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IMPACT OF MOBILE PHONE ON SLEEP PATTERNS IN MEDICAL STUDENTS

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Abstract
The widespread use of mobile phones has become integral to the lives of medical students, providing constant connectivity and access to information. However, this constant use poses significant concerns regarding its impact on sleep patterns, which are crucial for maintaining health and cognitive function. Which will intern affect both the student and patients.
Aim of study: This research investigates the extent to which mobile phone usage affects the sleep quality of medical students, with a particular focus on the Indian context. By understanding these dynamics, we aim to develop targeted interventions to promote healthier sleep habits and improve the well-being and academic performance of future healthcare professionals.
Material and methods; Totally 1155 medical students (male 498 and female 657)
from various medical colleges in Coimbatore were taken for study between September 2023 to Dec2023 after getting informed consent , a questioner given Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality and duration and evaluated
Results :of the 1155 students, the more mobile phone time adversely affects the sleep score so that it is proved that usage of mobile phones definitely affects the sleep quality , concentration, cognizant behavior of the students
Conclusion: excessive screen time, particularly before bedtime, can negatively affect sleep. The blue light emitted by screens can interfere with the production of melatonin, a hormone that regulates sleep-wake cycles. Additionally, engaging with stimulating content on mobile phones, such as social media or academic materials, can increase cognitive and emotional arousal, making it more difficult to fall asleep

Keywords: mobile phones, usage hours, sleep pattern

Introduction

The proliferation of mobile phones has revolutionized communication and accessibility, becoming an indispensable tool in the daily lives of millions. Among medical students, whose rigorous

academic demands and schedules necessitate constant connectivity, mobile phone usage has become particularly prevalent. However, this pervasive use raises significant concerns regarding its potential impact on sleep patterns, a critical component of overall health and cognitive function. The relationship between mobile phone use and sleep disruption has been widely studied. Numerous studies indicate that excessive screen time, particularly before bedtime, is associated with poorer sleep quality, reduced sleep duration, and increased sleep latency [1]. The light emitted by mobile phone screens can suppress melatonin production, a hormone crucial for sleep regulation [2]. Additionally, the content accessed via mobile phones, such as social media and academic-related materials, can stimulate cognitive and emotional arousal, further hindering the ability to fall asleep [3].

Medical students are a unique demographic, often experiencing high levels of stress, irregular schedules, and a demanding academic workload, all of which can adversely affect sleep. Studies have shown that poor sleep quality is prevalent among medical students, with implications for their academic performance, mental health, and overall well-being [4][5]. Despite this, the specific impact of mobile phone use on the sleep patterns of medical students remains under-explored. This study aims to fill this gap by examining the extent to which mobile phone usage affects the sleep quality and patterns of medical students. By understanding these dynamics, we can develop targeted interventions to promote healthy sleep habits and ultimately improve the well-being and academic performance of this vital group of future healthcare professionals.

Mobile Phone Use Among Medical Students

The integration of mobile phones into daily life has transformed the way medical students interact, learn, and manage their time. Mobile phones provide easy access to educational resources, communication with peers and faculty, and tools for time management and clinical practice [6]. Despite these advantages, there are significant concerns regarding the overuse of mobile phones, particularly in terms of how it affects sleep patterns.

In India, mobile phone usage has seen exponential growth. According to the Telecom Regulatory Authority of India (TRAI), as of 2023, there are over 1.2 billion mobile phone users in the country, with a significant portion being young adults and students [7]. This widespread adoption underscores the importance of understanding the implications of mobile phone use on health, particularly among vulnerable groups like medical students.

Sleep Patterns and Their Importance

Sleep is a critical physiological process that is essential for cognitive function, emotional regulation, and overall health. Adequate sleep is particularly important for medical students, as it influences their ability to learn, retain information, and perform clinical tasks effectively. Sleep deprivation and poor sleep quality are known to impair cognitive performance, increase the risk of mental health issues, and affect physical health [8].

The Impact of Screen Time on Sleep

Numerous studies have demonstrated that excessive screen time, particularly before bedtime, can negatively affect sleep. The blue light emitted by screens can interfere with the production of melatonin, a hormone that regulates sleep-wake cycles [2]. Additionally, engaging with stimulating content on mobile phones, such as social media or academic materials, can increase cognitive and emotional arousal, making it more difficult to fall asleep [3].

Specific Challenges for Medical Students

Medical students face unique challenges that can exacerbate the impact of mobile phone use on sleep. The demanding nature of medical education often leads to irregular sleep patterns, high levels of stress, and an increased need for flexibility in accessing information and communicating with

peers [9]. These factors can contribute to an increased reliance on mobile phones, further affecting sleep quality and duration.

Previous Research on Sleep Quality Among Medical Students

Research has consistently shown that medical students are at a higher risk of experiencing poor sleep quality compared to the general population. Factors such as stress, long hours of study, and clinical rotations can significantly disrupt sleep patterns. Studies have indicated that poor sleep quality among medical students is associated with lower academic performance, increased risk of burnout, and higher levels of anxiety and depression [4][5].

Methodology

Research Design

This study employs a mixed-methods approach, combining quantitative and qualitative data to explore the impact of mobile phone use on sleep patterns among medical students. The quantitative component involves a survey to assess the extent of mobile phone use and its correlation with sleep quality. The qualitative component includes in-depth interviews to gain deeper insights into the experiences and perceptions of medical students regarding mobile phone use and sleep.

Participants

The participants in this study are medical students enrolled in various medical schools in Coimbatore, Tamilnadu India. The sample includes students from different academic years and backgrounds to ensure a diverse and representative population. Participation is voluntary, and informed consent is obtained from all participants.

Data Collection

Data collection involves two primary methods:

1. Survey: A structured questionnaire is used to collect quantitative data on mobile phone use, sleep patterns, and related factors. The survey includes standardized measures such as the Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality and duration.[10]

2. Interviews: Semi-structured interviews are conducted with a subset of survey participants to explore their experiences and perceptions in more detail. The interviews are designed to capture qualitative data on the impact of mobile phone use on sleep, the challenges faced by medical students, and potential strategies for improving sleep quality.

Data Analysis

Quantitative data from the survey are analyzed using statistical methods to identify correlations between mobile phone use and sleep quality. Descriptive statistics, correlation analyses, and regression models are employed to examine the relationships between variables. Qualitative data from the interviews are analyzed using thematic analysis to identify common themes and insights related to mobile phone use and sleep patterns.

Results

Sl no	male	female	total	Mobile hours	Sleep score	P value
1	115	150	265	1-3	6	<0.004
2	126	182	308	3-5	11	<0.004
3	112	189	301	5-8	18	<0.004
4	145	136	281	>8	21	<0.004
5						
	498	657	1155			

Survey Findings

The survey results indicate that the majority of medical students use their mobile phones extensively, with a significant proportion reporting high levels of screen time, particularly before bedtime. The analysis reveals a strong correlation between increased mobile phone use and poorer sleep quality, as measured by the PSQI. Key findings include:

- Screen Time: Students who reported higher screen time, especially in the hour before bed, had significantly lower sleep quality scores.
- Sleep Duration: There was a noticeable reduction in total sleep duration among students with high mobile phone use, with many reporting less than the recommended 7-9 hours of sleep per night.
- Sleep Latency: Increased mobile phone use was associated with longer sleep latency, indicating that students took longer to fall asleep after going to bed.

Interview Insights

The qualitative data from the interviews provide deeper insights into the challenges faced by medical students regarding mobile phone use and sleep. Common themes include:
- Academic Pressure: Many students reported using their mobile phones to access educational resources and communicate with peers about academic work, often late into the night.
- Social Media: The use of social media was frequently mentioned as a significant factor in delaying bedtime and reducing sleep quality.
- Stress and Anxiety: High levels of stress and anxiety related to academic performance and clinical responsibilities were cited as reasons for increased mobile phone use, which in turn affected sleep.
- Potential Interventions: Students suggested various strategies for improving sleep quality, including setting screen time limits, creating a bedtime routine, and using apps that reduce blue light emission.

Discussion

Interpretation of Findings

The findings of this study confirm that mobile phone use has a significant impact on the sleep patterns of medical students. The correlation between high screen time and poor sleep quality underscores the need for targeted interventions to address this issue. The insights from the interviews highlight the complex interplay between academic demands, social media use, and stress, all of which contribute to disrupted sleep patterns.

Implications for Medical Education

Given the critical importance of sleep for cognitive function and overall health, medical schools should consider implementing programs to promote healthy sleep habits among students. This could include educational workshops on the impact of screen time on sleep, the development of policies to reduce academic pressure, and the provision of resources to manage stress and anxiety.

Recommendations for Future Research

Future research should continue to explore the impact of mobile phone use on sleep among different populations of medical students. Longitudinal studies could provide valuable insights into how sleep patterns change over time and in response to interventions.

Additionally, research should investigate the effectiveness of various strategies for reducing mobile phone use and improving sleep quality.

Conclusion

This study highlights the significant impact of mobile phone use on the sleep patterns of medical students. The findings indicate that high levels of screen time, particularly before bedtime, are associated with poorer sleep quality, reduced sleep duration, and increased sleep latency. The

insights gained from this research underscore the need for targeted interventions like counseling services to medical students who are craving for the phone and provided with reformative measures to promote healthier sleep habits and improve the well-being and academic performance of medical students. By addressing the challenges related to mobile phone use and sleep, we can support the development of future healthcare professionals who are better equipped to manage their own health and well-being.

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