

Association Between Smartphone Addiction and Depression, Anxiety, and Stress Among Nursing Students: A Cross-Sectional Online Study

Sumit Kumar Sharma¹, Harshit Agrawal², Nitika Thakur³, Biji Paulose⁴,
Himanshu Soni⁵, Meenal Caleb⁶

¹Vice Principal, College of Nursing Government Medical College Ambedkar Nagar, Uttar Pradesh.

²Tutor/ Clinical Instructor, AIIMS Gorakhpur Medical Surgical NursingNeuroscience

³Associate Professor, College or hospital: Sharda School of Nursing Science and Research, Sharda University, UP

⁴Asso. Professor, Fatima College of Nursing Lucknow, Uttar Pradesh

⁵Associate Professor, College of Nursing, Government Medical College, Prayagraj, U.P.

⁶Prof cum Principal, Sainath College of Nursing, Singrauli, M.P

Corresponding Author:

Dr Sumit Kumar Sharma, Vice Principal college of nursing government medical college ambedkar nagar uttarpradesh.

E-mail:

ss.sharmasumit08@gmail.com

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Abstract

Background: Smartphones have become an integral part of students' daily lives, offering easy access to educational resources, communication, and entertainment. However, excessive smartphone use has emerged as a growing public health concern, particularly among nursing students, who frequently rely on smartphones for academic and clinical learning. Prolonged smartphone use has been associated with poor mental health outcomes, including depression, anxiety, and stress.

Materials & Methods: A quantitative cross-sectional online study was conducted among **150 nursing students** selected through convenience sampling. Data were collected using an online questionnaire comprising demographic characteristics, the Smartphone Addiction Scale–Short Version (SAS-SV), and the Depression Anxiety Stress Scale (DASS-21). Descriptive and inferential statistics were used to analyze the data.

Results: The findings indicated that a considerable proportion of nursing students demonstrated moderate to high levels of smartphone addiction. Students with higher smartphone addiction scores reported significantly higher levels of depression, anxiety, and stress. A statistically significant positive association was observed between smartphone addiction and psychological distress ($p < 0.05$).

Conclusion: Smartphone addiction is significantly associated with depression, anxiety, and stress among nursing students. Regular screening, digital well-being education, counselling services, and awareness programmes should be implemented within nursing institutions to promote healthy smartphone use and improve students' mental well-being.

Keywords: Smartphone addiction; Nursing students; Depression; Anxiety; Stress; Mental health; DASS-21; Cross-sectional study.

Introduction

Smartphones have revolutionized communication, education, and access to health information, making them indispensable in modern society. Nursing students increasingly depend on smartphones for online learning, accessing academic materials, virtual classrooms, clinical references, and communication with faculty and peers. While smartphones provide numerous educational benefits, excessive and uncontrolled use has raised concerns regarding its effects on students' psychological and academic well-being.¹⁻³

Smartphone addiction is characterized by excessive, compulsive, and uncontrolled smartphone use that interferes with daily functioning, academic performance, sleep quality, interpersonal relationships, and mental health. Individuals with smartphone addiction often experience difficulty limiting screen time, anxiety when separated from their devices, and persistent use despite negative consequences. The rapid expansion of social media platforms, online gaming, instant messaging applications, and digital entertainment has further contributed to problematic smartphone use among young adults.⁴⁻⁶

Nursing students represent a particularly vulnerable population because of demanding academic schedules, clinical responsibilities, frequent examinations, and emotional stress associated with patient care. Smartphones are commonly used for educational purposes; however, prolonged non-academic use may reduce concentration, impair sleep, increase fatigue, and negatively affect psychological well-being. Excessive smartphone use has also been associated with reduced academic performance, poor time management, decreased physical activity, and social isolation.⁷⁻⁹

Depression, anxiety, and stress are among the most common mental health problems affecting university students worldwide. Depression is characterized by persistent sadness, hopelessness, loss of interest, and reduced motivation, whereas anxiety involves excessive worry, nervousness, and fear. Stress results from the inability to cope effectively with academic, social, or personal demands. These psychological conditions adversely affect learning ability, academic achievement, professional development, and overall quality of life among nursing students.¹⁰⁻¹²

Recent evidence suggests a significant relationship between problematic smartphone use and poor mental health outcomes. Excessive smartphone use may contribute to sleep disturbances, reduced face-to-face social interaction, emotional dependence, cyberbullying exposure, and increased psychological distress.

Conversely, students experiencing depression, anxiety, or stress may use smartphones excessively as a coping mechanism, further reinforcing addictive behaviour. This bidirectional relationship highlights the importance of understanding smartphone addiction within the context of student mental health.¹³⁻¹⁵

Several international and Indian studies have reported increasing prevalence of smartphone addiction among healthcare students. Reported prevalence ranges from 25% to over 60%, depending on the assessment tools and study population. Nursing students frequently rely on smartphones for accessing e-books, drug references, clinical guidelines, and online classes, making them more susceptible to prolonged screen exposure. Despite these educational benefits, unhealthy smartphone use patterns may adversely affect emotional well-being and academic success.¹⁶⁻¹⁸

Following the COVID-19 pandemic, online teaching and virtual learning substantially increased students' dependence on smartphones. Although digital learning improved educational accessibility, it also resulted in prolonged screen time and increased opportunities for social media engagement, potentially increasing the risk of smartphone addiction and associated mental health problems. Even after the return to traditional classroom teaching, many students continue to exhibit high levels of smartphone use.¹⁹⁻²¹

Understanding the association between smartphone addiction and depression, anxiety, and stress among nursing students is important for designing effective preventive interventions. Early identification of students at risk can help educational institutions implement counselling services, digital wellness programmes, mental health screening, and awareness campaigns. Such interventions may contribute to healthier technology use, improved psychological well-being, and better academic performance among future nursing professionals.²²⁻²⁴

Objectives of the Study

1. To assess the level of smartphone addiction among nursing students.
2. To determine the levels of depression, anxiety, and stress among nursing students.
3. To examine the association between smartphone addiction and depression, anxiety, and stress.
4. To determine the association between smartphone addiction and selected demographic variables.

Research Hypotheses

H₁: There is a statistically significant association

between smartphone addiction and depression among nursing students.

H₂: There is a statistically significant association between smartphone addiction and anxiety among nursing students.

H₃: There is a statistically significant association between smartphone addiction and stress among nursing students.

H₄: Smartphone addiction is significantly associated with selected demographic variables among nursing students.

Materials and Methods

Study Design: A **quantitative, descriptive cross-sectional online study** was conducted to assess the association between smartphone addiction and depression, anxiety, and stress among nursing students.

Study Setting: The study was conducted among undergraduate nursing students enrolled in selected nursing colleges. Data were collected through an online survey using **Google Forms** during the study period.

Study Population: The study population consisted of B.Sc. Nursing, Post Basic B.Sc. Nursing, and M.Sc. Nursing students who were using smartphones for academic and personal purposes.

Sample Size: A total of **150 nursing students** participated in the study.

Sampling Technique: A **non-probability convenience sampling technique** was used to recruit eligible participants. The Google Form link was shared through WhatsApp groups, email, and other official student communication platforms.

Inclusion Criteria

Participants who:

- Were enrolled in a nursing programme.
- Were aged **18 years or above**.
- Used a smartphone regularly for at least **6 months**.
- Were willing to participate in the study.
- Submitted the completed online questionnaire.

Exclusion Criteria

Participants who:

- Did not provide informed consent.
- Submitted incomplete questionnaires.
- Were on long-term leave during the data collection period.

Study Instruments: The online questionnaire consisted of four sections.

Section I: Demographic Variables

This section collected information on:

- Age
- Gender
- Nursing programme
- Year of study
- Residence (Urban/Rural)
- Average daily smartphone use
- Primary purpose of smartphone use
- Monthly family income

Section II: Smartphone Addiction Scale–Short Version (SAS-SV)

Section III: Depression Anxiety Stress Scale (DASS-21)

Validity and Reliability: The study instruments were reviewed by experts in psychiatric nursing, medical-surgical nursing, community health nursing, psychology, and biostatistics to establish content validity.

The Smartphone Addiction Scale–Short Version (SAS-SV) and DASS-21 are internationally validated instruments with excellent psychometric properties. A pilot study was conducted among 15 nursing students (excluded from the final analysis) to assess feasibility and clarity of the questionnaire.

The overall reliability of the questionnaire was found to be satisfactory with a **Cronbach's alpha coefficient of 0.89**.

Pilot Study: A pilot study was conducted among 15 nursing students to evaluate the feasibility of the study, clarity of the questionnaire, and time required for completion. The pilot findings confirmed that the questionnaire was understandable and suitable for the main study. The pilot participants were excluded from the final analysis.

Data Collection Procedure

Ethical approval was obtained from the Institutional Ethics Committee before commencing the study.

Permission was obtained from the concerned nursing college authorities. An online questionnaire was prepared using **Google Forms**, and the survey link was distributed electronically through WhatsApp groups, email, and student communication platforms.

The first page of the questionnaire contained an information sheet explaining the purpose of the study, confidentiality, voluntary participation, and informed consent. Participants who agreed electronically were

allowed to complete the questionnaire.

The survey remained open for **six weeks**, and reminders were sent periodically to improve the response rate. Only one response from each participant was accepted.

Statistical Analysis

Data were entered into Microsoft Excel and analysed using **IBM SPSS Statistics version 26.0**.

Descriptive statistics including **frequency, percentage, mean, and standard deviation** were used to summarize demographic characteristics and study variables.

Inferential statistics included:

- Chi-square test to determine the association between

smartphone addiction and demographic variables.

- Pearson correlation coefficient to examine the relationship between smartphone addiction and depression, anxiety, and stress scores.
- Binary logistic regression to identify predictors of smartphone addiction.

A p-value < 0.05 was considered statistically significant.

Results

A total of **150 nursing students** participated in the online cross-sectional study. Data were analyzed using descriptive and inferential statistics. The findings are presented below.

Table 1. Distribution of Participants According to Demographic Characteristics (N = 150)

Variable	Frequency (n)	Percentage (%)
Age (Years)		
18–20	64	42.7
21–23	74	49.3
≥24	12	8.0
Gender		
Male	38	25.3
Female	112	74.7
Programme		
B.Sc. Nursing	118	78.7
Post Basic B.Sc. Nursing	22	14.7
M.Sc. Nursing	10	6.6
Residence		
Urban	82	54.7
Rural	68	45.3
Average Smartphone Use/Day		
<4 hours	26	17.3
4–6 hours	52	34.7
>6 hours	72	48.0

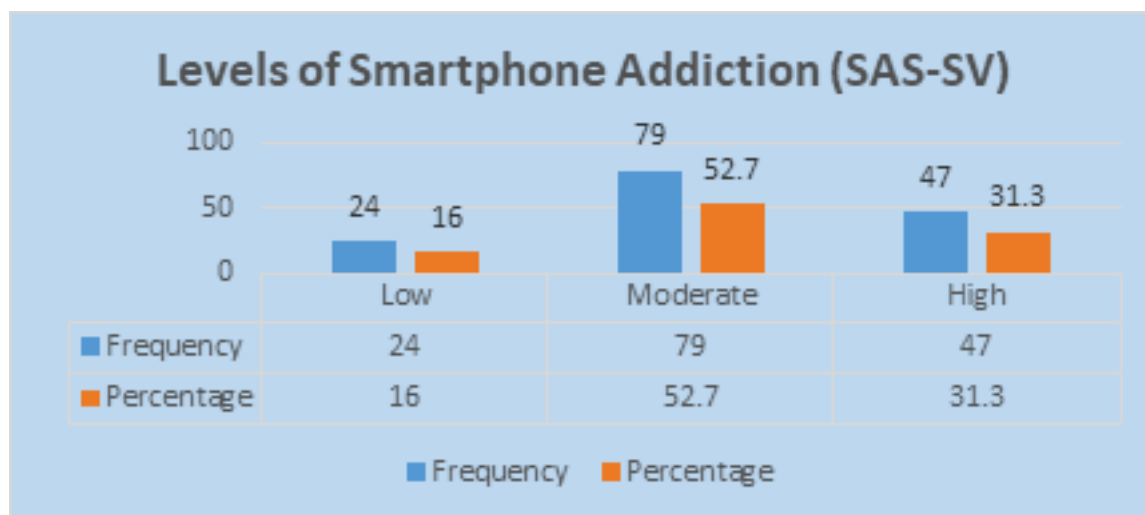
Interpretation: Nearly half (49.3%) of participants were aged 21–23 years. Females constituted 74.7% of the study population. Almost half (48%) reported using smartphones for more than six hours daily.

Table 2. Levels of Smartphone Addiction (SAS-SV)

Level	Frequency	Percentage
Low	24	16.0
Moderate	79	52.7
High	47	31.3

Mean SAS-SV Score: 34.8 ± 8.2

Interpretation: More than half of the participants (52.7%) demonstrated moderate smartphone addiction, while nearly one-third (31.3%) exhibited high smartphone addiction.

**Figure 01: Levels of Smartphone Addiction (SAS-SV)****Table 3. Levels of Depression Among Nursing Students (DASS-21)**

Depression Level	Frequency	Percentage
Normal	56	37.3
Mild	28	18.7
Moderate	40	26.7
Severe/Extremely Severe	26	17.3

Interpretation: Approximately 44% of students experienced moderate to severe depressive symptoms.

Table 4. Levels of Anxiety and Stress (DASS-21) Anxiety

Level	Frequency	Percentage
Normal	46	30.7
Mild	31	20.7
Moderate	42	28.0
Severe/Extremely Severe	31	20.6

Stress

Level	Frequency	Percentage
Normal	60	40.0
Mild	33	22.0
Moderate	36	24.0
Severe/Extremely Severe	21	14.0

Interpretation: Anxiety levels were comparatively higher than stress levels, with nearly half of the participants experiencing moderate to severe anxiety symptoms.

Table 5. Correlation Between Smartphone Addiction and Psychological Variables

Variable	Pearson's r	p-value
Depression	0.49	<0.001*
Anxiety	0.55	<0.001*
Stress	0.46	<0.001*

*Statistically Significant

Interpretation: Smartphone addiction demonstrated a **moderate positive correlation** with depression ($r=0.49$), anxiety ($r=0.55$), and stress ($r=0.46$). Students with higher smartphone addiction scores were more likely to report increased psychological distress.

Table 6. Association Between Smartphone Addiction and Daily Smartphone Use

Daily Smartphone Use	High Addiction	Low/Moderate Addiction	Total
<4 Hours	3	23	26
4–6 Hours	12	40	52
>6 Hours	32	40	72

Chi-square = 15.82 df = 2 p <0.001* *Statistically Significant

Interpretation: Students using smartphones for more than six hours daily had significantly higher levels of smartphone addiction compared with those using smartphones for fewer hours.

Table 7. Binary Logistic Regression Analysis for Predictors of Smartphone Addiction

Predictor	Adjusted OR	95% CI	p-value
Smartphone use >6 hours/day	2.94	1.54–5.61	0.001*
Depression	1.82	1.12–2.96	0.015*
Anxiety	2.21	1.33–3.66	0.003*
Stress	1.64	1.01–2.68	0.041*

*Statistically Significant

Interpretation: Daily smartphone use exceeding six hours, higher depression scores, anxiety, and stress independently predicted smartphone addiction among nursing students.

Discussion

The present cross-sectional online study assessed the association between smartphone addiction and depression, anxiety, and stress among nursing students. The findings revealed that a considerable proportion of nursing students exhibited **moderate to high smartphone addiction**, and higher addiction scores were significantly associated with increased levels of depression, anxiety, and stress. These findings suggest that excessive smartphone use may negatively influence the psychological well-being of nursing students.

Conclusion

The current study comes to the conclusion that among nursing students, smartphone addiction is strongly linked to stress, anxiety, and sadness. Nearly one-third of the subjects showed high levels of smartphone addiction, while over half showed moderate levels. Psychological anguish was considerably more common among students with higher smartphone addiction ratings. An key indicator of smartphone addiction was shown to be daily smartphone use surpassing six hours. These results emphasize the necessity of early detection of problematic smartphone use and the introduction of counseling services, digital well-being programs, and mental health promotion activities in nursing facilities. Encouraging students to use smartphones responsibly may enhance their academic performance, professional growth, and psychological well-being.

Recommendations

1. Regular screening for smartphone addiction and psychological distress should be conducted among nursing students.
2. Nursing colleges should organize digital well-being and mental health awareness programmes.
3. Counselling services should be strengthened to support students experiencing depression, anxiety, or stress.
4. Workshops on time management, stress management, and healthy technology use should be incorporated into the nursing curriculum.

5. Faculty members should encourage balanced smartphone use for educational purposes while discouraging excessive recreational use.
6. Future multicentre longitudinal studies with larger sample sizes are recommended to establish causal relationships.

Limitations

- Cross-sectional design limits causal inference.
- Online self-reported responses may introduce reporting bias.
- Convenience sampling limits generalizability.
- Participants were recruited from selected nursing colleges only.
- Smartphone usage was self-reported rather than objectively measured.

Source of Funding: The study was self-funded by the investigators. No external financial assistance was received.

Conflict of Interest: The authors declare no conflict of interest.

Ethical Approval: Ethical approval was obtained from the Institutional Ethics Committee prior to the commencement of the study. Electronic informed consent was obtained from all participants before completion of the online questionnaire.

References

1. Kwon M, Kim DJ, Cho H, Yang S. The Smartphone Addiction Scale: Development and validation of a short version for adolescents. *PLoS One*. 2013;8(12):e83558.
2. Lovibond SH, Lovibond PF. *Manual for the Depression Anxiety Stress Scales*. 2nd ed. Sydney: Psychology Foundation; 1995.
3. World Health Organization. *World Mental Health Report*. Geneva: WHO; 2022.
4. World Health Organization. Adolescent mental health. Geneva: WHO; 2024.
5. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR)*. Washington, DC: APA; 2022.
6. Polit DF, Beck CT. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. 12th ed. Philadelphia: Wolters Kluwer; 2023.

7. Burns N, Grove SK. *Understanding Nursing Research*. 8th ed. St. Louis: Elsevier; 2022.
8. Parahoo K. *Nursing Research: Principles, Process and Issues*. 4th ed. London: Palgrave Macmillan; 2021.
9. Sharma SK. *Nursing Research and Statistics*. 4th ed. New Delhi: Elsevier; 2022.
10. Park K. *Park's Textbook of Preventive and Social Medicine*. 28th ed. Jabalpur: Banarsidas Bhanot; 2025.
11. International Council of Nurses. *Guidelines for Nursing Education*. Geneva: ICN; 2023.
12. UNICEF. *The State of the World's Children*. New York: UNICEF; 2023.
13. Ministry of Health and Family Welfare. *National Mental Health Programme*. New Delhi: Government of India; 2023.
14. Elhai JD, Dvorak RD, Levine JC, Hall BJ. Problematic smartphone use: A conceptual overview and systematic review. *J Affect Disord*. 2017;207:251–9.

