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Influence of Smartphone Addiction on Sleep Quality Among Young Adults

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Abstract: *The rapid expansion of smartphone technology has significantly influenced the lifestyle and behavioural patterns of young adults (Twenge, 2019). While smartphones provide numerous benefits in communication, education and entertainment, excessive usage has raised concerns regarding behavioural addiction and its impact on health, particularly sleep quality (Kwon et al., 2013). The present study examines the relationship between smartphone addiction and sleep quality among young adults in Mysore. A quantitative cross-sectional design was adopted with a sample of 120 college students selected through convenience sampling. Statistical techniques including descriptive statistics, Pearson correlation, independent samples t-test and One-Way ANOVA were used for data analysis. The findings revealed a significant positive relationship between smartphone addiction and several sleep-related variables, indicating that higher smartphone addiction is associated with poorer sleep quality (Demirciet al., 2015; Lemolaet al., 2015). However, no significant differences were observed based on gender or domicile. The study highlights the growing impact of smartphone overuse on sleep health among young adults and emphasizes the need for awareness programs on digital well-being and healthy sleep practices.*

Keywords: *Smartphone Addiction, Sleep Quality, Young Adults, Digital Behaviour, Mysore.*

Introduction: The rapid advancement of digital technology has significantly transformed the way individuals communicate, access information and interact with society. Among these technological innovations, smartphones have emerged as one of the most influential devices shaping modern lifestyles. Over the past decade, smartphone ownership has increased dramatically across the world, particularly among young adults and college students (Twenge, 2019). Smartphones provide multiple functionalities including internet access, social networking, online learning, entertainment and instant communication, making them an essential tool in daily life (Pew Research Center, 2021).

Young adults constitute one of the largest user groups of smartphones due to their academic demands, social connectivity needs and exposure to digital environments. University students frequently rely on smartphones for academic research, communication with peers and faculty, accessing educational materials and engaging with social media platforms (Samaha&Hawi, 2016). While smartphones offer numerous advantages in terms of convenience and accessibility, the excessive and uncontrolled use of smartphones has raised growing concerns about behavioural addiction.

Smartphone addiction refers to a pattern of excessive and compulsive smartphone use characterized by difficulty controlling usage, withdrawal symptoms when the device is unavailable, and negative consequences in daily functioning (Kwon *et al*., 2013). Researchers have increasingly identified smartphone addiction as a form of behavioural addiction that shares similarities with other technology-related addictions such as internet addiction and social media addiction (Billieux*et al*., 2015). Excessive smartphone use has been associated with several psychological and behavioural problems including anxiety, stress, reduced academic performance and decreased life satisfaction (Demirci*et al*., 2015; Elhai*et al*., 2017).

One of the major health-related concerns associated with excessive smartphone use is its impact on sleep quality. Sleep plays a vital role in maintaining physical health, cognitive functioning, emotional regulation and overall well-being (Hirshkowitz*et al.,* 2015). Adequate sleep is particularly important for young adults, as it supports learning, memory consolidation and academic performance. Poor sleep quality, on the other hand, has been linked to fatigue, reduced concentration, mood disturbances and decreased academic productivity (Lemola*et al.,* 2015).

Smartphone usage, particularly during night time hours, has been identified as a significant contributor to sleep disturbances. Several mechanisms explain how smartphone use may negatively affect sleep patterns. One important factor is exposure to blue light emitted from smartphone screens, which suppresses the production of melatonin, a hormone responsible for regulating the sleep-wake cycle (Chang *et al*., 2015). Reduced melatonin levels can delay sleep onset and disrupt circadian rhythms. In addition, engaging with stimulating content such as social media, online videos or gaming before bedtime may increase cognitive and emotional arousal, making it more difficult for individuals to fall asleep (Exelmans& Van den Bulck, 2016).

Research across various countries has consistently demonstrated a significant relationship between excessive smartphone use and poor sleep outcomes. Studies have found that individuals with higher levels of smartphone addiction tend to experience delayed sleep onset, shorter sleep duration, increased night time awakenings, and overall poorer sleep quality (Demirci*et al*., 2015; Lemola*et al*., 2015). These sleep disturbances may further contribute to mental health issues such as depression, anxiety, and stress among young adults (Elhai*et al*., 2017).

Young adults and university students are particularly vulnerable to smartphone addiction because of their high engagement with digital media, academic responsibilities, and social networking activities (Samaha&Hawi, 2016). Many students use smartphones late at night for academic work, social communication and entertainment, which can significantly interfere with their sleep patterns. Furthermore, the widespread availability of high-speed internet and affordable smartphones has further increased digital engagement among students worldwide.

In the Indian context, smartphone usage has grown rapidly over the past decade due to increased internet penetration, affordable data services and widespread availability of mobile devices (Statista, 2023). College students in urban and semi-urban regions have particularly high access to smartphones and digital platforms. Cities like Mysore, which host numerous educational institutions and a large student population, provide a suitable setting for examining the relationship between smartphone usage and sleep behaviours among young adults.

Although several international studies have explored the relationship between smartphone addiction and sleep quality, there remains a need for more research in the Indian context, particularly among college students. Moreover, demographic factors such as gender and domicile (rural, urban, and semi-urban) may influence smartphone usage patterns and sleep behaviours. Understanding these factors can help educators and policymakers design effective interventions aimed at promoting healthy digital habits among students.

Therefore, the present study aims to examine the influence of smartphone addiction on sleep quality among young adults in Mysore, while also investigating potential differences based on gender and domicile. By

exploring these relationships, the study seeks to contribute to the growing body of research on digital behaviour and its implications for student health and well-being.

Methodology

Research Design: The present study employed a quantitative cross-sectional research design to explore the relationship between Smartphone Addiction and Sleep Quality among college students.

Sample: The study sample consisted of 120 college students from Mysore selected through convenience sampling. The demographic distribution of the participants is as follows:

- Females: 64 (53.3%)
- Males: 56 (46.7%)

In terms of domicile distribution:

- Urban: 62 students (51.7%)
- Rural: 34 students (28.3%)
- Semi-urban: 24 students (20.0%)

Among females, the majority (54.7%) belonged to urban areas, while 23.4% were from rural backgrounds and 21.9% from semi-urban areas. Among males, 48.2% were urban residents, while a relatively higher proportion (33.9%) came from rural areas.This distribution indicates a predominance of urban students in the sample, which may reflect the concentration of educational institutions in urban areas.

Instruments: Two standardized instruments were used in the present study to measure the major variables: Smartphone Addiction and Sleep Quality.

1. **Smartphone Addiction Scale – Short Version (SAS-SV):** Smartphone addiction was measured using the Smartphone Addiction Scale – Short Version (SAS-SV) developed by Min Kwon and colleagues in 2013. The SAS-SV is a widely used standardized tool designed to assess the level of smartphone dependency among adolescents and young adults.The scale consists of 10 items that measuresbehavioural symptoms associated with smartphone addiction. It includes daily-life disturbance, withdrawal, tolerance and cyberspace-oriented relationships. Participants are required to indicate their level of agreement with each statement using a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).

Higher scores on the scale indicate a greater level of smartphone addiction. The SAS-SV has demonstrated good reliability and validity across different populations. In the original study, the scale showed high internal consistency with a Cronbach's alpha of .91.The SAS-SV has been widely used in studies examining problematic smartphone use among university students and has been found to be an effective measure for assessing behavioural addiction related to smartphone use.

2. **Pittsburgh Sleep Quality Index (PSQI):** Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) developed by Daniel J. Buysse and colleagues in 1989. The PSQI is one of the most widely used instruments for measuring subjective sleep quality and sleep disturbances.The PSQI consists of 19 self-rated items, which are grouped into seven components like Subjective sleep quality, Sleep latency, Sleep duration, Habitual sleep efficiency, Sleep disturbances, Use of sleep medication and Daytime dysfunction. Each component is scored on a 0 to 3 scale and the scores are summed to obtain a global PSQI score ranging from 0 to 21. Higher scores indicate poorer sleep quality.

Discussion

Statistical Analysis: Data analysis was conducted using SPSS. The statistical techniques like descriptive statistics, Pearson product-moment correlation, Independent sample t-test and One-way ANOVA were used to interpret the results.

Demographic Characteristics

Domicile- Gender Cross Tabulation					
			Gender		Total
			Female	Male	
Domicile	Rural	Count	15	19	34
		% within gender	23.4%	33.9%	28.3%
	Urban	Count	35	27	62
		% within gender	54.7%	48.2%	51.7%
	Semi-urban	Count	14	10	24
		% within gender	21.9%	17.9%	20.0%
Total		Count	64	56	120
		% within gender	100.0%	100.0%	100.0%

The cross-tabulation analysis revealed that urban students constituted the largest group (51.7%), followed by rural students (28.3%) and semi-urban students (20.0%). Among female participants, more than half belonged to urban areas, whereas male participants showed a relatively higher representation from rural areas.This pattern reflects broader trends in higher education accessibility, where urban students are more likely to enrol in colleges due to proximity and infrastructure.

Relationship between Smartphone Addiction and Sleep Quality

Correlations		
		Smartphone Addiction
C1	Pearson Correlation	.331
	Sig. (2-tailed)	.000
	N	120
C2	Pearson Correlation	.290
	Sig. (2-tailed)	.001
	N	120
C3	Pearson Correlation	.058
	Sig. (2-tailed)	.527
	N	120
C4	Pearson Correlation	.295
	Sig. (2-tailed)	.001
	N	120

C5	Pearson Correlation	.259
	Sig. (2-tailed)	.004
	N	120
C6	Pearson Correlation	-.014
	Sig. (2-tailed)	.881
	N	120
C7	Pearson Correlation	.152
	Sig. (2-tailed)	.098
	N	120
Total_Score	Pearson Correlation	.320
	Sig. (2-tailed)	.000
	N	120

Pearson correlation analysis was conducted to examine the association between smartphone addiction and sleep-related variables. A Significant positive correlation was found between smartphone addiction and several sleep-related indicators: C1 ($r = .331$, $p < .001$), C2 ($r = .290$, $p = .001$), C4 ($r = .295$, $p = .001$), C5 ($r = .259$, $p = .004$) and total sleep quality score ($r = .320$, $p < .001$). These results indicate that higher levels of smartphone addiction are associated with poorer sleep outcomes.

The significant relationship between smartphone addiction and the overall sleep quality score suggests that excessive smartphone usage may negatively affect sleep patterns among young adults.However, certain variables did not show significant relationships with smartphone addiction. Variables like C3 ($r = .058$, $p = .527$), C6 ($r = -.014$, $p = .881$) and C7 ($r = .152$, $p = .098$).This suggests that smartphone addiction does not uniformly influence all dimensions of sleep disturbance and other factors may also contribute to sleep problems among students.

These findings are consistent with previous studies that indicate smartphone overuse disrupts sleep patterns due to prolonged screen exposure, late-night usage, and increased cognitive stimulation.

Gender Differences in Smartphone Addiction and Sleep Quality

T Test:

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Smartphone Addiction	Male	56	31.68	9.956	1.330
	Female	64	32.50	12.259	1.532
Total Score	Male	56	6.89	3.808	.509
	Female	64	7.64	4.606	.576

Independent Samples Test				
	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Smartphone Addiction	-.399	118	.690	-.821
Total score	-.961	118	.339	-.748

Independent samples t-tests were conducted to determine whether smartphone addiction and sleep quality differed between male and female participants.The results indicated no significant gender differences in smartphone addiction scores:t(118) = −0.399, p = .690. Although female participants reported slightly higher mean scores (M = 32.50) compared to males (M = 31.68), the difference was not statistically significant.Similarly, sleep quality scores did not differ significantly between genders:t(118) = −0.961, p = .339. Females reported marginally higher sleep disturbance scores (M = 7.64) compared to males (M = 6.89), but the difference was not statistically significant.These findings suggest that smartphone addiction and sleep-related problems affect both male and female students similarly.

Differences Based on Domicile

Descriptives					
		N	Mean	Std. Deviation	Std. Error
Smartphone Addiction	Rural	34	33.44	11.696	2.006
	urban	62	31.60	11.797	1.498
	semi-urban	24	31.58	8.978	1.833
	Total	120	32.12	11.205	1.023
Total Score	Rural	34	7.38	4.321	.741
	urban	62	7.32	4.479	.569
	semi-urban	24	7.08	3.670	.749
	Total	120	7.29	4.251	.388

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Smartphone Addiction	Between Groups	83.232	2	41.616	.328	.721
	Within Groups	14857.135	117	126.984		
	Total	14940.367	119			
Total Score	Between Groups	1.381	2	.690	.038	.963
	Within Groups	2149.411	117	18.371		
	Total	2150.792	119			

A one-way ANOVA was conducted to examine whether smartphone addiction and sleep quality differed across rural, urban, and semi-urban students.The results revealed no statistically significant differences in smartphone addiction across domicile groups- F(2,117) = 0.328, p = .721. Similarly, sleep quality scores did

not differ significantly across domicile categories- $F(2,117) = 0.038$, $p = .963$. Although rural students reported slightly higher mean scores for smartphone addiction and sleep disturbances, the differences were not statistically significant.

This suggests that smartphone addiction is becoming a widespread phenomenon across geographical backgrounds, likely due to increased internet accessibility and digital integration in daily life.

Conclusion: The present study examined the relationship between smartphone addiction and sleep quality among young adults in Mysore.The findings revealed a significant relationship between smartphone addiction and several sleep-related variables, indicating that excessive smartphone usage is associated with poorer sleep quality. These results highlight the potential impact of digital behaviour on the health and well-being of college students.

However, the study found no significant differences based on gender or domicile, suggesting that smartphone addiction and sleep disturbances are prevalent across demographic groups.The findings emphasize the need for greater awareness about healthy smartphone usage and sleep hygiene among students. Educational institutions can play a vital role by organizing digital well-being workshops, promoting balanced technology use, and encouraging students to adopt healthier sleep habits.

Future research may explore additional psychological variables such as stress, anxiety, academic pressure and social media usage patterns to gain a deeper understanding of the factors influencing smartphone addiction and sleep quality among young adults.

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