FNJN

İSTANBUL UNIVERSITY CERRAHPAŞA

Florence Nightingale Journal of Nursing

DOI: 10.5152/FNJN.2025.24272

Research Article

Smartphone Addiction, Insomnia, Loneliness, and Self-Esteem Among Nursing Students: A Correlation Study

Raksha Yadav[1], Smriti Arora[1], Uma Phalswal[1], Priyanshi Dixit[2]

[1]Department of College of Nursing, All India Institute of Medical Sciences (AIIMS), Rishikesh, India
[2]Department of College of Nursing, Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi, India

Cite this article as: Yadav, R., Arora, S., Phalswal, U., & Dixit, P. (2025). Smartphone addiction, insomnia, loneliness, and self-esteem among nursing students: A correlation study. *Florence Nightingale Journal of Nursing*, *33*, 0272, doi: 10.5152/FNJN.2025.24272.

What is already known on this topic?

- *Although, numerous studies have been conducted regarding the impact of smartphone addiction to sleep quality.*
- *The evidence of self-perceiving low self-esteem with smartphone addiction was partially explored with contrasting avocations.*

What this study adds on this topic?

- *No study has been to find the correlation among study variables.*
- *Contrasting results regarding impact of smart phone addiction on self-esteem are contradictory in literature.*
- *This leads to the thought of discovering the association of study variables are novice to present study.*

Abstract

AIM: This study aims to explore the prevalence of smartphone addiction among nursing students and its correlation with their levels of insomnia, loneliness, and self-esteem.

METHODS: In this correlational study, 515 consenting undergraduate nursing students studying in various nursing colleges,were enrolled through total enumerative sampling from April to November 2024. We excluded nursing students with a diagnosis or history of mental health problems (anxiety, depression, etc.).

RESULTS: In the present study, 23.1% ($N = 515$) of the nursing students were found to have smartphone addiction. Most participants (66.03%) did not have clinically significant insomnia, followed by 26.21%, 6.79%, and 0.97% of participants with mild, moderate, and severe insomnia, respectively. The mean ± standard deviation of loneliness was 45.58 ± 8.98, with high levels of loneliness being most prevalent (64.46%). The mean ± standard deviation of self-esteem was 27.94 ± 4.89, and 66.21% of the participants had high self-esteem. The correlation analysis showed that smartphone addiction, insomnia, and loneliness, scores were significantly positively correlated ($p < .01$). On the other hand, self-esteem scores were negatively correlated with smartphone addiction, insomnia, and loneliness scores ($p < .01$). Multiple linear regression has shown that high levels of insomnia and loneliness and low self-esteem positively predicted smartphone addiction ($p < .01$).

CONCLUSION: In summary, nursing students suffered high loneliness and were strongly associated with smartphone addiction, insomnia and self-esteem. Overuse on smartphone addiction can cause low self-esteem and increased insomnia can develop into sleep problems. Smartphone addiction among college students must be strictly monitored, and such individuals require reverent supervision and intervention programmes, so that it can be detected at an earliest. After academic hours, other sports, entertainment, and cultural programs should be considered to reduce the screen time.

Keywords: Insomnia, loneliness, nursing students, self-esteem, smartphone addiction

Introduction

Smartphones are becoming increasingly indispensable in everyday life and offer various mobile applications for information, communication, education, and entertainment purposes, such as social media. In 2023, active users worldwide reached almost 6.6 billion (Chen & Chen, 2020). It has been forecast to exceed 7.8 billion by 2028. India has the second-most smartphone users, with 659 million, after China (Smartphone Users by Country 2022, n.d.). Using phones late at night may turn out to be a major lifestyle problem these days. It can lead to an imbalance in circadian rhythms, and the user may land up in psychological diseases such as stress, depression, anxiety, and sleep disorders (Ghosh et al., 2021). Excessive usage of smartphones has subjected users to several physical and psychosocial adverse effects (Associations Between

Corresponding author: Priyanshi Dixit,
E-mail: priyanshidixit17@gmail.com

Received: November 18, 2024
Revision Requested: December 10, 2024
Last Revision Received: December 30, 2024
Accepted: January 24, 2025
Publication Date: April 28, 2025

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

Problematic Mobile Phone Use and Psychological Parameters in Young Adults, n.d.; Fossum et al., 2014; Tamura et al., 2017). As soon as school-going students enter college/university, social and structural transformations affect their relationships, roles, and presumptions. In college life, most student stays in hostels and away from their native place, so they have to make decisions independently and autonomously, sometimes they feel lonely due to being away from their home place, and according to a study (Beutel et al., 2017), it affects psychological health. The shift from senior high school to university brings social and structural changes that influence their relationships, roles, and expectations. They begin deciding upon themselves as more independent, become self-sufficient, and learn to adjust to a life of maturity, which can leave a young adult vulnerable to loneliness.

Starting a new life at school has many advantages in that it not only can be exciting and offer opportunities but also is difficult because you are on your own in a new environment and have to develop yourself as you move toward being an adult without anybody or limited friends to rely on. This may lead the young people to be more susceptible to loneliness (Caplan et al., 2009). Self-esteem is closely related to smartphone addiction (Dou et al., 2020; Fu et al., 2020; Lee & Lee, 2017). Self-esteem refers to a personal reflection that is conveyed through attitude and verbal behavior, about someone's level of capacity, value, or rank. Students with low self-esteem have a negative self-image and will always carry insecurities and identity in communicative relations (Cooper et al., 2017; Passanisi et al., 2015). As a result, they prefer technology-mediated communication, which leads them to the massive use of mobile phones (Billieux et al., 2015). University students are at a very high risk of having sleep problems. Poor sleep quality among university students has been found in studies (Bonnet & Arand, 1995). Research has shown that around 60% of college students have poor-quality sleep (Lund et al., 2010). At night, 27% of students are diagnosed with one or another disorder while sleeping (Gaultney, 2010), and 24.3% suffer from nightmares.

Smartphone addiction has emerged as a significant behavioral health concern, particularly among nursing students, who often rely heavily on their devices for both academic and personal purposes. Despite the apparent interconnectedness of smartphone addiction, insomnia, loneliness, and self-esteem, there is limited research investigating these relationships. Understanding these correlations is crucial for developing targeted interventions to promote healthier technology use, improve sleep hygiene, and foster emotional well-being among nursing students. Given the critical role of nurses in healthcare delivery, addressing these issues at the student level could have long-term implications for their professional competency and patient care quality. Therefore, the current study aimed to find the correlation of smartphone addiction with insomnia, loneliness and self-esteem.

Research Question

1. What is the relationship between smart-phone addiction, self esteem, insomnia and loniliness among nursing students.

Methods

Study Design

This was a descriptive correlational study conducted among nursing students.

Sample

The sample size was calculated using the formula 4pq/d2. Taking a 95% confidence level, 5% error, and a 52.8% prevalence of smartphone addiction, the sample size came out to be 392, so the current study enrolled 515 samples. The sample for this study was 515 nursing students pursuing B.Sc. (Nursing) recruited through total enumerative sampling from April to November 2024 from various nursing colleges.Inclusion criteria for the participants were nursing students who had smartphones, had access to the Internet, were willing to fill out Google forms, and could understand the English language. Nursing students who were diagnosed with mental health problems or had a known history of any mental health problems and were not willing to be part of the study were excluded. After obtaining online consent and willingness, a Google form was circulated through emails or WhatsApp, containing all items to assess the study variables. An average of 15–20 minutes was taken to complete the questionnaires. The confidentiality and privacy of study participants were ensured and kept confidential. Participants were provided the option to withdraw from the study voluntarily.

Data Collection Tools

Sociodemographic and Smartphone Usage Details

Data were collected using self-structured sociodemographic sheets and standardized questionnaires. A data sheet was created to elicit information related to socio-demographic variables (age, religion, academic year, marital status, type of hostel, etc.) and smartphone-related usage details.

Smartphone Addiction Scale-Short Version

The Smartphone Addiction Scale-Short Version (SAS-SV) was used to assess the level of smartphone addiction. This scale consists of a 10-item scale, rated on a six-point Likert scale ranging between 10 and 60 with responses ranging from "I strongly disagree" to "I strongly agree." The minimum and maximum possible scores are 10 and 60, respectively. A high score indicates a high risk of addiction. In this study, the scale's Cronbach's alpha coefficient was 0.87 (Kwon et al., 2013)

Rosenburg Insomnia Scale

The Insomnia Severity Index (ISI) is a self-report scale used to evaluate the severity of insomnia over the past 2 weeks. This scale consists of seven items rated on a five-point Likert scale with a total score ranging from 0 to 28. The score is interpreted as follows: 0–7: no clinically significant insomnia, 8–14: subthreshold insomnia (mild), 15–21: moderate insomnia, 22–28: severe insomnia (Crönlein et al., 2013).

Revised University of California Los Angeles loniliness Scale (Revised-UCLA Scale)

The Revised UCLA Loneliness Scale is a commonly used tool to measure subjective feelings of loneliness and social isolation.

It consists of 20 items, and respondents indicate how often they feel certain ways using a four-point Likert scale: 1 = never, 2 = rarely, 3 = sometimes, and 4 = often. The score range is 20–80, with higher scores indicating a greater sense of loneliness. The cut-offs for loneliness severity are score <28: no/low loneliness; score 28–43: moderate loneliness; and score >43: high loneliness (Russell et al., 1980).

Rosenberg Self- Esteem Scale (RSE)

The Rosenberg Self-Esteem Scale (RSES) is a widely used tool for assessing self-esteem. It contains 10 items, each rated on a four-point Likert scale. The minimum and maximum possible scores are 10 and 60, respectively (<15: low self-esteem; 15–25: normal self-esteem; >25: high self-esteem), with the responses ranging from "strongly disagree" to "strongly agree." Internal consistency was found to be 0.92. (RSES, 2021).

Statistical Analysis

The data analysis was conducted to reduce, organize, and give meaning to data. For the current study data, analysis was done using descriptive and inferential statistics. The level of significance was set as p <.05. Tables depicted the analyzed data. The statistical tests used were as follows: (a) frequency and percentage distribution of selected sociodemographic variables and use of smartphones; (b) mean and standard deviation for calculating study variables (smartphone addiction, insomnia, loneliness, self-esteem) scores; (c) Chi-square was used to determine the association of smartphone addiction with selected personal variables; (d) Pearson correlation was used to assess the correlation between study variables. (e) Stepwise multiple regression analysis was used to predict SAS-SV scores.

Ethical Considerations

The ethics committee of All India Institute of Medical Scineces, Rishikesh has provided ethical clearance (Approval no: AIIMS/IEC/24/155, Date: April 6, 2024). Confidentiality and anonymity were maintained. Informed consent was obtained from participants following the provision of a participants information sheet.

Results

A total of 515 students participated in the study after excluding 16 participants who had not consented to participate in the study. A maximum of 79.7% of participants fell into the age range of 20–23 years. The majority of participants, specifically 92.8%, were identified as Hindu, with the remaining 2.9%, 1.9%, and 2.3% belonging to the Muslim, Christian, and other religions, respectively. This study included 21.9%, 33.8%, 9.9%, and 34.4% of participants in the B.Sc. Nursing first year, second year, third year, and fourth year, respectively. Approximately three-fourths (75.1%) of participants were from nuclear families, followed by 23.7% and 1.25 were from joint and extended families. About 53% of participants were from urban areas, whereas 47% were from rural areas. In hostels, a maximum of 65% of participants lived in shared rooms, and 35% lived in single rooms. Almost all of the participants had no history of smoking or alcohol use, except 0.6% and 1.2%, respectively (Table 1).

Table 1.
Frequency, Percentage Distribution and associations of Smart-Phone Addiction with selected socio-demographic and personal variablesamong Nursing Stuidents (N = 515)

Sl. No.	Variables	Categories	*N*	%	χ^2; *p*
1	Age (in years)	17–20	78	15.1	2.486; .454
		20–23	359	69.7	
		23–26	74	14.4	
		26–29	4	0.8	
2	Religion	Hindu	478	92.8	3.064; .378
		Muslim	15	2.9	
		Christian	10	1.9	
		others	12	2.3	
3	Academic year of study	First year	113	21.9	1.927; .588
		Second year	174	33.8	
		Third year	51	9.9	
		Fourth year	177	34.4	
4	Marital status	Unmarried	501	97.7	0.405; 1.000
		Married	14	2.3	
5	Type of family	Nuclear	387	75.1	1.317; .534
		Joint	122	23.7	
		Extended	6	1.2	
6	Place of hometown	Rural	242	47	1.576; .414
		Urban	273	53	
7	Type of hostel room	Single	180	35	3.398; .065
		Sharing	335	65	
8	Smoking	No	512	99.4	−0.951; .341
		Yes	03	0.6	
9	Consumption of alcohol	No	509	98.8	−1.349; .344
		Yes	06	1.2	

A comparison between the participants with smartphone addiction (SAS ≥ 33) revealed no significant differences in terms of age, religion, academic year of study, marital status, type of family, place of hometown, type of hostel room, smoking status, and consumption of alcohol. Additionally, there were no differences in the maximum use during the day or night, years of smartphone use, and the amount of money spent on smartphones. However, the two groups differed in terms of daily hours of smartphone usage, mode of using the internet, most used applications, checking of smartphone at night when getting up from bed, checking social networking sites right after waking up, and approximate time to check smartphone as soon as they got out of bed at the significance level of <.05 (Table 1).

This study gathered comprehensive data on smartphone usage, revealing that nearly half (54%) of the participants used their smartphones for 4–5 hours daily. Surprisingly, 20% of the participants use their smartphones for more than 10 hours daily,

with 10.9%, 26.6%, and 6.4% using them for 7–9 hours, 2–3 hours, and less than 2 hours, respectively. Nearly 56.7% of participants used their smartphones primarily during the night. The most commonly used applications on their smartphones were educational apps (28.7%), social media and entertainment apps (28.7%), gaming apps (2.5%), and news and current affairs (2.1%). About half of the participants have been using smartphones for the past 2–5 years. Nearly half (49.3%) of participants used their smartphones at night when they got up from sleep. Half of the participants (48.9%) checked social networking sites like WhatsApp, Instagram, Twitter, or Facebook right after waking up. The approximate time to check the smartphone as soon as they get out of bed was <5 minutes, 5–30 minutes, >30 minutes, and >1 hour for 30.7%, 28.3%, 18.3%, and 22.7% of participants, respectively. Most of the participants used smartphones for entertainment (77.7%), followed by educational purposes (51.8%) (Table 2).

Table 3 illustrates that the majority of nursing students (76.89%) score less than 33 on the Standardized SAS with a mean and SD of 26.69 ± 10.20. According to the ISI, the majority (66.01%) of participants did not have clinically significant insomnia, followed by 26.21%, 6.79%, and 0.97% of participants with mild, moderate, and severe insomnia, respectively. The mean and SD of ISI were 6.17 ± 5.11. The Revised UCLA Loneliness Scale found that a majority of 64.46% of participants were highly lonely, followed by 33.20% and 2.33% of participants with moderate and low loneliness, respectively, with mean and SD values of 45.58 ± 8.98. The RSES revealed that 66.21% of participants had high self-esteem, followed by 33% and 0.776% of participants with normal and low self-esteem, with a mean and SD value of 27.94 ± 4.89.

Table 4 illustrates the correlation between the SAS-SV, ISI, UCLA, and RSES scales. The correlation analysis showed that SAS-SV, ISI, and UCLA scores were significantly positively and lowly correlated. On the other hand, RSES scores were negatively correlated with SAS-SV, ISI, and UCLA scores. All correlation values were significant at a *p*-value of <.01.

We further calculated multiple linear regression to predict the SAS-SV scores of participants based on their ISI, UCLA, and RSES scores. We regressed the dependent variable (SAS-SV) on the predicting variables of ISI, UCLA, and RSES scores. The adjusted R^2 value (0.148) indicates that the model explains 14.8% of the variance in SAS-SV scores based on the predictor variables. The regression model is statistically significant ($F = 30.743$, $p = .001$). Therefore, the predictors (ISI, UCLA, RSES scores) collectively provide a good fit to the data in predicting SAS-SV scores. Insomnia ($\beta = 0.332$; $p < .001$) was a significant positive predictor of Smartphone addiction. Loneliness ($\beta = 0.050$; $p < .289$) was not a significant predictor of Smartphone addiction. However, self-esteem ($\beta = -0.093$; $p = .044$) was a significant negative predictor of Smartphone addiction (Table 5).

Discussion

Smartphones have become essential instruments for students. Excessive usage may result in smartphone addiction, leading to physiological, psychological, and social detriment. The addiction

Table 2.
Frequency, Percentage Distribution and association of Smart-Phone Addiction with use of smart phones. (N = 515)

Sl. No.	Variables	*N*	%	χ^2; *p*
1	Daily hours of smartphone usage			
	<2 hours	33	6.4	35.705 ; .000*
	2–3 hours	137	26.6	
	4–5 hours	278	54	
	7–9 hours	56	10.9	
	>10 hours	11	20	
2	Maximum use during			
	Day	222	43.1	1.546 ; .462
	Night	293	56.9	
3	Mode of using the internet			
	Mobile data	351	68.2	22.258 ; .000*
	Wi-Fi	5	1	
	Both modes	159	30.9	
4	Most used applications			
	Educational app/academics/scientific	148	28.7	11.896; .006*
	Gaming	13	2.5	
	Entertainment (YouTube, Instagram, Facebook)	148	28.7	
	News and current affairs	11	2.1	
5	Years of smartphone use			
	<2 years	81	15.7	3.901; .142
	2–5 years	271	52.6	
	>5 years	163	31.7	
6	Do you check your smartphone at night when you get up from sleep?			
	Yes	254	49.3	19.853; .000*
	No	261	50.7	
7	Checking Social Networking Service sites like WhatsApp, Instagram, Twitter, or Facebook right after waking up?			
	Yes	252	48.9	20.729; .000*
	No	263	51.1	
8	What is the approximate time to check your smartphone as soon as you get out of bed?			
	<5 minutes	158	30.7	13.346; .004*
	5–30 minutes	146	28.3	
	>30 minutes to 1 hour	94	18.3	
	>1 hour	117	22.7	
9	Amount of money spent on smartphone use (in rupees/month)			
	Upto 250	217	42.1	6.347; .096
	251–500	213	41.4	
	501–1000	70	13.6	
	>1000	15	2.9	

(*Continued*)

Table 2.
Frequency, Percentage Distribution and association of Smart-Phone Addiction with use of smart phones. (N = 515)

Sl. No.	Variables	N	%	χ^2; p
10	Apart from making calls and sending texts, how do you mostly use smartphones? (select all that apply)			
	Social networking	156	30.3	NA
	Entertainment (watching videos, listening to songs, etc.)	400	77.7	
	Gaming	49	9.5	
	Reading news	73	14.2	
	Study-related purposes	267	51.8	

Note: *Association is significant at a *p*-value of <.05.

to smartphones among undergraduate students has emerged as a significant issue in the past decade (Zhou et al., 2024). The present study explored the prevalence of smartphone addiction, insomnia, loneliness, and self-esteem among nursing students and its association with their selected socio-demographic variables. We found that nearly half of the participants (54%) used their smartphones for 4 to 5 hours per day, but a notable proportion (20%) were using smartphones for more than 10 hours daily. Similar findings were noted in a systematic review of smartphone addiction among nursing students (Osorio-Molina et al., 2021). In the present study, a higher proportion of the participants (56.7%) used their smartphones at night. The majority of participants (68.2%) utilized mobile data for internet access, and 28.7% of them used educational and social media apps the most; these findings are in line with an existing study (Machado et al., 2023). Approximately half (52.6%) of the present study participants had been utilizing smartphones for a duration of 2–5 years. It is noteworthy that 50.7% of nursing students used their smartphones at night upon awakening, while 51.1% checked social networking sites immediately after rising. It is significant to observe that more than three-quarters (77.3%) of nursing students utilized their smartphones within 1 hour after waking up in the morning, with a considerable percentage

Table 3.
Frequency, Percentage Distribution, Mean, and Standard Deviation of the Nursing Students based on Standardized Smartphone Addiction Scale-Short Version, Insomnia Severity Index, Revised UCLA Loneliness Scale, Rosenberg Self-Esteem Scale

Sl. No.	Categories	N	%	Mean ± SD
Standardized Smartphone Addiction Scale-short version (SAS-SV)				
1	Smartphone addiction (score ≥33)	119	23.10	26.69 ± 10.20
2	Score <33	396	76.89	
Insomnia Severity Index (ISI)				
1	No clinically significant insomnia (0–7)	340	66.02	6.17 ± 5.11 5 (Median)
2	Mild insomnia (8–14)	135	26.21	
3	Moderate insomnia (15–21)	35	6.79	
4	Severe insomnia (22–28)	5	0.97	
Revised UCLA Loneliness Scale				
1	No/low loneliness (<28)	12	2.33	45.58 ± 8.98
2	Moderate loneliness (28–43)	171	33.20	
3	High loneliness (>43)	332	64.46	
Rosenberg Self-Esteem Scale (RSES)				
1	Low self-esteem (<15)	4	0.77	27.94 ± 4.89
2	Normal self-esteem (15–25)	170	33	
3	High self-esteem (>25)	341	66.21	

Table 4.
Correlation matrix between studied variables among nursing students s (N = 515)

	Smartphone Addiction (SAS-SV)	Insomnia (ISI)	Loneliness (UCLA)	Self-Esteem (RSES)
Smartphone addiction (SAS-SV)	1	0.373*	0.197*	−0.206*
Insomnia (ISI)	0.373*	1	0.318*	−0.270*
Loneliness (UCLA)	0.197*	0.318*	1	−0.445*
Self-esteem (RSES)	−0.205*	−0.270*	−0.445*	1

Note: ISI = Insomnia Severity index; RSES = Rosenberg Self-Esteem Scale; SAS-SV = standardized Smartphone Addiction Scale-short version; UCLA = revised UCLA loneliness scale. *Correlation is significant at a *p*-value of <.01.

Table 5.
Multiple Regression Analysis Predicting Smartphone Addiction Scale-Short Version Scores

	B	**Standard Error**	***β***	*t*	*p*	*R*	***R²***	**Adjusted *R²***	*F*
ISI	0.658	0.086	0.332	7.653	.000	0.391	0.153	0.148	30.743 ($p = .001$)
UCLA	0.056	0.053	0.050	1.062	.289				
RSES	−0.192	0.095	−0.093	−2.020	.044				

Note: ISI = Insomnia Severity index; RSES = Rosenberg Self-Esteem Scale; SAS-SV = Standardized Smartphone Addiction Scale—short version; UCLA = Revised UCLA loneliness scale. *R* = correlation coefficient; R^2 = coefficient of determination; β = standardized coefficient. Dependent variable: SAS-SV. Independent variables: ISI, UCLA, RSES.

using them within the first 5 minutes (30.7%) and within 5–30 minutes (28.3%). These findings align with another study conducted among nursing students (Kalal et al., 2023).

In the current study, 23.1% of individuals were identified as smartphone addicts. However, another study conducted on nursing students (Kajla et al., 2022) discovered that 4.73% of nursing students had severe smartphone addiction. Further, one more study identified smartphone addiction in 10.41% of the female participants (Liu et al., 2022). Another study identified a 39% prevalence of problematic smartphone usage among nursing students (Jose et al., 2024). Whereas, Mohamed et al. discovered that 95.8% of nursing students exhibited smartphone addiction (Mohamed & Mostafa, 2020). Ali et al. determined the incidence of smartphone addiction to be 69.39% among undergraduate nursing students (Ali et al., 2024). Machado et al. identified moderate smartphone addiction levels in 72.6% of nursing students (Machado et al., 2023). The current study revealed that participants exhibiting elevated daily smartphone usage hours, those who accessed their devices at night upon waking, and who promptly checked their smartphones and Social Networking Service sites after rising from bed demonstrated a higher propensity for smartphone addiction. Kalal et al. reported analogous findings (Kalal et al., 2023).

In the present study, higher levels of smartphone addiction were associated with higher levels of insomnia and lower levels of self-esteem. Multiple linear regression has shown that high levels of insomnia and low self-esteem positively predicted smartphone addiction. It highlights the seriousness of smartphone addiction as well as its impact. These findings encourage educators to emphasize the promotion of responsible smartphone usage practices and to mitigate significant psychological issues related to smartphone use. Similar findings were noted in other studies as well (Machado et al., 2023; Osorio-Molina et al., 2021; Sarman & Çiftci, 2024).

Study Limitations

There were some limitations to this study. First, the data collection instruments were self-reported, due to the nature of the questionnaires, individual perception cannot be overlooked. Second, participants were taken from the same context so it's possible that the population is not representative of the entire population, and, therefore, it is possible that smart phone addiction prevalence is higher or lower in students of other professions. Third, the nature of the study design being correlational, causality could not be explored. Apart from these assessing an impact of smartphone addiction on insomnia, self-esteem, and loneliness other variables like personality factors and coping strategies were not taken in account. Finally, this study was only conducted on a specific group and results could not be generalized to the general population.

Conclusion and Recommendations

The current study indicates that a significant percentage of nursing students (23.1%) exhibit smartphone addiction, 33.98% experience insomnia, and 64.46% report a high level of loneliness. However, a small proportion had low self-esteem levels (0.78%). These findings are concerning and necessitate the implementation of interventions to address the issue of smartphone addiction.In summary, nursing students suffered high loneliness and were strongly associated with smartphone addiction, insomnia and self-esteem. Overuse on smartphone addiction can cause low self-esteem and increased insomnia can develop into sleep problems. Smartphone addiction among college students must be strictly monitored, and such individuals require reverent supervision and intervention programmes, so that it can be detected at an earliest. After academic hours, other sports, entertainment, and cultural programs should be considered to reduce the screen time.This study's findings suggested that future researches using longitudinal studies with different educational and age backgrounds could be performed. Also, with regards to future research, the findings of this study could extend to draw preventive, protective, and therapeutic programs for smartphone addiction.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

Ethics Committee Approval: The ethics committee AIIMS Rishikesh has provided ethical clearance (Approval no: AIIMS/IEC/24/155, Date: April 6, 2024).

Informed Consent: Online written informed consent was obtained from the participants who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – R.Y., S.A., U.P., P.D.; Design – R.Y., S.A., U.P., P.D.; Supervision – R.Y,. S.A., U.P. Resources – R.Y., S.A., U.P., P.D.; Materials – R.Y., S.A.; Data Collection and/or Processing – U.P., P.D.; Analysis and/or Interpretation – R.Y., U.P.; Literature Search – R.Y., S.A., U.P., P.D.; Writing – R.Y., U.P., P.D.; Critical Review – R.Y., S.A.

Acknowledgment: The researchers express gratitude to all the students for their earnest participation.

Declaration of Interests: The authors have no conflict of interest to declare.

Funding: The authors declared that this study has received no financial support.

REFERENCES

a, P., Devi, P., Panwar, P., b, P., Yadav, R., & Kumar, A. (2022). Smartphone addiction and its health impacts among B.Sc. (Hons.) nursing students. *International Journal of Advanced Research*, *10*(8), 103–109. [CrossRef]

Aijaza Ali, S., Marshall, P., & Bashir, S. (2024). Investigating the smartphone addiction among undergraduate nursing students. *Pakistan BioMedical Journal*, 2–6. [CrossRef]

Beutel, M. E., Klein, E. M., Brähler, E., Reiner, I., Jünger, C., Michal, M., Wiltink, J., Wild, P. S., Münzel, T., Lackner, K. J., & Tibubos, A. N. (2017). Loneliness in the general population: Prevalence, determinants and relations to mental health. *BMC Psychiatry*, *17*(1), 97. [CrossRef]

Billieux, J., Maurage, P., Lopez-Fernandez, O., Kuss, D. J., & Griffiths, M. D. (2015). 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*, *2*(2), 156–162. [CrossRef]

Bonnet, M. H., & Arand, D. L. (1995). We are chronically sleep deprived. *Sleep*, *18*(10), 908–911. [CrossRef]

Caplan, S., Williams, D., & Yee, N. (2009). Problematic Internet use and psychosocial well-being among MMO players. *Computers in Human Behavior*, *25*(6), 1312–1319. [CrossRef]

Chen, X., & Chen, H. (2020). Differences in preventive behaviors of COVID-19 between urban and rural residents: Lessons learned from A cross-sectional study in china. *International Journal of Environmental Research and Public Health*, *17*(12), 4437. [CrossRef]

Cooper, K., Smith, L. G. E., & Russell, A. (2017). Social identity, self-esteem, and mental health in autism. *European Journal of Social Psychology*, *47*(7), 844–854. [CrossRef]

Crönlein, T., Langguth, B., Popp, R., Lukesch, H., Pieh, C., Hajak, G., & Geisler, P. (2013). Regensburg Insomnia Scale (RIS): A new short rating scale for the assessment of psychological symptoms and sleep in insomnia; Study design: Development and validation of a new short self-rating scale in a sample of 218 patients suffering from insomnia and 94 healthy controls. *Health and Quality of Life Outcomes*, *11*, 65. [CrossRef]

Dou, K., Wang, L.-X., Li, J.-B., Wang, G.-D., Li, Y.-Y., & Huang, Y.-T. (2020). Mobile phone addiction and risk-taking behavior among Chinese adolescents: A moderated mediation model. *International Journal of Environmental Research and Public Health*, *17*(15), 5472. [CrossRef]

Fossum, I. N., Nordnes, L. T., Storemark, S. S., Bjorvatn, B., & Pallesen, S. (2014). Retrieved from https://www.tandfonline.com/doi/abs/10.1080/15402002.2013.819468. The association between use of electronic media in bed before going to sleep and insomnia symptoms, daytime sleepiness, morningness, and chronotype. *Behavioral Sleep Medicine*, *12*(5), 343–357. [CrossRef]

Fu, L., Wang, P., Zhao, M., Xie, X., Chen, Y., Nie, J., & Lei, L. (2020). Can emotion regulation difficulty lead to adolescent problematic smartphone use? A moderated mediation model of depression and perceived social support. *Children and Youth Services Review*, *108*, 104660. [CrossRef]

Gaultney, J. F. (2010). The prevalence of sleep disorders in college students: Impact on academic performance. *Journal of American College Health: J of ACH*, *59*(2), 91–97. [CrossRef]

Ghosh, T., Sarkar, D., Sarkar, K., Dalai, C. K., & Ghosal, A. (2021). A study on smartphone addiction and its effects on sleep quality among nursing students in a municipality town of West Bengal. *Journal of Family Medicine and Primary Care*, *10*(1), 378–386. [CrossRef]

Jose, S., Cyriac, M. C., Sebastian, S., Lidiyamol, P. V., & Dhandapani, M. (2024). Impact of problematic mobile phone use among nursing students in India: Exploring associations with depression, insomnia, self-esteem and satisfaction with life. *International Journal of Nursing Practice*, *30*(5), e13247. [CrossRef]

Kalal, N., Vel, N. S., Angmo, S., Choyal, S., Bishnoi, S., Dhaka, S., Rulaniya, S., & Banswal, S. (2023). Smartphone addiction and its impact on quality of sleep and academic performance among nursing students. Institutional based cross-sectional study in Western Rajasthan (India). *Investigacion y Educacion en Enfermeria*, *41*(2), e11. [CrossRef]

Kwon, M., Kim, D.-J., Cho, H., & Yang, S. (2013). The smartphone addiction scale: Development and validation of a short version for adolescents. *PLOS One*, *8*(12), e83558. [CrossRef]

Lee, C., & Lee, S.-J. (2017). Prevalence and predictors of smartphone addiction proneness among Korean adolescents. *Children and Youth Services Review*, *77*, 10–17. [CrossRef]

Liu, H., Zhou, Z., Huang, L., Zhu, E., Yu, L., & Zhang, M. (2022). Prevalence of smartphone addiction and its effects on subhealth and insomnia: A cross-sectional study among medical students. *BMC Psychiatry*, *22*(1), 305. [CrossRef]

Lund, H. G., Reider, B. D., Whiting, A. B., & Prichard, J. R. (2010). Sleep patterns and predictors of disturbed sleep in a large population of college students. *Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, *46*(2), 124–132. [CrossRef]

Machado, J., Pai, R. R., & Kotian, R. R. (2023). The pattern of smartphone usage, smartphone addiction, and associated subjective health problems associated with smartphone use among undergraduate nursing students. *Journal of Education and Health Promotion*, *12*, 49. [CrossRef]

Mohamed, S. M., & Mostafa, M. H. (2020). Impact of smartphone addiction on depression and self-esteem among nursing students. *Nursing Open*, *7*(5), 1346–1353. [CrossRef]

Rosenberg Self-Esteem Scale (RSES) (2021, March 1). *Novopsych.* Retrieved from https://novopsych.com.au/assessments/well-being/rosenberg-self-esteem-scale-rses/

Osorio-Molina, C., Martos-Cabrera, M. B., Membrive-Jiménez, M. J., Vargas-Roman, K., Suleiman-Martos, N., Ortega-Campos, E., & Gómez-Urquiza, J. L. (2021). Smartphone addiction, risk factors and its adverse effects in nursing students: A systematic review and meta-analysis. *Nurse Education Today*, *98*, 104741. [CrossRef]

Passanisi, A., Gervasi, A. M., Madonia, C., Guzzo, G., & Greco, D. (2015). Attachment, self-esteem and shame in emerging adulthood. *Procedia – Social and Behavioral Sciences*, *191*, 342–346. [CrossRef]

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, *39*(3), 472–480. [CrossRef]

Sarman, A., & Çiftci, N. (2024). Relationship between smartphone addiction, loneliness, and depression in adolescents: A correlational structural equation modeling study. *Journal of Pediatric Nursing*, *76*, 150–159. [CrossRef]

Associations between problematic mobile phone use and psychological parameters in young adults (n.d.). SpringerLink. Retrieved from https://link.springer.com/article/10.1007/s00038-011-0234-z

Smartphone users by country 2022 (n.d.). Statista. Retrieved from https://www.statista.com/statistics/748053/worldwide-top-countries-smartphone-users/

Tamura, H., Nishida, T., Tsuji, A., & Sakakibara, H. (2017). Association between excessive use of mobile phone and insomnia and depression among Japanese adolescents. *International Journal of Environmental Research and Public Health*, *14*(7), 701. [CrossRef]

Zhou, B., Mui, L. G., Li, J., Yang, Y., & Hu, J. (2024). A model for risk factors harms and of smartphone addiction among nursing students: A scoping review. *Nurse Education in Practice*, *75*, 103874. [CrossRef]