RESEARCH PAPER

Prevalence of Smartphone Addiction and Its Impact on Sleep Quality and Mental Health Among Young Adults Attending OPD at a Tertiary Care Centre

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Abstract

Background: Smartphone usage has increased dramatically among young adults over the past decade. Excessive smartphone use has been associated with behavioural addiction, sleep disturbances, anxiety, depression, and stress, thereby affecting overall mental wellbeing and daily functioning.

Aim: To assess the prevalence of smartphone addiction and evaluate its impact on sleep quality and mental health among young adults attending the outpatient department (OPD) of a tertiary care centre.

Materials and Methods: A cross-sectional observational study was conducted among 240 young adults aged 18–30 years attending the OPD of a tertiary care hospital. Participants were selected using convenient sampling after obtaining informed consent. Data were collected using a structured questionnaire consisting of socio-demographic details, Smartphone Addiction Scale–Short Version (SAS-SV), Pittsburgh Sleep Quality Index (PSQI), and Depression Anxiety Stress Scale (DASS-21). Statistical analysis was performed using SPSS version 25. Chi-square test and Pearson correlation were used to assess associations. A p-value <0.05 was considered statistically significant.

Results: Among 240 participants, 138 (57.5%) demonstrated smartphone addiction. Poor sleep quality was observed in 149 (62.1%) participants. Anxiety, depression, and stress symptoms were identified in 46.7%, 39.2%, and 34.6% participants respectively. Smartphone addiction showed a significant positive association with poor sleep quality ($p<0.001$), anxiety ($p=0.002$), depression ($p=0.004$), and stress ($p=0.001$). Participants using smartphones for more than 6 hours daily demonstrated significantly higher addiction scores and poorer mental health outcomes.

Conclusion: Smartphone addiction is highly prevalent among young adults attending tertiary care OPD and is significantly associated with poor sleep quality and adverse mental health outcomes. Early screening, awareness programs, and behavioural interventions are recommended to reduce problematic smartphone use and improve psychological wellbeing.

Keywords: Smartphone addiction; Sleep quality; Anxiety; Depression; Stress; Young adults; Mental health

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Introduction

Smartphones have become an integral component of modern life owing to rapid technological advancement and widespread internet accessibility. Their multifunctional capabilities including communication, social networking, online education, gaming, entertainment, and professional activities have resulted in excessive dependence among young adults.[1] Although smartphones offer numerous benefits, excessive usage may negatively affect physical, psychological, and social wellbeing.[2]

Smartphone addiction is considered a behavioural addiction characterized by compulsive smartphone use, inability to control usage, withdrawal symptoms, and interference with daily activities.[3] Young adults are particularly vulnerable because of increased social media engagement, academic pressures, and lifestyle factors.[4] Recent studies have demonstrated that prolonged smartphone usage is associated with sleep disturbances, reduced academic performance, impaired concentration, emotional instability, and poor interpersonal relationships.[5]

Sleep quality is essential for cognitive performance, emotional regulation, and overall health. Excessive exposure to smartphone screens, particularly during nighttime, suppresses melatonin secretion and disrupts circadian rhythm leading to delayed sleep onset and poor sleep quality.[6] Poor sleep quality further contributes to fatigue, impaired memory, mood disturbances, and reduced productivity.[7]

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Mental health problems including anxiety, depression, and stress are increasingly prevalent among young adults worldwide.[8] Excessive smartphone use has been identified as a significant risk factor for psychological distress due to social isolation, cyber dependency, reduced physical activity, and disturbed sleep patterns.[9] Several studies have reported positive correlations between smartphone addiction and symptoms of anxiety and depression among university students and young adults.[10]

Despite growing evidence, limited studies have evaluated smartphone addiction and its psychological impact among young adults attending tertiary healthcare settings in India. Understanding the relationship between smartphone addiction, sleep quality, and mental health may help formulate preventive strategies and awareness programs.

Therefore, the present study was conducted to assess the prevalence of smartphone addiction and evaluate its impact on sleep quality and mental health among young adults attending OPD at a tertiary care centre.

Materials and Methods

A hospital-based cross-sectional observational study was conducted in the outpatient department of a tertiary care centre over a period of six months from August 2025 to January 2026.

The study population included young adults aged between 18 and 30 years attending the OPD during the study period. Participants willing to provide written informed consent were included in the study. Individuals with known psychiatric illness, severe systemic illness, diagnosed sleep disorders, substance dependence, or those on psychotropic medications were excluded from the study.

Sample size was calculated using the formula:

$n = Z^2pq/d^2$

Considering the prevalence of smartphone addiction among young adults as 55%, confidence interval of 95%, and allowable error of 6.5%, the minimum sample size obtained was 228. Considering possible incomplete responses, a final sample size of 240 participants was included.

Convenient sampling technique was used for participant recruitment. After obtaining informed consent, participants were interviewed using a pre-validated structured questionnaire.

The questionnaire consisted of four sections:

1. Socio-demographic details including age, gender, educational status, occupation, duration of smartphone use, and average daily screen time.
2. Smartphone Addiction Scale–Short Version (SAS-SV) for assessment of smartphone addiction.
3. Pittsburgh Sleep Quality Index (PSQI) for evaluation of sleep quality.
4. Depression Anxiety Stress Scale (DASS-21) for assessment of mental health status.

Data collected were entered into Microsoft Excel and analysed using SPSS version 25. Descriptive statistics including frequency, percentage, mean, and standard deviation were calculated. Chi-square test and Pearson correlation test were used to determine associations between smartphone addiction, sleep quality, anxiety, depression, and stress scores. A p-value less than 0.05 was considered statistically significant.

Institutional Ethical Committee approval was obtained prior to commencement of the study.

Results

The present study included 240 participants with a mean age of 23.8 ± 3.4 years. Among them, 132 (55%) were males and 108 (45%) were females.

Out of 240 participants, 138 (57.5%) demonstrated smartphone addiction according to SAS-SV criteria. Majority of addicted participants reported daily smartphone usage exceeding 6 hours.

Poor sleep quality based on PSQI scores was observed among 149 (62.1%) participants. Sleep disturbances including delayed sleep onset, reduced sleep duration, and daytime sleepiness were more common among participants with smartphone addiction.

Anxiety symptoms were identified in 112 (46.7%) participants, depression in 94 (39.2%), and stress in 83 (34.6%) participants according to DASS-21 scores.

A statistically significant association was observed between smartphone addiction and poor sleep quality (χ^2=18.42, p<0.001). Smartphone addiction was also significantly associated with anxiety (p=0.002), depression (p=0.004), and stress (p=0.001).

Participants with daily smartphone use greater than 6 hours demonstrated significantly higher addiction scores and poorer sleep quality compared to those using smartphones for less than 4 hours daily.

Table 1. Distribution of Participants According to Smartphone Addiction

Smartphone Addiction Status	Frequency	Percentage
Addicted	138	57.5%
Non-addicted	102	42.5%

Table 2. Mental Health Status Among Participants

Variable	Frequency	Percentage
Anxiety	112	46.7%
Depression	94	39.2%
Stress	83	34.6%

Table 3. Association Between Smartphone Addiction and Sleep Quality

Sleep Quality	Addicted	Non-addicted	p-value
Poor Sleep	108	41	<0.001
Good Sleep	30	61	

Table 3 demonstrates the association between smartphone addiction and sleep quality among the study participants. Among the 138 participants with smartphone addiction, 108 (78.3%) had poor sleep quality, whereas only 30 (21.7%) had good sleep quality. In contrast, among the 102 non-addicted participants, 41 (40.2%) had poor sleep quality and 61 (59.8%) had good sleep quality.

Statistical analysis using the Chi-square test revealed a statistically highly significant association between smartphone addiction and sleep quality ($\chi^2 = 18.42$, $p < 0.001$). This indicates that participants with smartphone addiction were significantly more likely to experience poor sleep quality compared to non-addicted participants.

The findings suggest that excessive smartphone usage may negatively affect sleep patterns due to prolonged screen exposure, delayed bedtime, sleep interruptions, and reduced sleep duration. Therefore, smartphone addiction appears to be an important contributing factor influencing poor sleep quality among young adults attending the tertiary care OPD.

Discussion

The present study assessed the prevalence of smartphone addiction and its impact on sleep quality and mental health among young adults attending a tertiary care centre. Smartphone addiction was observed in 57.5% of participants, indicating a high prevalence among young adults. Similar findings were reported by Sohn et al.[11] who demonstrated increasing prevalence of problematic smartphone use among adolescents and young adults globally.

Poor sleep quality was identified in 62.1% participants and showed significant association with smartphone addiction. Excessive smartphone usage during bedtime may suppress melatonin release and delay sleep onset, thereby affecting sleep duration and quality.[12] A study by Demirci et al.[13] also reported poorer sleep quality among individuals with excessive smartphone use.

The present study demonstrated significant association between smartphone addiction and anxiety, depression, and stress levels. Similar findings were observed by Elhai et al.[14] who reported that problematic smartphone use was strongly associated with psychological distress and emotional dysregulation. Increased social media exposure, fear of missing out, and reduced social interaction may contribute to mental health disturbances among addicted individuals.[15]

Participants with prolonged daily screen time showed higher addiction scores and poorer mental health outcomes. This finding is consistent with previous studies suggesting that excessive screen exposure negatively influences cognitive functioning and emotional wellbeing.[16]

The study highlights the importance of early identification of smartphone addiction among young adults. Awareness programs regarding healthy digital habits, sleep hygiene, stress management, and psychological counselling may help reduce the burden of smartphone-related behavioural problems.

However, the study had certain limitations including single-centre design, convenient sampling method, and self-reported questionnaires which may introduce reporting bias. Further multicentric longitudinal studies are recommended to establish causal relationships.

Conclusion

Smartphone addiction is highly prevalent among young adults attending tertiary care OPD and significantly affects sleep quality and mental health. Increased smartphone usage is associated with anxiety, depression, stress, and poor sleep quality. Early screening, counselling, and awareness regarding responsible smartphone use are essential to improve psychological wellbeing and quality of life among young adults.

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