reducing their ability to disengage (6).

Another important feature of problematic use of digital devices is the loss of control: people can't stop using their devices even if they know that it's bad for them. This includes unsuccessful efforts to cut down, continued use at inappropriate times (e.g., study or sleep hours), and neglect of important activities such as school or physical exercise (7). These patterns are similar to the characteristics of behavioral addiction and are increasingly being recognized as a public health concern.

Globally, the prevalence of problematic smart phone use among university students has been increasing, with some studies reporting significant levels of dependency and associated functional impairments (8). In developing countries like Pakistan, where access to smart phones is growing rapidly, it is important to understand the patterns and magnitude of use of digital devices among students. However, little research has been conducted on these behaviors in nursing students, particularly in smaller academic settings.

It is important to understand the extent and patterns of problematic use of digital devices to develop targeted interventions to promote healthy digital habits and improve academic and psychological outcomes. Therefore, the purpose of this study is to assess the prevalence and behavioral patterns of problematic use of digital devices in nursing students, with a focus on the compulsive use and loss of control dimensions.

Literature Review

As digital technologies become more embedded in everyday life, there is increasing research on problematic forms of device use, particularly by students. Problematic use of digital devices is often conceptualized as a multidimensional construct, encompassing excessive engagement, compulsive behaviors, and impaired self-regulation. Empirical studies have consistently found that young adults are among the most frequent users of digital devices, and thus are at higher risk for developing maladaptive usage patterns (9).

Many of the university students show behavioral dependence on digital devices such as frequent checking, inability to limit the usage, and preoccupation with online activities. Roberts et al. (2014) stated that on average, college students spent more than eight hours per day on their smart phones, with many participants reporting difficulty in controlling their usage (10). Similarly, Lin et al. (2016) reported that smartphone overuse is a behavioral condition with symptoms of tolerance, withdrawal and functional impairment, similar to recognized behavioral addictions (11).

One important dimension of problematic use is compulsive digital behavior, which has been

associated with neuropsychological reinforcement mechanisms. Digital platforms are built to deliver sporadic rewards (e.g., notifications, social validation) that drive repeated engagement and habitual checking behaviours. According to Alter (2018), these design features contribute to the development of “behavioral addiction loops” where users find it difficult to disengage from digital environments. The compulsivity is also amplified by emotional factors, as people frequently turn to digital devices to cope with stress, anxiety or boredom (12).

Another important feature is loss of control over device use, which can manifest as unsuccessful attempts to cut down and continued use despite adverse consequences. Research conducted by Fabio (2022) found that there is a significant relationship between the problem of smart phone use with decreased self-control and increased impulsivity of university students (13). The findings may indicate that deficits in executive functioning may play a role in excessive and uncontrolled digital behavior.

The literature is well documented on the consequences of problematic digital device use. Excessive use has been linked to poor sleep quality, lower academic performance and reduced physical activity. A longitudinal study conducted by Twenge et al. (2018) found that adolescents and young adults with more screen time had lower psychological well-being and higher levels of depressive symptoms (14). Additionally, Przybylski and Weinstein (2017) highlighted that even moderate levels of digital overuse can interfere with daily functioning and interpersonal relationships (15).

Other contextual and demographic factors matter as well in structuring patterns of digital device use. Gender differences have been noted, with some studies indicating females are more likely to use social media, while males may show higher engagement in gaming-related activities (16). Living arrangements and academic demands also impact usage behaviors. Students living in hostels or away from the supervision of their families may demonstrate higher levels of unrestricted use of devices (17).

The number of international studies is increasing, but there is still a lack of contextual studies on

problematic use of digital devices among nursing students in developing areas. Nursing students are under unique academic and clinical pressures that may predispose them to maladaptive coping strategies such as overuse of devices. Thus, understanding the prevalence and behavioral patterns within this population is important to inform targeted educational and behavioral interventions.

Methodology

A descriptive cross-sectional study design was employed to assess the prevalence and patterns of problematic digital device use among nursing students in south Punjab. The study population comprised undergraduate nursing students enrolled in 2nd, 3rd, and 4th years. A total of 37 participants were included using a non probability convenient sampling technique. Data were collected through a structured, self administered questionnaire developed after an extensive review of relevant literature. The tool consisted of two sections: socio-demographic characteristics (age, gender, year of study, device used most, and living arrangement) and a 26 item scale assessing problematic digital device use across two domains, including compulsive behavior and loss of control. Responses were measured on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Data were coded and entered into statistical software for analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize socio-demographic variables and patterns of responses. Composite scores were computed for each domain by summing Likert scale items to determine the overall level of problematic digital device use. Results were presented in tables and interpreted in terms of prevalence and behavioral patterns. Ethical considerations were strictly observed, ensuring voluntary participation, confidentiality, and anonymity of respondents, with informed consent obtained prior to data collection.

Results:

The socio-demographic profile of the participants showed that slightly more than half of the students were aged 18–21 years (54.1%), while 43.2% were

in the age group of 22–25 years. Regarding gender distribution, females constituted a slightly higher proportion (56.8%) compared to males (43.2%). In terms of academic level, students were almost

equally distributed across years of study, with 2nd and 3rd year students each representing 32.4%, while 4th year students accounted for 35.1% of the sample.

Corrected Table 1: Socio-demographic characteristics of participants (n = 37)

Variable	Category	Frequency (n)	Percentage (%)
Age	18–21 years	20	54.1
	22–25 years	16	43.2
Gender	Male	16	43.2
	Female	21	56.8
Year of study	2nd year	12	32.4
	3rd year	12	32.4
	4th year	13	35.1
Device used most	Smart phone	27	73.0
	Tablet	2	5.4
	Laptop/PC	8	21.6
Living arrangement	With family	19	51.4
	In hostel	18	48.6
	Others	0	0

Findings related to device usage indicated that the majority of participants primarily used smart phones (73.0%), followed by laptops/PCs (21.6%), and a small proportion used tablets (5.4%). Regarding living arrangements, nearly half of the students lived with their families (51.4%), while 48.6% resided in hostels, indicating a balanced distribution between home and institutional living environments.

Compulsive Behaviour:

The findings of compulsive digital device use among nursing students revealed a high level of behavioral dependency across multiple dimensions. A substantial proportion of participants reported

feeling uneasy when unable to access their devices (86.4% agreed or strongly agreed), indicating strong emotional attachment and dependency. Similarly, a large majority acknowledged engaging in mindless scrolling or prolonged app switching (86.4%), reflecting habitual and uncontrolled usage patterns.

Academic disengagement due to device use was also evident, with 86.4% of students reporting that they ignore studies or clinical responsibilities because of digital device usage. Furthermore, more than four-fifths of respondents indicated using devices as a coping mechanism for stress, boredom, or loneliness (83.8%), highlighting the role of emotional regulation in digital dependency.

Table: Compulsive Digital Device Use among Nursing Students (n = 37)

S.No	Statement	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
1	I feel uneasy if I can't access my device.	15 (40.5)	17 (45.9)	4 (10.8)	1 (2.7)	0 (0.0)
2	I scroll or switch apps mindlessly for a long time.	17 (45.9)	15 (40.5)	2 (5.4)	2 (5.4)	0 (0.0)
3	I ignore studies or clinical work because of device use.	14 (37.8)	18 (48.6)	3 (8.1)	1 (2.7)	1 (2.7)
4	I use devices to escape stress, boredom or loneliness.	21 (56.8)	10 (27.0)	5 (13.5)	1 (2.7)	1 (2.7)
5	I keep my device with me all the time.	37 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
6	I find it hard to limit device use even when I want to.	20 (54.1)	9 (24.3)	6 (16.2)	2 (5.4)	1 (2.7)
7	I prefer screen-based activities.	16 (43.2)	13 (35.1)	2 (5.4)	5 (13.5)	1 (2.7)
8	I start using my device for a short time but end up using it for a long time, ignoring offline activities.	25 (67.6)	7 (18.9)	3 (8.1)	2 (5.4)	0 (0.0)
9	I feel a strong need to check my device and cannot stop using it.	17 (45.9)	9 (24.3)	6 (16.2)	6 (16.2)	0 (0.0)
10	I feel guilty or ashamed about how much time I spend on my screen.	10 (27.0)	7 (18.9)	10 (27.0)	4 (10.8)	6 (16.2)

Notably, all participants (100%) reported keeping their device with them at all times, demonstrating universal device attachment within the sample. A majority also reported difficulty in limiting usage even when desired (78.4%) and a tendency to extend usage beyond intended duration (86.5%). These findings collectively suggest a strong pattern of compulsive engagement and reduced behavioral control.

Overall, the results indicate a high prevalence of compulsive digital device use among nursing students, characterized by emotional dependence, habitual usage, and impaired self-regulation, which may have implications for academic performance and psychological well-being.

Loss of Control:

The findings regarding loss of control over digital device use demonstrate a significant level of

behavioral dysregulation among nursing students. A considerable proportion of participants reported unsuccessful attempts to reduce screen time (56.7% agreed or strongly agreed), indicating limited self-regulatory control over digital behavior. Additionally, more than two-thirds of respondents reported that excessive device use negatively affected sleep quality (67.5%) and physical activity levels (78.4%), highlighting clear functional impairment.

Interpersonal and academic consequences were also evident, with 59.4% of students reporting negative effects on relationships with friends and family, and 67.5% indicating that their academic performance was compromised due to device use. Furthermore, a notable proportion acknowledged continued usage despite awareness of harmful effects (67.5%), suggesting a compulsive behavioral pattern.

Table: Loss of Control over Digital Device Use among Nursing Students (n = 37)

S.No	Statement	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
11	I have tried to reduce my screen time but failed.	15 (40.5)	6 (16.2)	7 (18.9)	5 (13.5)	4 (10.8)
12	My screen use affects my sleep quality or duration.	15 (40.5)	10 (27.0)	6 (16.2)	5 (13.5)	1 (2.7)
13	My screen use stops me from doing physical activity.	20 (54.1)	9 (24.3)	4 (10.8)	4 (10.8)	0 (0.0)
14	Using my device affects my relationships with friends or family.	15 (40.5)	7 (18.9)	6 (16.2)	5 (13.5)	4 (10.8)
15	I keep using devices even though I know they have bad effects.	17 (45.9)	8 (21.6)	7 (18.9)	3 (8.1)	2 (5.4)
16	I lose track of time while using devices.	20 (54.1)	8 (21.6)	6 (16.2)	2 (5.4)	1 (2.7)
17	I hide or minimize my device use from others.	14 (37.8)	14 (37.8)	4 (10.8)	4 (10.8)	1 (2.7)
18	I cannot stop using my device even when it causes problems.	12 (32.4)	13 (35.1)	6 (16.2)	4 (10.8)	2 (5.4)
19	My studies suffer because of device use.	18 (48.6)	7 (18.9)	5 (13.5)	6 (16.2)	2 (5.4)
20	I feel screen devices control me instead of me controlling them.	16 (43.2)	8 (21.6)	5 (13.5)	5 (13.5)	3 (8.1)
21	I feel anxious or irritated when I try to reduce my screen time.	18 (48.6)	5 (13.5)	5 (13.5)	8 (21.6)	1 (2.7)

Time distortion and behavioral loss of control were also prominent, as more than three-quarters of participants reported losing track of time while using digital devices (75.7%). In addition, 75.7% indicated either hiding or minimizing their device use or being unable to stop usage even when problems arise.

Overall, the results reflect a high level of loss of control over digital device use among nursing students, characterized by impaired self-regulation, psychological discomfort during reduction attempts, and significant interference with academic, physical, and social functioning.

Summary of Mean Scores:

The overall findings indicate a high level of problematic digital device use among nursing students. The mean score for compulsive behavior was 4.19 out of 5, reflecting strong emotional dependency, habitual usage patterns, and difficulty disengaging from digital devices. Similarly, the loss of control domain demonstrated a mean score of 4.06, indicating significant impairment in self-regulation, time management, and behavioral control.

Table: Summary of Mean Scores of Problematic Digital Device Use among Nursing Students (n = 37)

Domain	Number of Items	Mean Score (\pm approx.)	Interpretation
Compulsive Behavior	10	4.19 / 5	High level of compulsive digital device use
Loss of Control	11	4.06 / 5	High level of loss of control over device use
Overall Problematic Digital Device Use	21	4.12 / 5	High prevalence of problematic digital device use

The overall composite mean score of 4.12 suggests a consistently high prevalence of problematic digital engagement across both behavioral dimensions. These findings highlight that nursing students exhibit not only excessive usage patterns but also reduced ability to regulate or limit their device use, which may adversely affect their academic performance, psychological well-being, and daily functioning.

Discussion

In the present study, high prevalence rates of problematic digital device use among nursing students were found with strong compulsive engagement and marked loss of behavioral control. Overall, the results indicate that students emotionally relied on digital devices, used them habitually, and struggled to regulate the time spent looking at screens. These results are consistent with global evidence of problematic smart phone use being a common behavioral concern among university students, especially in health science disciplines.

In the current study, a significant number of participants reported compulsive behaviours such as discomfort in the absence of the device, long scrolling, and always having the device. These findings are in agreement with international research indicating that compulsive smart phone use is fuelled by reinforcement mechanisms embedded in digital platforms, leading to habitual checking and reduced self-regulation. Lo et al. (2023) systematically reviewed the literature and identified the propensity of university students to develop compulsive checking behaviours and problems disengaging from smart phones due to reward-based app design and social reinforcement

structures. Chen et al. (2017) also found that persuasive digital design characteristics contribute significantly to sustained screen engagement and habitual usage behaviours in young adults (16).

The study also found a significant trend of loss of control, with students reporting unsuccessful attempts to limit their screen time, interference with sleep, disruption of academic work, and decreased physical activity. These results are in agreement with the findings of other recent studies carried out among nursing students in South Asia and other parts of the world. For example, in India, a study showed that problematic mobile phone use among nursing students was significantly associated with sleep disturbance, lower academic performance, and psychological distress (18). Similarly, a cross-sectional study among health sciences students in Saudi Arabia reported a high prevalence of problematic smart phone use and significant associations with impaired academic functioning and behavioural dependence (19).

Meta-analytical evidence also supports the high level of device attachment observed in the present study indicating that smart phone dependency is increasingly recognised as a behavioural addiction-like condition. Lu et al. (2024) conducted a large-scale systematic review and reported that core addiction-like features of problematic smart phone use include salience, withdrawal, tolerance, and loss of control, in line with behavioural addiction frameworks (20). The findings of the current study strongly reflected these characteristics with students reporting emotional discomfort when they were unable to access devices and continued to usage despite being aware of negative consequences.

Moreover, the findings of this study are congruent with evidence that there are detrimental effects of excessive digital engagement on psychosocial well-being. A systematic review of university students found that problematic smart phone use was significantly associated with stress, anxiety, and reduced academic performance, with duration of use and emotional coping motives as key predictors (21). This is especially relevant for nursing students, who are burdened with a high academic and clinical workload and therefore more susceptible to maladaptive coping strategies such as overuse of devices.

The results of the present study are also consistent with recent experimental evidence that intervention-based approaches, such as behavioural modification strategies, can reduce smart phone dependency and increase self-regulation. A recent study on LLM based behavioural intervention showed reduced scores of smart phone addiction and improved self efficacy after structured behavioural guidance programs (22). This underlines the need for awareness programs such as digital detox interventions in educational spaces.

Overall, the results of this study point to high levels of problematic digital device use in nursing students, characterised by compulsive behaviours and loss of self-control. This pattern mirrors global trends and raises concerns about the psychological and academic effects of excessive digital engagement. The findings highlight the need for targeted educational interventions, digital literacy programs, and institutional policies to foster healthy device use behaviours among nursing students.

REFERENCES

1. Billieux J, Maurage P, Lopez-Fernandez O, Kuss DJ, Griffiths MD. Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research. *Current Addiction Reports*. 2015;2(2):156-62.
2. Lepp A, Barkley JE, Karpinski AC. The relationship between cell phone use and academic performance in a sample of US college students. *Sage Open*. 2015;5(1):2158244015573169.
3. Samaha M, Hawi NS. " Relationships among smartphone addiction, stress, academic performance, and satisfaction with life": Corrigendum. 2017.
4. Elhai JD, Dvorak RD, Levine JC, Hall BJ. Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of affective disorders*. 2017;207:251-9.
5. Montag C, Wegmann E, Sariyska R, Demetrovics Z, Brand M. How to overcome taxonomical problems in the study of Internet use disorders and what to do with "smartphone addiction"? *Journal of behavioral addictions*. 2021;9(4):908-14.
6. Kardefelt-Winther D. A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Computers in human behavior*. 2014;31:351-4.
7. Panova T, Carbonell X. Is smartphone addiction really an addiction? *Journal of behavioral addictions*. 2018;7(2):252-9.
8. Sohn SY, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: a systematic review, meta-analysis and GRADE of the evidence. *BMC psychiatry*. 2019;19(1):1-10.
9. Krogstad J, Passel J, Cohn DV. Pew Research Center. US Border Apprehensions Of Families And Unaccompanied Children Jump Dramatically. 2016.
10. Roberts J, Yaya L, Manolis C. The invisible addiction: Cell-phone activities and addiction among male and female college students. *Journal of behavioral addictions*. 2014;3(4):254-65.
11. Lin Y-H, Chiang C-L, Lin P-H, Chang L-R, Ko C-H, Lee Y-H, et al. Proposed diagnostic criteria for smartphone addiction. *PloS one*. 2016;11(11):e0163010.
12. Alter A. *Irresistible: The rise of addictive technology and the business of keeping us hooked*: Penguin; 2018.
13. Fabio RA, Stracuzzi A, Lo Faro R. Problematic smartphone use leads to behavioral and cognitive self-control deficits. *International journal of environmental research and public health*. 2022;19(12):7445.

14. Twenge JM, Joiner TE, Rogers ML, Martin GN. Increases in depressive symptoms, suicide-related outcomes, and suicide rates among US adolescents after 2010 and links to increased new media screen time. *Clinical psychological science*. 2018;6(1):3-17.
15. Przybylski AK, Weinstein N. A large-scale test of the goldilocks hypothesis: quantifying the relations between digital-screen use and the mental well-being of adolescents. *Psychological science*. 2017;28(2):204-15.
16. Chen B, Liu F, Ding S, Ying X, Wang L, Wen Y. Gender differences in factors associated with smartphone addiction: a cross-sectional study among medical college students. *BMC psychiatry*. 2017;17(1):341.
17. Aljomaa SS, Qudah MFA, Albursan IS, Bakhiet SF, Abduljabbar AS. Smartphone addiction among university students in the light of some variables. *Computers in Human Behavior*. 2016;61:155-64.
18. Jose S, Cyriac MC. Impact of problematic mobile phone use among nursing students in India: Exploring associations with depression, insomnia, self-esteem and satisfaction with life. 2024;30(5):e13247.
19. Abo-Ali EA, Al-Ghanmi A, Hadad H, Etaawi J, Bhutta K, Hadad N, et al. Problematic Smartphone Use: Prevalence and Associated Factors Among Health Sciences Students in Saudi Arabia. *Journal of prevention* (2022). 2022;43(5):659-71.
20. Lu X, An X, Chen S. Trends and influencing factors in problematic smartphone use prevalence (2012–2022): A systematic review and meta-analysis. *Cyberpsychology, Behavior, and Social Networking*. 2024;27(9):616-34.
21. Candussi CJ, Kabir R, Sivasubramanian M. Problematic smartphone usage, prevalence and patterns among university students: A systematic review. *Journal of Affective Disorders Reports*. 2023;14:100643.
22. Wu R, Yu C, Pan X, Liu Y, Zhang N, Fu Y, et al., editors. MindShift: leveraging large language models for mental-states-based problematic smartphone use intervention. *Proceedings of the 2024 CHI conference on human factors in computing systems*; 2024.