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Effect of Smartphone Addiction on Sleep Quality Among Physiotherapy Students in Navi Mumbai: A Cross-Sectional Study

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Abstract

The increasing reliance on smartphones has introduced both benefits and challenges, particularly in academic settings. Among these challenges, smartphone addiction—also referred to as nomophobia—has emerged as a factor contributing to poor sleep quality, especially among student populations who often rely on these devices for academic, social, and recreational purposes. Sleep, being vital for cognitive and physical performance, is often compromised due to excessive screen time, thereby affecting the well-being and performance of students. The objective of this study was to assess the impact of smartphone addiction on the quality of sleep among physiotherapy students in Navi Mumbai. A cross-sectional observational study was conducted among 195 physiotherapy students, including undergraduates, interns, and postgraduates, from various colleges in Navi Mumbai. Participants completed a structured online questionnaire comprising demographic details, the Smartphone Addiction Scale-Short Version (SAS-SV), and the Pittsburgh Sleep Quality Index (PSQI). Convenience sampling was used for participant recruitment over a six-month period. The findings revealed that 34.4% of students were classified as addicted to smartphones, 50.8% were at high risk, and only 14.9% were not addicted. In terms of sleep quality, 75.9% experienced mild sleep difficulties, 23.1% had moderate difficulties, and 1% reported severe sleep issues. A significant positive correlation was observed between smartphone addiction and poor sleep quality. Notably, 31.3% of students admitted difficulty sleeping due to smartphone use, and over 63% self-identified as smartphone addicted. Furthermore, the physical impact, such as neck and wrist pain, and psychological factors, including stress and cognitive arousal before sleep, were prominent among frequent users.The study establishes a strong association between smartphone addiction and poor sleep quality among physiotherapy students. These findings underscore the need for awareness programs, digital detox initiatives, and targeted interventions to manage screen time and improve sleep hygiene. Addressing smartphone overuse can significantly enhance academic performance, physical health, and mental well-being in healthcare students.

Keywords: smartphone addiction, sleep quality, physiotherapy students, Pittsburgh Sleep Quality Index (PSQI), Smartphone Addiction Scale (SAS-SV), sleep hygiene.

1. Introduction

The evolution of mobile technology has profoundly transformed the way individuals communicate, access information, and entertain themselves. Among these technological advancements, smartphones have become indispensable tools in modern life. Despite their numerous benefits, excessive smartphone usage has raised significant health concerns, particularly among young adults and students. One of the emerging issues is *smartphone addiction*, also known as *nomophobia*, which refers to the psychological dependence on smartphones to the extent that it disrupts daily life and well-being.

Research indicates that smartphone addiction can lead to a myriad of physical and psychological problems including neck and back pain, visual strain, stress, anxiety, depression, and notably, poor sleep quality. Physiotherapy students, who are expected to maintain high levels of physical fitness and cognitive alertness, are especially vulnerable due to their demanding academic schedules, clinical commitments, and constant engagement with digital platforms. Increased screen time, particularly before bedtime, has been shown to stimulate the brain and delay the onset of sleep, largely due to the blue light emitted by screens that suppresses melatonin production and disrupts the circadian rhythm.

Adequate sleep is a fundamental pillar of health, influencing learning, memory consolidation, emotional regulation, immunity, and overall performance. Adults are recommended to sleep for 7–9 hours per night, yet studies show that screen-based distractions are significantly compromising sleep quality among student populations. Physiotherapy students, in particular, require optimal sleep for their physical performance, clinical decision-making, and emotional resilience. Poor sleep among this population not only impairs their academic and clinical efficiency but may also increase the risk of burnout, physical strain, and errors in patient care.

Several studies across various student populations have highlighted the adverse effects of smartphone addiction on sleep. Kumar et al. (2019) found that 44.7% of medical students were addicted to smartphone use, and 51.3% had poor sleep quality, showing a significant association between the two. Similar trends were observed among health science and nursing students across India, where excessive phone usage before bedtime was correlated with sleep disturbances, prolonged sleep latency, and impaired daytime functioning. Despite these findings, there remains a paucity of research specifically addressing this issue among physiotherapy students.

Given the academic and clinical demands faced by physiotherapy students and the rising prevalence of smartphone use, this study aims to explore the **effect of smartphone addiction on sleep quality** among physiotherapy students in Navi Mumbai. By identifying the extent of this relationship, the research intends to create awareness, promote healthier smartphone usage, and ultimately improve student well-being and professional preparedness.

2. Methodology

This research was conducted as an **observational, cross-sectional study** aimed at assessing the relationship between smartphone addiction and sleep quality among physiotherapy students in Navi Mumbai.The target population included undergraduate, intern, and postgraduate students enrolled in physiotherapy programs across various colleges in Navi Mumbai. Participants were approached digitally through institutional channels. A **convenience sampling** technique was employed to recruit participants. The sample size was 193 which was calculated using the standard formula.

Participants included in the study were physiotherapy students aged 18 years and above, currently enrolled in undergraduate, internship, or postgraduate programs at physiotherapy colleges located in Navi Mumbai.

Only those students who were regular smartphone users and provided informed consent were considered eligible for participation. Students were excluded from the study if they had a known psychiatric illness or a past history of psychiatric disorders, as such conditions could potentially confound the assessment of sleep quality and smartphone addiction. Additionally, individuals who declined to provide consent were not included in the final analysis.

Data Collection Tools: Data was collected via a structured **Google Form** which included:

1. **Demographic questionnaire** (age, gender, course level)
2. **Smartphone Addiction Scale – Short Version (SAS-SV)**: A widely used validated instrument consisting of 10 items that assess various dimensions of smartphone dependency, including behavioral and emotional aspects. Responses were recorded on a six-point Likert scale ranging from strongly disagree to strongly agree.
3. **Pittsburgh Sleep Quality Index (PSQI)**: This is a standardized tool used to measure the quality and pattern of sleep over the past month. It includes 19 self-rated questions grouped into seven components, such as sleep latency, sleep duration, sleep efficiency, and daytime dysfunction.

Procedure:

A Questionnaire containing demographic data and scales used for the study which is Pittsburgh Sleep Quality Index and Short Version- Smartphone Addiction Scale were used and circulated in different physiotherapy colleges. Students were selected on the basis of inclusion criteria.Aims and objectives of the research were explained and Consent was obtained. Questions were circulated via Google forms and responses were collected from 195 participants in a stipulated time frame.

3. Results

The present observational study included 195 physiotherapy students from Navi Mumbai to investigate the relationship between smartphone addiction and sleep quality. The sample consisted of undergraduate, intern, and postgraduate students, selected through convenience sampling. Demographic data revealed that the majority of participants were aged between 20 to 23 years, with 20% being 21 years old and 18.5% aged 20 years (Fig 1.1). Females constituted a significant portion of the sample (85.1%), while males accounted for only 14.9% (Fig 1.2). Most respondents (68.7%) were undergraduate students, followed by interns (22.1%) and postgraduates (9.2%) (Fig 1.3).

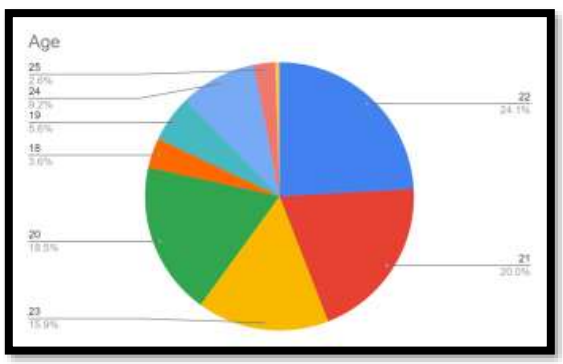
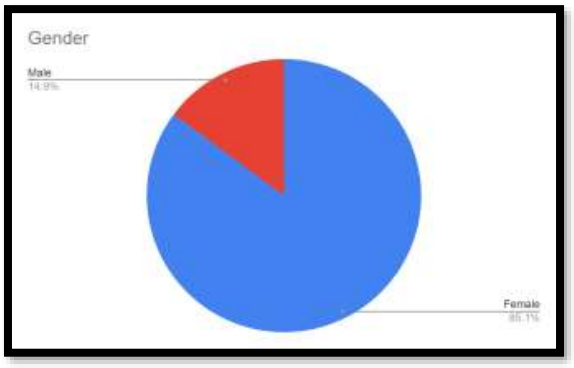


Fig 1.1



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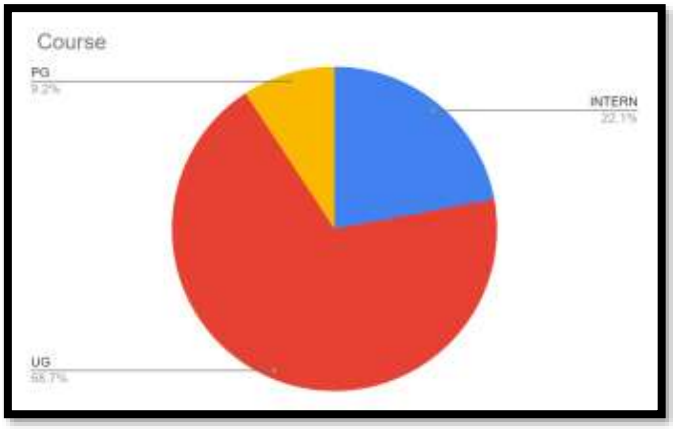
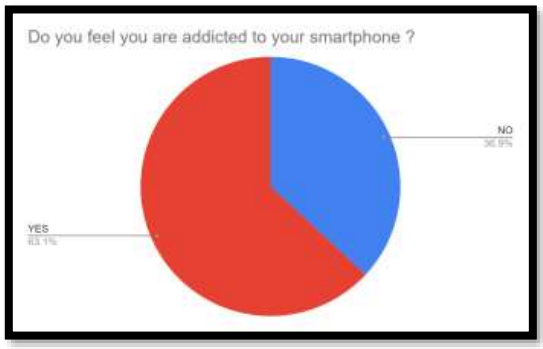


Fig 1.3

In terms of smartphone usage, 63.1% of students acknowledged that they felt addicted to their smartphones (Fig 1.4). Despite this, only 31.3% reported experiencing difficulty sleeping at night due to smartphone use (Fig 1.5). When asked about daily usage duration, the most common duration was 6 hours (21.6%), followed by 5 hours (20.1%) and 4 hours (16%). A smaller proportion used their smartphones for excessively long durations, with a few individuals reporting usage beyond 10 hours a day (Fig 1.6).



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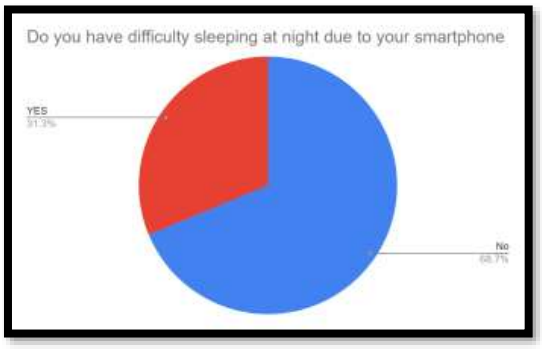

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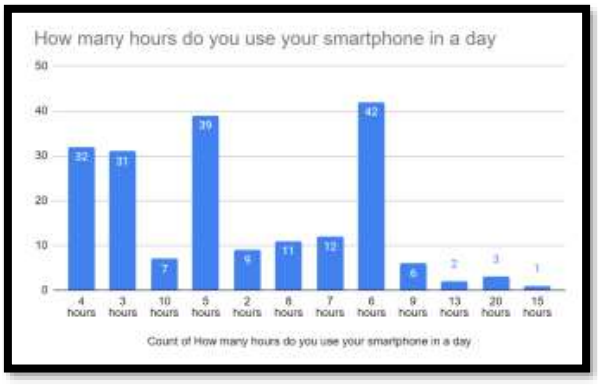

Fig 1.6

The Smartphone Addiction Scale - Short Version (SAS-SV) provided more detailed insights into the behavioral patterns associated with smartphone addiction. Approximately 34.4% of students were

categorized as addicted, and an additional 50.8% were at high risk of addiction. Only 14.9% were found to have no addiction. Key indicators of addiction included missing planned work, difficulty concentrating, experiencing wrist or neck pain, persistent thoughts about smartphones, and inability to part with their devices even when it interfered with daily life. Notably, 35.6% agreed and 13.4% strongly agreed to using smartphones longer than intended. (Fig 1.7)

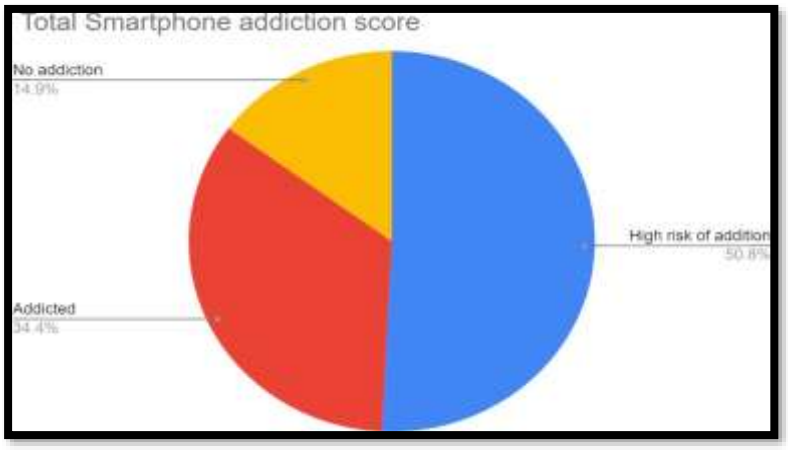

Fig 1.7

Sleep quality, assessed using the Pittsburgh Sleep Quality Index (PSQI), revealed that 75.9% of students had mild sleep difficulties, 23.1% had moderate issues, and 1% reported severe sleep difficulty. These findings suggest a significant prevalence of poor sleep quality among the student population. A positive correlation was observed between higher smartphone addiction scores and lower sleep quality. (Fig 1.8)

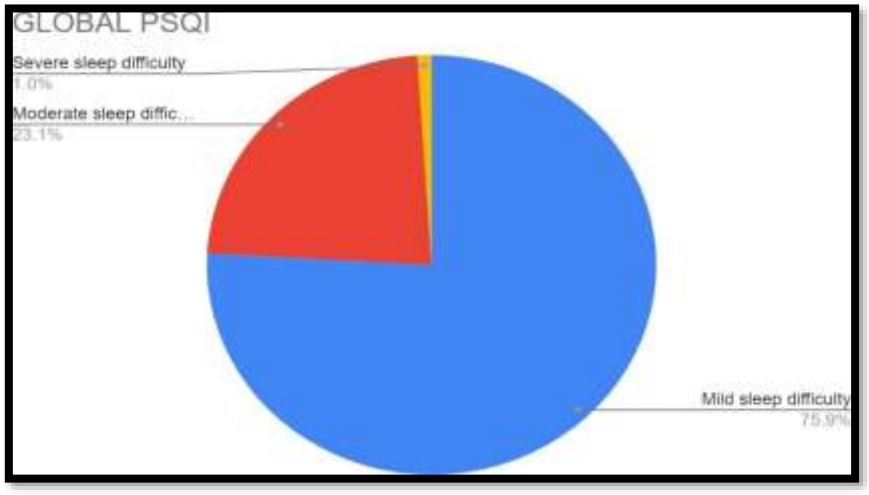

Fig 1.8

The data collectively demonstrate a substantial impact of smartphone addiction on sleep quality. Students who exhibited signs of addiction were more likely to report difficulty sleeping and showed symptoms indicative of disrupted sleep patterns. The findings highlight the urgent need for interventions focused on promoting healthy smartphone use and sleep hygiene among physiotherapy students, given their rigorous academic and clinical schedules that demand optimal cognitive and physical performance.

4. Discussion

The study was undertaken to know the effect of smartphone addiction on quality of sleep in physiotherapy students of Navi Mumbai. A Total of 195 subjects participated in the study, which included physiotherapy Undergraduate, Interns and Postgraduate students from different colleges of Navi Mumbai. Results indicated that 166 students (85.2%) are addicted to their smartphone according to the Short Version-Smartphone Addiction Scale and 193 students (99%) have poor sleep quality according to Pittsburgh Sleep Quality Index. This showed a positive correlation which exists between smartphone addiction and quality of sleep. Smartphone usage has led to many health hazards and affects humans both physically and psychologically. It disturbs the circadian rhythm, caused due to blue light emission which suppresses production of hormone melatonin which is important for sleep regulation.

According to this study it was seen that 61 students (31.3%) have difficulty sleeping at night due to their smartphone usage. There is disruption in cognitive and emotional stimulation, cognitive arousal from engaging content can heighten stress and anxiety, making it harder for individuals to relax and prepare for sleep. Research shows that smartphone use before bed can lead to increased anxiety and disrupted sleep.

Physiotherapy students face demanding schedules that require optimal cognitive and physical functioning. Poor sleep quality can significantly affect academic performance, clinical skills, and overall health. Research shows that sleep deprivation impairs cognitive functions such as memory, concentration, and problem-solving skills. For physiotherapy students, who need to retain complex information and perform precise clinical tasks, reduced sleep quality can negatively impact their academic and professional abilities.

Inadequate sleep impairs psychomotor skills and manual dexterity, which are essential for physiotherapy students during hands-on clinical training. Reduced sleep quality can lead to increased errors in clinical techniques and a decreased ability to handle complex patient scenarios effectively. Reduced sleep quality is associated with various physical health problems, such as increased susceptibility to illness and chronic conditions. For physiotherapy students, compromised immune function and higher levels of physical fatigue can exacerbate the physical demands of their studies and clinical work. Studies have shown that sleep deprivation can weaken immune responses and increase the risk of infections.

Inadequate sleep affects physical health by increasing fatigue and susceptibility to illness, and can exacerbate mental health issues such as stress and anxiety (Alvaro et al., 2013). For physiotherapy students, who must manage their own health while learning to help others, poor sleep quality can lead to increased risk of burnout and reduced effectiveness in clinical practice.

Smartphone use has also led to musculoskeletal issues such as wrist and neck pain. Smartphone use frequently involves awkward hand positions and poor ergonomics. Holding a smartphone with one hand while using the thumb for typing or scrolling can lead to prolonged periods of wrist flexion and extension, contributing to pain and discomfort. One of the significant musculoskeletal issues related to smartphone use is forward head posture. This posture, often adopted when users look down at their phones, places increased stress on the cervical spine and surrounding muscles. Research indicates that prolonged forward head posture is associated with neck pain and discomfort.

Extended periods of smartphone use can lead to muscle fatigue and strain in the neck. The static nature of holding the neck in a flexed position can lead to increased tension in the cervical muscles, resulting in pain and discomfort. Overall, the responses suggest that smartphone addiction has an effect on the quality of sleep. The study also enlightens or causes introspection of one's usage of smartphone on a daily basis

and its effect on quality of sleep. Therefore steps should be taken to reduce smartphone usage and improve sleep quality for better physical and psychological health.

5. Conclusion

In summary, this research highlights the relationship between smartphone addiction and sleep quality among physiotherapy students. It shows the majority of the participants are addicted to their smartphone as well as have poor sleep quality. The study also shows that the majority of participants cannot stand not having their smartphone in their hand. This study highlights that smartphone addiction significantly impacts sleep quality among physiotherapy students, with notable repercussions for their academic performance, clinical skills, and overall health. Addressing smartphone use and enhancing sleep hygiene practices are vital steps in improving sleep quality and supporting the overall well-being of physiotherapy students. By taking proactive measures, students can better manage the demands of their rigorous programs and achieve more favourable outcomes in their academic and clinical endeavours.

6. Clinical Implications

The effect of smartphone addiction on the quality of sleep in physiotherapy students can have significant clinical application for both healthcare professionals and educational institutions.

1. Integrating sleep quality assessments into routine health check-ups for students, particularly those in demanding academic programs like physiotherapy.
2. Healthcare providers can offer targeted counselling sessions focusing on managing smartphone use, promoting healthy sleep habits, and reducing screen time before bed.
3. Programs such as digital detox or workshops can be conducted in educational institutes.
4. Creating awareness among students and the general population regarding hazards of excessive smartphone use and its effect on sleep.
5. Colleges and universities should implement policies to limit screen time during study hours or before bed, especially in dormitories or on-campus housing.

Since smartphone addiction can be linked to anxiety, depression, and other mental health issues, the study findings can be used to enhance mental health support services, providing comprehensive care that includes addressing smartphone addiction.

7. Limitations

The study focuses on physiotherapy students from a specific institution or region, which may limit the generalizability of the findings to other student populations or the general public. This study also relies on self-reported questionnaires for measuring smartphone addiction and sleep quality, which may introduce bias. Participants might underreport or over report their behaviour due to social desirability or recall bias. A limited sample size might affect the statistical power of the study, making it difficult to detect small but significant effects.

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