



Scrolls and Restless Nights: A Thematic Analysis of Smartphone Usage and Sleep Quality among College Students

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Abstract: The ubiquitous nature of smartphones has brought profound changes to everyday life, providing perpetual connectivity, entertainment, and access to information. Nevertheless, there is growing evidence that excessive or late-night use of smartphone can adversely affect sleep quality. Exposure to blue light, cognitive stimulation, and sleep pattern disruption are all classically linked to poor sleep quality. This research examines the interaction between patterns of smart phone use and sleep quality with a view to gaining a deeper understanding, of how contemporary digital behaviours affect general well-being. This qualitative study explores how smartphone usage impacts the sleep quality of college students. Using semi-structured interviews guided by ten open-ended questions, we conducted a thematic analysis to uncover patterns in behaviours, attitudes, and perceived consequences. The findings reveal three major themes, including, Technological Dependency and Routine, Cognitive and Emotional Stimulation, and Conflict between Awareness and Action. These insights highlight the complexities of digital habits and suggest a need for targeted interventions to promote healthier sleep hygiene.

Keywords: *Bed Time Smart Phone Usage, Sleep Quality, College Students, Thematic Analysis, Mental Wellbeing.*

1. Introduction

Smart Phone Usage

In the last two decades, smartphones have become ubiquitous tools of modern life, transforming the way individuals communicate, access information, and engage with the world. As of recent global estimates, over 6.8 billion people own a smartphone, making it one of the most rapidly adopted technologies in human history. Originally developed as communication devices, smartphones have evolved into multifunctional platforms that integrate social networking, entertainment, academic tools, and productivity applications. While their widespread adoption offers numerous advantages including increased connectivity, learning opportunities, and convenience it has also raised growing concerns about potential negative consequences associated with excessive or inappropriate use.

A growing body of research has linked high levels of smartphone use to various mental and physical health outcomes, such as increased stress, anxiety, sleep disturbances, and reduced academic performance, particularly among adolescents and university students. These populations are especially vulnerable due to their high levels of engagement with digital technologies and the developmental importance of maintaining healthy sleep and mental health patterns. Furthermore, the addictive nature of smartphones characterized by compulsive checking, fear of missing out (FOMO), and nomophobia (fear of being without a mobile device) has led researchers to explore its impact on well-being and daily functioning.

Smartphones are ubiquitous devices with the ability to process more data than other phones; they come with a lot of features like games, use of the Internet and social networks, messaging, videos, multimedia, and navigation, besides their use for communication. Use of the Internet is growing ever so easier with advancement in mobile technology and the use of smartphones. In one of the studies, it was posited that there are more than 1.5 billion smartphone people across the globe, and it has been approximated that over 1 billion smartphones will be sold during 2016 (International Data Corporation, 2013).

Sleep Quality

College students face a higher risk of sleep problems, with insomnia rates at 18.5% compared to 7.4% in the general population (Almojali, 2017). A cross-national survey found 10.4% of undergraduates experienced severe or extreme nocturnal sleep issues in the past month, ranging from 3.0% in Thailand to 32.9% in Indonesia (Shahsavari, 2017).

A diversity of factors have been reported to be associated with sleep problems in university students, such as smoking, academic failure, depression, anxiety, and stress. Lee (2017) asserts that in recent years, because of the rapid development of communications and information technologies, smartphone use has been very popular in young people, particularly university students. While smartphone, use made our lives more convenient, it also has

negative effects on the health of users. For instance, in the international literature, sleep problems in university students and adolescents have been significantly associated with mobile phone addiction (MPA) and various measures of problematic smartphone use, including long duration of smartphone usage, late night smartphone use, bedtime smartphone use, and excessive use of a smartphone (Gladius, 2018).

2. Review of Literature

Mohd Isa (2025) researched on the study titled *“Investigation on the association between college students’ smartphone-related behaviours and sleep quality during COVID-19”*. The study explored the relationship between smartphone usage behaviours and sleep quality among college students during the COVID-19 pandemic. The researchers found that specific behaviours, such as not turning off smartphones during sleep, playing mobile games before bed, and engaging with social media apps at night, were significantly associated with increased risks of sleep disturbances. The findings highlighted the impact of digital media habits on students’ well-being during periods of heightened stress and isolation.

Huang, (2020) researched on study title *“Smartphone use and sleep quality in Chinese college students: A preliminary study”*. The preliminary study investigated the relationship between smartphone usage patterns and sleep quality among Chinese college students. The researchers found that excessive smartphone use and symptoms of mobile phone addiction were significantly linked to poorer sleep quality. The findings suggests a potential negative impact of problematic smartphone behaviours on students’ sleep health, emphasizing the need for awareness and possible interventions.

Durar (2020) in the research paper titled *“Smartphone usage, sleep quality and depression in university students”* examined the associations between smartphone usage, sleep quality, and depressive symptoms among university students. The findings indicated that excessive smartphone use is significantly correlated with poor sleep quality and heightened levels of depression. The study highlights the importance of monitoring digital device use to protect mental health and promote better sleep hygiene in student populations.

Khairina (2023) researched on paper titled *“Increasing smartphone usage correlates with worsening sleep quality among students”*. The study explored the relationship between smartphone use and sleep quality in medical students. The authors reported a moderate positive correlation, indicating that as smartphone usage increases, sleep quality tends to decline. These findings suggests that heightened smartphone engagement may negatively impact sleep health in academically demanding student populations.

Wang (2019) researched on title “*Relationship of sleep quality, smartphone dependence, and health-related behaviors in female junior college students*”. The study investigated the interrelations among smartphone dependence, sleep quality, and health-related behaviours among female junior college students. The findings indicates that higher levels of smartphone dependence are associated with poorer sleep quality. Additionally, the study suggests that enhancing health-related behaviours may contribute to improvements in sleep outcomes for this population.

Ruan (2023) researched on paper titled “*Effect of physical exercise on sleep quality in college students: Mediating role of smartphone use*”. The study examined how physical exercise influences sleep quality among college students and explored the mediating role of smartphone use. The results indicated that regular physical activity is associated with improved sleep quality, and that reduced smartphone use partially mediates this relationship. These findings highlight the importance of both active lifestyles and mindful smartphone habits in promoting better sleep.

Ahad (2018) researched on paper titled “*Effect of smartphone usage on quality of sleep in medical students*”. The study explored the impact of smartphone usage on sleep quality among medical students. The findings revealed a high prevalence of smartphone addiction in this population, which is significantly associated with poor sleep quality. The study emphasized the need for awareness and interventions targeting smartphone overuse to improve sleep health in medical students.

3. Methodology

3.1 Objectives of the Study

- a) To understand college students’ perceptions and experiences related to bedtime smartphone use.
- b) To analyse coping mechanisms or strategies students employ to manage smartphone use before bed.
- c) To identify thematic links between smartphone dependency and academic, social, or mental well-being related to sleep disruption.

3.2 Research Design

A qualitative research design was employed in this study, utilizing semi-structured interviews with 10 college students to enable an in-depth exploration of the topic

3.3 Participants

Ten undergraduate students from diverse disciplines participated. Ages ranged from 18 to 24. Sampling was purposive, ensuring a mix of genders, academic backgrounds, and sleep habits.

3.4 Data Collection

Each participant was asked the following ten open-ended questions in a one-on-one interview format:

1. How do you typically use your smartphone before bed?
2. How long do you usually spend on your phone before going to sleep?
3. What apps or activities do you engage with most at night?
4. How do you feel your smartphone use affects your ability to fall asleep?
5. Do you ever find yourself staying up later than intended because of your phone?
6. What emotions do you experience when using your phone at night?
7. Are you aware of any negative impacts your phone may have on your sleep? If so, how do you respond?
8. Have you tried to reduce your night-time phone use? Why or why not?
9. How do you think your sleep would change if you stopped using your phone at night?
10. What does a “good night’s sleep” mean to you?

3.5 Data Analysis

Interviews were transcribed and analysed using Braun and Clarke’s six-phase thematic analysis. Initial coding was done manually, followed by clustering codes into broader themes.

4. Findings and Thematic Analysis

Three key themes emerged from the data,

Theme 1: Technological Dependency and Routine

Participants revealed that smartphone use had become a ritual default night-time, often replacing more traditional bedtime routines.

- “It’s just what I do. I check Instagram, then TikTok... it’s like brushing my teeth.”
- “Even when I’m tired, I feel like I have to scroll a bit before I sleep.”

The phone served as a transitional tool between wakefulness and rest, often prolonging the transition due to passive engagement.

Theme 2: Cognitive and Emotional Stimulation

Night-time smartphone use provided mental stimulation, which many acknowledged as a barrier to sleep.

- “Sometimes I read something stressful or exciting and it keeps me wired.”

- “It’s like I get this second wind after being on my phone.”

Notifications, social media, and messaging created emotional arousal—both positive (amusement, connection) and negative (anxiety, FOMO).

Theme 3: Conflict between Awareness and Action

Despite awareness of the impact on sleep, most students continued their habits, citing stress relief, boredom, or habit.

- “I know it’s not great for me, but I can’t stop. It’s part of my wind-down.”
- “I’ve tried those screen timers. I just ignore them.”

This cognitive dissonance revealed an intention-behaviour gap, suggesting the need for deeper behavioural interventions beyond awareness campaigns.

4. Detailed coding Frame work

Table 1: *Determining the Codebook: Initial Codes and Definitions given by the participants.*

S. No	Code	Definition
1	Routine Usage	Habitual or automatic smartphone use before sleep
2	Time Displacement	Staying awake longer than planned due to phone use
3	App Engagement	Specific apps or activities used (e.g., TikTok, Instagram, YouTube)
4	Sleep Delay	Perceived delay in falling asleep due to screen exposure or cognitive arousal
5	Mind Stimulation	Thoughts or mental engagement stimulated by content
6	Emotional Arousal	Feelings triggered by smartphone content (e.g., anxiety, excitement)
7	Awareness of Harm	Recognition that smartphone use negatively affects sleep
8	Behavioural Resistance	Attempts to resist use or implement limits (e.g., timers, Do Not Disturb)
9	Ineffective Coping	Using phone as a coping mechanism for stress, boredom, or loneliness
10	Desire for Change	Expressed intention to improve sleep by reducing phone use

Table 2: *Determining Theme mapping for the responses provided by the participants.*

Theme 1:	Technological Dependency and Routine	Codes Included Routine Usage App Engagement Time Displacement	Illustrative Quotes: “It’s the last thing I do before I sleep—every single night.” “I start with checking messages, then it turns into scrolling for an hour.”	Interpretation: Smartphone use has become an ingrained part of bedtime behaviour, regardless of its impact on rest.
Theme 2:	Cognitive and Emotional Stimulation	Codes Included: Sleep Delay Mind Stimulation Emotional Arousal Ineffective Coping	Illustrative Quotes: “Sometimes I see something upsetting, and then I can’t sleep.” “Watching videos distracts me from my overthinking, but I stay up too late.”	Interpretation: Phones keep users mentally and emotionally activated, preventing natural wind-down for sleep. The phone acts as both a stimulant and a sedative.
Theme 3:	Conflict Between Awareness and Action	Codes Included: Awareness of Harm Behavioural Resistance Desire for Change	Illustrative Quotes: “I use blue light filters, but I still stay up just as late.” “I know it’s bad for me, but I just scroll anyway it’s like I can’t stop.”	Interpretation: There is a tension between what students know and what they do. Despite efforts to change, many find themselves stuck in habitual pattern.

Table 3: *Frequency of responses provided by the participants.*

Code	Frequency (Across 10 Interviews)
Routine Usage	10
Time Displacement	9
Sleep Delay	8
Awareness of Harm	8
Ineffective Coping	7
Emotional Arousal	7
Behavioural Resistance	6
App Engagement	6
Mind Stimulation	5
Desire for Change	5

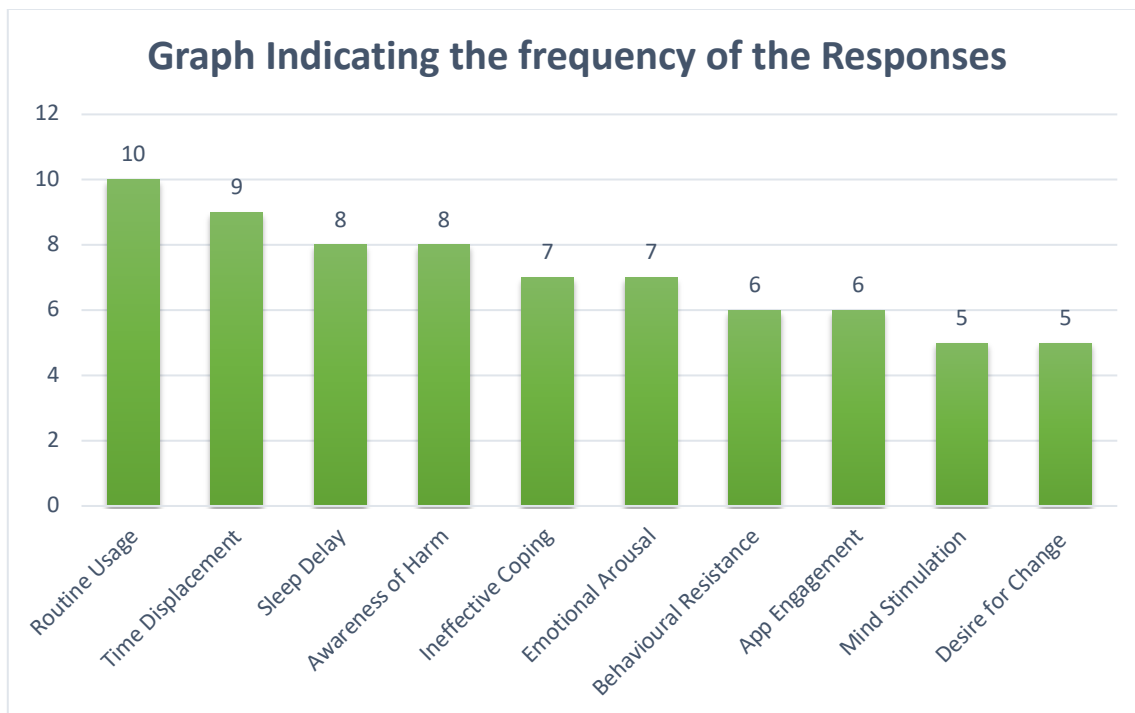
**Figure 4.1** *indicating the frequency of responses for the 10 open-ended questions.*

Table 4: *Detailed coding frame work of the responses provided by the participants*

Code	Definition	Theme	Illustrative Quote
Routine Usage	Habitual or automatic use of a smartphone before sleeping	Technological Dependency and Routine	“It’s the last thing I do before I sleep—every single night.”
App Engagement	Engagement with specific apps or platforms (e.g., TikTok, Instagram, YouTube)	Technological Dependency and Routine	“I always check TikTok. Just 10 minutes, but it becomes an hour.”
Time Displacement	Staying up later than intended due to phone use	Technological Dependency and Routine	“I say I’ll sleep at 11, but suddenly it’s 1 a.m. and I’m still on my phone.”
Sleep Delay	Difficulty falling asleep due to phone use	Cognitive and Emotional Stimulation	“It takes me longer to fall asleep if I’m on my phone before bed.”
Mind Stimulation	Mental engagement triggered by phone content	Cognitive and Emotional Stimulation	“Sometimes I read a thread and can’t stop thinking about it.”
Emotional Arousal	Emotional response to digital content, both positive and negative	Cognitive and Emotional Stimulation	“I’ll see something funny or upsetting and then I’m too alert to sleep.”
Ineffective Coping	Using phone to deal with stress, boredom, or loneliness	Cognitive and Emotional Stimulation	“I use my phone to distract myself from stress, even if it keeps me up.”
Awareness of Harm	Recognition that smartphone use affects sleep quality	Conflict Between Awareness and Action	“I know it messes with my sleep, but I still do it.”

Behavioural Resistance	Attempts to limit use (e.g., timers, DND mode)	Conflict Between Awareness and Action	“I’ve tried screen timers, but I just ignore them or turn them off.”
Desire for Change	Expressed wish or intention to reduce night-time smartphone use	Conflict Between Awareness and Action	“I want to stop using it before bed, but I don’t know what else to do.”

5. Discussion

The themes highlights a paradox; while students value good sleep, their behaviours reflect a preference for immediate gratification and distraction. The phone is both a stress reliever and a stressor. This aligns with previous literature suggesting that screen time displaces sleep and increases arousal, but our data adds nuance by showing internal conflict and the normalization of tech use as a coping mechanism. College students’ sleep is deeply intertwined with their digital routines. Interventions should focus not only on reducing screen time but also on replacing night-time phone use with more restful rituals. Future research could explore behavioural nudges or peer accountability models to help students align their intentions with actions.

6. Findings (Brief Summary)

The thematic analysis of interviews with college students revealed three key themes:

1. **Technological Dependency and Routine:** Most participants described using their smartphones as a habitual part of their bedtime routine. Social media apps and video platforms were the most commonly used, often leading to prolonged screen time and unintended delays in going to sleep.
2. **Cognitive and Emotional Stimulation:** Students reported that engaging with content on their phones before bed stimulated their minds and emotions, making it harder to wind down. Some used their phones to cope with stress or loneliness, while others noted that content—whether exciting, stressful, or entertaining—kept them alert longer than intended.
3. **Conflict between Awareness and Action:** although many participants were aware of the negative effects of smartphone use on their sleep, few were able to change their

habits. Attempts to self-regulate (e.g., using timers or turning on night mode) were often ineffective, indicating a gap between intention and behaviour.

7. Conclusion

This study highlights a persistent and complex relationship between smartphone use and sleep quality among college students. While students are generally aware of the adverse effects of night time phone use, psychological dependency and ingrained habits often override their intentions to reduce screen time. To address this issue, interventions should go beyond awareness campaigns and focus on behavioural strategies, alternative coping mechanisms, and promoting healthier digital routines at night.

8. Limitations of the Study

This study has several limitations that should be considered when interpreting the findings:

1. ***Small and Homogeneous Sample***: The study involved only ten college students from a single institution, which limits the generalizability of the findings. Experiences may differ across regions, cultures, and academic settings.
2. ***Self-Reported Data***: Data were collected through self-report interviews, which may be influenced by recall bias or social desirability. Participants might underreport or overstate their smartphone usage or sleep disturbances.
3. ***Lack of Objective Sleep Measures***: The study did not incorporate physiological or behavioural sleep data.
4. ***Cross-Sectional Design***: Interviews were conducted at a single point in time. This limits insights into how smartphone use and sleep quality may fluctuate over time or during high-stress periods like exams.

9. Suggestions for Future Research

1. ***Expand the Sample Size and Diversity***: Future studies should include a larger, more diverse participant pool across multiple universities, age groups, and cultural backgrounds to enhance the generalizability of results.
2. ***Use Mixed Methods***: Combining qualitative interviews with quantitative methods (e.g., sleep tracking apps, screen-time logs, or standardized sleep questionnaires) would allow for richer, more triangulated findings.

3. **Longitudinal Studies:** Long-term studies could track changes in smartphone use and sleep habits over time, especially during transitions such as the start of a semester, exam periods, or the shift to remote learning.
4. **Intervention-Based Research:** Future work could explore the effectiveness of interventions, such as mindfulness apps, digital detox programs, or sleep hygiene education, in helping students reduce harmful night-time phone use.
5. **Explore Psychological Correlates:** Investigating how factors like anxiety, loneliness, or academic stress contribute to late-night phone use may help tailor more targeted mental health and wellness strategies.

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