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Prevalence of Smartphone Addiction and its Relation with the Mental Wellbeing of Nursing Students of a Selected Nursing Institution in Kolkata, West Bengal

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Abstract

*A smartphone is helpful for the students but excessive use of smartphone is a sign of addiction to smartphone. Long-term use of smartphone can cause physical, mental and behavioural problems such as eye problems, unhealthy eating habits, decrease in academic performance, decrease in attention and concentration, communication and adaptation problems, development of addictive behaviour, low self-esteem and suicidal tendencies (Nayak JK, 2018).[1]To create awareness about smart phone addiction among nursing students the researcher conducted the study "**Prevalence of smartphone addiction and its relation with the mental well-being of nursing students of a selected nursing institution in Kolkata, West Bengal."** The objectives were to identify the prevalence rate of smart phone addiction, to assess the mental wellbeing and to find out the relationship between smart phone addiction and mental wellbeing among nursing students.*

***Methodology:** The research approach adopted was a non-experimental descriptive survey design. The study was conducted in a selected nursing Institution of Kolkata with sample size 119. Non probability consecutive sampling technique was used. The tools used were personal information, Smart phone addiction scale- SV, questionnaire on mental well-being including Bergen insomnia scale (BIS) and Patient Health Questionnaire (PHQ 9) for data collection. The techniques used for data collection were questionnaire through online.*

***Result:** The findings showed 31.93% participants addicted to smartphone, 89.9% participants were found to spend 0–5 hours daily on screens.55.46% students admitted to using their smartphone for at least 30 minutes after the lights were turned off, and 54.62% kept their smartphone near their pillow while sleeping.The insomnia among nursing students revealed 60.50% and depression among the nursing students showed29.41% mild depression, and 5.04% students experienced severe depression while 31.09% had no depression.Smartphone addiction had significant positive correlation with insomnia (r= 0.33) and depression (r= 0.37).*

***Conclusion:**Future research can be built upon these findings and further investigation and intervention can be done. Addressing the problems proactively and awareness and precaution can enhance academic outcomes, clinical safety, and student's mental well-being.*

***Key words:**Smart phone addiction, sleep, depression*

INTRODUCTION:

A smartphone is helpful for the students but excessive use of smartphone is a sign of addiction to smartphone.Long-term use of smartphone can cause physical, mental and behavioural problems such as eye problems, unhealthy eating habits, decrease in academic performance, decrease in attention and concentration, communication and adaptation problems, development of addictive behaviour, low self-esteem and suicidal tendencies (Nayak JK, 2018).[1]

Negi KS, Godiyal Sobserved HNBUG-SRT college students while walking around the campus, along with a questionnaire and found 64 % of students used mobile phones in the campus. A randomized sample of 100 students was collected. The survey showed that there were negative psychological effects of smartphone usage on the young generation. They felt depressed and anxious while using cell phones. On the other hand, some youngsters showed relax behavior even without having a cell phone.[2]

A cross-sectional study was conducted by **Gangadharan N and et al.** to determine the prevalence of mobile phone addiction among adolescents and its associated risk factors among adolescents. It was community-based, conducted among 264 adolescents (10-19 years) of low-income urban areas of Delhi. The prevalence of mobile phone addiction in the participants was 33.0% (95% CI: 27.2-38.6). The addiction was higher among boys (33.6%) than girls (32.3%) (p=0.835). Mobile phone addiction was

found to be significantly higher among those adolescents who had ≥3 siblings, those belonging to nuclear families, and among late-onset users (≥16 years). Late-onset users (adjusted odds ratio {aOR}: 3.39; 95% CI: 1.307-8.83) and ≥3 siblings (aOR: 1.98; 95% CI: 1.141-3.44) were independent predictors of mobile phone addiction. The mean time spent on mobile phones was significantly higher among those with addiction but no significant gender difference was found between time spent on phones and addiction. The high prevalence of mobile phone addiction found in the study was an indication of the potential public health concern posed by mobile phone use among adolescents in urban settings. Hence, it was essential to limit the access to mobile phones for important utility purposes for adolescents.[3]

Thomee et al. purposed that high frequency of cell phone use had a risk of mental health outcomes when they had a 1-year followed-up for young students aged 20-24. They concluded that high cell phone usage was associated with sleep deprivation and symptoms of depression for both men and women. Among the participants Complete questionnaires were 935/1120 (83.5%), of which 619 (66.2%) were females and 316 (33.8%) were males. The mean ± standard deviation of their age was 31.7 ± 11 years. Majority of participants obtained university education 766 (81.9%), while 169 (18.1%) had school education. The PMS of addiction was 50.2 ± 20.3, and MS of depression was 13.6 ± 10.0. A significant positive linear relationship was present between smart phone addiction and depression($y = 39.2 + 0.8\times$; $P < 0.001$).[4]

A descriptive-analytical study was conducted by **Jafari H and et al** to investigate the relationship between addiction to mobile phone and sense of loneliness among medical sciences students. 439 students entered the study by stratified random sampling. The study tool was the mobile phone addiction and SELSA's sense of loneliness questionnaires. The average score of mobile phone addiction in boys and girls was 73.77 ± 11.48 and 74.64 ± 12.28 from 100, respectively. There was no significant difference between them. According to the rating of mobile phone addiction, 17.8% of the students were in the range of moderate dependency and 10.9% of them were in the range of extreme dependency. Also, 71.3% of the students were identified as mobile phone addicts. The average score of sense of loneliness in boys and girls was 43.22 ± 5.16 and 42.82 ± 5.30, out of 105, respectively. There was no significant difference between them. There was a significant and negative correlation between the scores of mobile phone addiction and sense of loneliness.[5]

A Cross-sectional survey study was conducted by **MostafaMH** to assess the impact of smartphone addiction on depression and self-esteem among nursing students. Stratified random sampling technique was used and 320 nursing students participated. Four tools used for data collection: personal data sheet, Hamilton rating scale of depression, smartphone addiction scale and Self-esteem Inventory. Result showed that 95.8% of nursing students reported smartphone addiction, while 32.5% were pseudonormal of depression. Twenty-eight percent of them had self-esteem. The study also revealed a statistically significant positive correlation between smartphone addiction and levels of depression. There was a statistically significant negative correlation between levels of depression and self-esteem.[6]

A descriptive-analytical study was conducted by **Shirzadegan R et al** to identify the relationship between addiction to smart phones and mental health in nursing students of Abadan University of Medical Sciences. 200 nursing students participated. The research instrument consisted of demographic information questionnaire, general health questionnaire and cell phone use questionnaire. Data were analyzed by SPSS software version 17 and Spearman correlation coefficient and independent t-test. The results indicated that the mean of smart phone addiction was similar in both genders, but the mean score of smart phone addiction insingle women (33.32%) was slightly higher than married women (28.48%).According to the classification of mental health scores, 43% had the lowest mental health, 44% had mild mental health and 13% had moderate mental health. In the sample,41% were used in low numbers and 59% were used as ordinary cell phones. With increasing excessive use of smart phone, general health was reduced. There was significant correlation between mental health dimensions and smart phone addiction($P<0.05$). they concluded that given the negative impact of smart phone addiction on general health, this relationship canhave a damaging effect on other aspects of student's life, including quality of life and academic achievement.[7]

A study was conducted by**Patel VA and et al** to assess Smartphone Addiction among Undergraduate Students of Sumandeep Vidyapeeth, Vadodara at the selected departments like nursing department, pharmacy department, physiotherapy department, dental department and MBBS department. The sample size is 200 undergraduate students, who fulfilled the inclusion criteria. Non probability, quota sampling technique was used.The research tool was developed in English. Modified Smartphone addiction scale (Self-structured checklist) was used for the assessment of smartphone addiction among Undergraduate Students. The finding showed that level of smart phone addiction among undergraduate

students was 1.0% strongly addicted, 31.5% moderately addicted, and 61.0% less addicted, 6.5% had No addiction. The association between smart phone addictions and selected socio demographic variables was done by Chi Square formula. There was no significant association between smart phone addiction score and selected demographic variables with 0.05 level of significant except age in years.[8]
Most of the global population, especially college and university students use a Smartphone. Due toits wide range of applications, while beneficial in numerous ways, Smartphone has disadvantages such as areduction in academic performance, psychological addiction.[9]
Recent research shows that smartphone addiction has widespread adverse effects and females are more susceptible for addiction. Unrestricted late-night smartphone use has turned out to a major lifestyle problem these days, and can lead to stress, depression, anxiety.[10]
Nursing is a profession that directly serves people and affects their health. Inappropriate and excessive use of the smartphone can lead to interruptions in the performance of basic nursing duties or a lack of patient care.
As future health professionals who will serve individuals and society, it is important for nursing students to acquire healthy habits in smartphone use and sleep (Osorio-Molina et al., 2021, Ramjan et al., 2021).
To create awareness about smart phone addiction among nursing students & to gather sufficient data in this area the researcher conducted the present study.

Problem statement
Prevalence of smartphone addiction and its relation with the mental wellbeing of nursing students of a selected nursing institution in Kolkata, West Bengal.

The objectives of the study were-
1. To identify the prevalence rate of smart phone addiction among nursing students in a selected nursing institution of Kolkata, West Bengal
2. To assess the mental wellbeing of nursing students using smart phone in a selected nursing institution of Kolkata, West Bengal
3. To find out the relationship between smart phone addiction and mental wellbeing among nursing students

Research Variables: Smart phone addiction & Mental wellbeing
Demographic variables: Age, Present residence, having any sibling, Monthly income of family, acquired % of marks, total duration of screen time per day

Hypothesis:
H_1: There is a significant relationship between smart phone addiction and mental wellbeing among nursing students at 0.05 level of significance

REVIEW OF LITERATURE:
Review of literature involves the systematic identification, location, scrutiny, summary of the written materials that contains information relevant to the phenomena under the study. It is one of the crucial steps in the development of the research project.
The researcher has reviewed the literature under the following heading:
1. Literature related to prevalence of smart phone addiction
2. Literature related to smart phone addiction and mental wellbeing

METHODOLOGY:
Research approach: Non experimental survey research
Research design: Descriptive correlational design
Setting: A selected Nursing Institution, Kolkata
Population: All B. Sc. Nursing or GNM students of nursing institute of Kolkata, West Bengal.
Sample: B. Sc. Nursing students of a selected nursing institute.
Sample size: 119
Sampling technique: Non probability consecutive sampling technique
Sampling criteria:
Inclusion Criteria:

- Students who were available during the data collection period
- Those who were willing to participate in the study
- Students using smart phone and internet facility

Exclusion Criteria:

- Any diagnosed sleep disorder

Data collection instruments:

Sl No.	Type of tool	Name of tool	Variables to be measured	Method of measurement
1.	Self-developed	Personal information	Age, having any sibling, monthly family income, acquired % of marks, total duration of screen time per day	Questionnaire
2.	Standard	Smart phone addiction scale- Short Version	Smart phone addiction	Questionnaire
3.	Self-developed	**Assessment of mental wellbeing** Part A: Bergen insomnia Scale Part B: Patient Health Questionnaire (PHQ-9)	 Sleep Depression	Questionnaire Questionnaire

Description of the tools

Tool 1: Personal information

It was constructed to collect data regarding the age, standard, present residence, having any sibling, monthly income of family, acquired % of marks, total duration of screen time per day

Tool 2: Smart phone addiction scale- Short Version

This standardised tool was chosen by the investigator to assess the prevalence of smart phone addiction after through literature review. This Smart phone addiction scale- Short Version was developed by Min Kown. It is a 6-point Likert scale. In this short version scale, it has total 10 items.

Tool 3: Bergen insomnia Scale

This standardised tool was selected by the investigator for the present study to assess the insomnia after reviewing many literatures. It was developed by Bergen. It has 6 items.

Tool 4: Patient Health Questionnaire (PHQ-9)

The above standardized tool was selected by the investigator to assess mental well-being which identified the presence of any depression among the participants. It has total 9 items in rating scale and maximum score is 27.

Reliability

The reliability of the tool was determined by administering the tool to the students who fulfil the sampling criteria of research study. The result of reliability testing was as following-

Name of tool	Type of reliability test	Result	Interpretation and Remarks
Tool 2: Smart phone addiction scale- Short Version	Internal consistency by using Cronbach Alpha	α=0.71	Acceptable and reliable
Tool 3: Part A: Bergen insomnia Scale Part B: Patient Health Questionnaire (PHQ-9)	Internal consistency by using Cronbach Alpha Internal consistency by using Cronbach Alpha	α=0.79 α=0.80	Acceptable and reliable Good and reliable

Development of final tool

After establishment of validity & reliability the investigator prepared the final draft of the tools.

Steps of data collection:
A written permission was obtained from head of the Institution before conducting the study. Permission was taken from coordinators of each batch of students.
Data were collected through google form after introduction of the investigator and Informed written consent wasobtained at the starting of data collection.

RESULT:
Organization of study findings-
The data were organized & presented under the following sections:
Section 1
This section dealt with sample characteristics which were analysed by frequency & percentage to describe the sample in terms of their personal information.
Section 2
This section identified the prevalence rate of smart phone addiction among nursing students which were analysed by frequency & percentage.
Section 3
This section dealt with the mental wellbeing of nursing students using smart phone which were analysed by frequency & percentage.
Section 4
This section identified the relationship between smart phone addiction and mental wellbeing among nursing students by using correlation coefficient

Section 1
Table 1: Frequency and percentage distribution of participants about demographic characteristics:

N= 119

Variables	Categories	Frequency	Frequency %
Age (in years)	19-23	17	98.32
	24-28	2	1.68
Residence	Home	32	26.89
	Hostel	43	36.13
	Relative's House	6	5.04
	Rent House	38	31.93
Sibling	No	36	30.25
	Yes	83	69.75
Monthly family income(in Rs.)	≥ 20,482	65	54.62
	10,241- 20,481	31	26.05
	7681- 10,240	8	6.72
	5120- 7680	5	4.20
	3072- 5119	7	5.88
	1034- 3071	1	0.84
	≤ 1033	2	1.68

The above table presented the demographic characteristics and family income of 119 participants. Most participants were aged 19 to 23yrs (98.32%) and lived in hostels (36.13%), 31.9% lived in rented houses. A majority had siblings (69.7%), and over half of the participants (54.6%) had a monthly family income of more than Rs.20,482/-.

Table 2: Frequency and percentage distribution of participants according to their Academic performance:

N= 119

Variables	Percentage of marks acquired	Frequency	Frequency %
Acquired Marks	50%-59%	26	21.85
	60%-69%	80	67.23
	70%-79%	11	9.24
	80%-89%	2	1.68

The above findings shows that the majority (67.23%) participants scored between 60% and 69%.

Table 3: Findings related to Smart phone use
N= 119

Variables	Categories	Frequency	Frequency %
Use of own smartphone	Yes	116	97.48
	No	3	2.52
Screentime (in hrs.)	0-5.0	107	89.92
	5.01-10.0	10	8.40
	10.1-15.0	1	0.84
	15.1-20.0	1	0.84

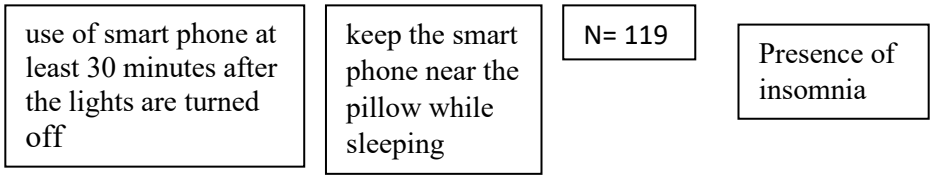
In the above table most participants used their own mobile (97.48%) and 89.9% participants were found to spend 0–5 hours daily on screens, while fewer spent 5–10 hours, and only a small percentage exceeded 10 hours.

Table 4: Findings of prevalence rate of smart phone addiction among nursing students

N= 119

Smart Phone Addiction	Frequency	Frequency %
Not addicted to Smart Phone	81	68.07
Addicted to Smart Phone	38	31.93

In the above table results indicated that 68.07% of the participants (n = 81) were not addicted to smartphones, while 31.93% (n = 38) participants were addicted to smartphone.



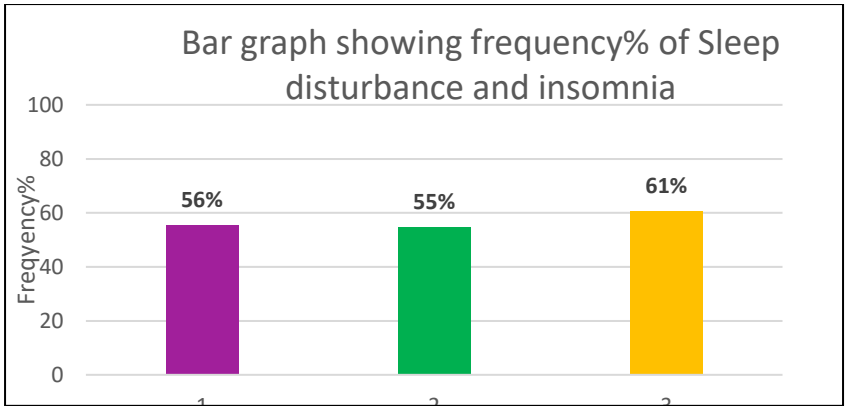


Figure 1: Bar graph showing frequency% of Sleep disturbance and insomnia among participants

The bar graph showed that over half of the students (55.46%, n = 66) admitted to using their smartphone for at least 30 minutes after the lights were turned off, and 54.62% (n = 65) kept their smartphone near their pillow while sleeping.
The prevalence of insomnia among nursing students (N=119) revealed that 60.50% (n = 72) were classified as insomniac, while 39.50% (n = 47) were not. Thus, it indicated that a majority of the nursing students in the sample reported experiencing insomnia.

Table 5: Findings regarding mental well- being of the participants

N=119

Depression	Frequency	Frequency %
No Depression	37	31.09
Mild	35	29.41
Moderate	30	25.21
Moderately Severe	11	9.24
Severe	6	5.04

In the above table the prevalence of depression among the nursing students showed that 31.09% (n = 37) had no depression, while 29.41% (n = 35) experienced mild depression, and 25.21% (n = 30) reported moderate depression. While 9.24% (n = 11) of the nursing students had moderately severe depression, the minority of 5.04% (n = 6) students experienced severe depression.

Table 6: Correlation between smart phone addiction and insomnia

Variables	Frequency	r	t
Smart Phone Addiction and Insomnia	119	0.33	3.6*

*p < 0.05, df= 117

The above table showed that Smartphone addiction had significant and below average correlation with insomnia (p<0.05). Therefore, the null hypothesis was rejected and research hypothesis was accepted.
The correlation was also of positive directionality implying that with an increase in smartphone addiction insomnia also increases.

Table 7: Correlation between smart phone addiction and depression

Variables	N	r	t
Smart Phone Addiction and Depression	119	0.37	5.13*

*p < 0.05, df= 117

The above table showed that Smartphone addiction had significant and below average correlation with depression ($p<0.05$). The correlation was again, of positive directionality implying that with an increase in smartphone addiction depression also increases.

DISCUSSION:

The present study found smart phone addiction 31.93% among nursing students, but in other study(by Machado J, 2023 in Udupi, Manipal) showed that 72.6% nursing students had smart phone addiction.[11] In present study, there was a positive correlation between smartphone addiction and insomnia($r= 0.33$) and depression ($r= 0.37$) & in other studyby **MostafaMH who** assessed the impact of smartphone addiction on depression and self-esteem among nursing students, and found 95.8% of nursing students had smartphone addictionwhile 32.5% were pseudonormal of depression and twenty-eight percent of them had low self-esteem.The study also revealed a statistically significant positive correlation between smartphone addiction and levels of depression. [12]

Implication:

The study has significant implications for nursing research, education, and practice. Here are some of the key implications:

1.Nursing Education:

The study findings suggests that there is a need for provide counselling and support services to help nursing students manage smartphone addiction and related mental health issues so that the students can maintain balance between their life style and smart phone use. The nurse educators should encourage the students to prioritize study and patient care and avoid distractions by using smart phone.

2.Mental health nursing:

The study findings aware that if students use smart phone excessively it affects their mental health. Therefore, counselling services, stress management programs, and mindfulness-based interventions can be applied to reduce the smart phone addiction.

3.Nursing research:

Based on this study findings interventional studies can be done to reduce the smart phone addiction. Further research can find out the long-term effect of smart phone addiction.

CONCLUSION:

Future research can be built upon these findings and further investigation and intervention can be done. If we can promote healthier behaviour among students, it can improve mental wellbeing, and enhance the overall quality of nursing care.Addressing the problems proactively and awareness and precaution can enhance academic outcomes, clinical safety, and student's mental well-being.

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