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Research Paper

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## **Determining Patterns of Smartphone Usage and the Association of Academic Stress with Sleep Quality among College Students in North India region: A Cross-sectional study**

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**Abstract:**

This study aims to investigate the patterns of smart-phone usage among college students and examine the association between academic stress and sleep quality. Data was collected through surveys administered to undergraduate students, assessing smart phone usage habits, perceived academic stress levels, and sleep quality. Results suggest significant associations between smart phone usage patterns, academic stress, and sleep quality, highlighting the need for interventions to promote healthier technology habits and improve sleep quality among college students.

## INTRODUCTION

Our everyday lives now would not be the same without mobile phones. Originally intended only for communication (making calls or sending texts), mobile phones have evolved into "smart-phones," or multifunctional devices with a wide range of applications (apps) including calculators, cameras, alarm clocks, games, the internet, social media networking (such as Facebook, Whats App, Twitter, Instagram, Skype,etc), email capabilities, and many other features that offer advantages like social connectivity and security in an emergency<sup>1</sup>.

Because of all these advantages, smart-phones are becoming increasingly popular among young adults, especially college and university students. They allow them to quickly access a variety of journals and articles online when they're unsure of something, and they enable them to stay in contact with their peers for support with daily tasks like homework<sup>2</sup>.

Additionally, fresh research indicates that some educators are open to using more modern methods, such as integrating smart-phones into the classroom. Despite all of their benefits, using a smart-phone excessively can lead to addiction and reliance<sup>3</sup>.

Several studies show that most mobile users experience higher stress and sleep deprivation, which negatively impacts their cognitive and learning capacities. Few researches have been done up to this point on the effects of medical students using cellphones right before bed on their academic performance and sleep disruptions<sup>4,5</sup>. Therefore, the purpose of the current study was to evaluate how prevalent it is for undergraduate medical students to use smartphones right before bed and how this behavior relates to related educational activities and the quality of sleep.

## **AIMS AND OBJECTIVES**

1. To find out the prevalence of smart-phone addiction among medical - paramedical students
2. To asses quality of sleep among undergraduate and to establish any association, if present, between smart phone-addiction, poor sleep quality.

## MATERIAL AND METHODS

**Study design:** Cross-sectional study.

**Type of study:** Observational, Questionnaire-based study which will be self-administered.

**Sample size:**

The sample size should be chosen with help of convenient sampling methods. Total 250 students were enrolled in this study.

**Selection criteria:** The undergraduate medical and paramedical students of the concerned institute available at the days of data collection.

**Inclusion criteria:**

1. Those who will give written consent after understanding the objectives of the study by signing the Informed Consent Form (ICF) after reading it properly.
2. Age group from 17 - 25 years.

**Exclusion criteria:**

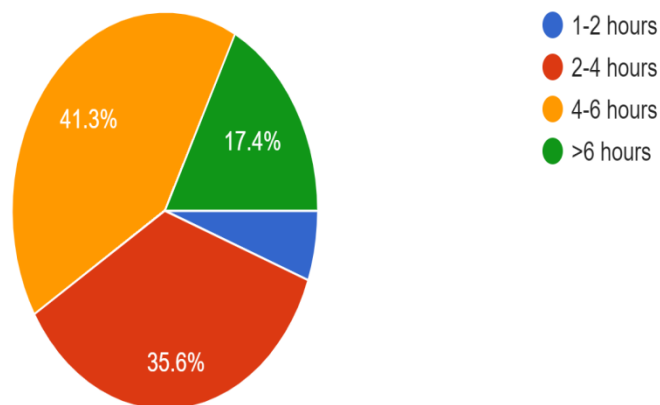
1. Those who won't give consent by signing the ICF.
2. Elderly people and younger than 17 years of age.
3. Previously diagnosed with any sleep disorder with or without treatment

## **Data Collection - Method of Screening**

All the participants those who have given consent for the study were given with the questionnaire. The questionnaire contains various aspects like number of smart mobile phones, how long they are using smart phones, duration of smart mobile phone usage in day time and night. Behaviour pattern like mid night checking, Using during class hours, sleep quality and academic performance.

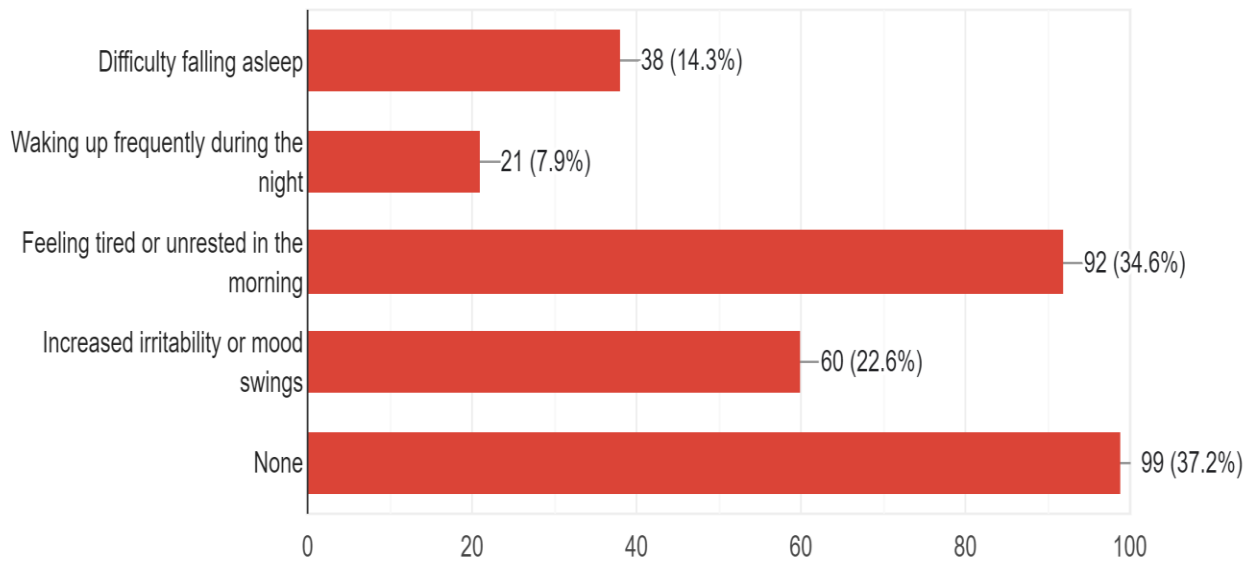
## RESULT

The pie chart below is showing the distribution of the students having different screen time based on the number of hours on daily basis. Out of 250 students, 109 students (41.3%) screen time is 4-6 hours, 94 students (35.6%) screen time is 2-4 hours, 46 student (17.4%) screen time is greater than 06 hours, 15 students (5.7%) screen time is 1-2 hours on daily basis.



Have you ever experienced any of the following symptoms after using your smartphone before bedtime?

266 responses

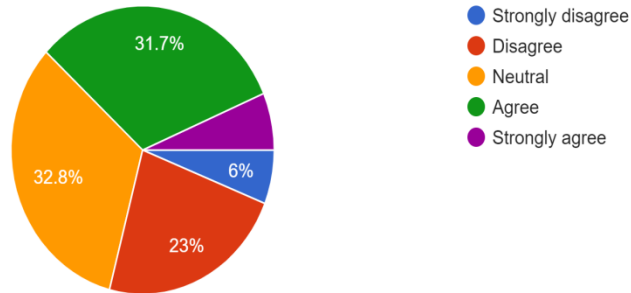


The above bar diagram is showing the symptoms after using smart phone before bedtime. Out of 250 students, 37.2% students complains of no symptoms, 34.6% students complains of feeling tired or unrested in the morning, 22.6% students complains of increased irritability or mood swings, 14.3% students complains of difficulty falling asleep, 7.9% students complains of waking up frequently during nights.



The pie chart below is showing the distribution of the students having difficulty in academics due to smart phone usage.

Having a hard time concentrating in class, while doing assignments, or while working due to smartphone use



## DISCUSSION

Most of the previous studies conducted on medical students show that screen time has an impact on sleep leading to delayed sleeping time as well as affects one's academic activities. Our study is a cross sectional study to determine the effect of smart phone usage on academic and sleep pattern behaviour as well as pattern of use during sleep. In our study, It was reported that Out of 250 students, screen time of 109 students (41.3%) is 4-6 hours , 94 students (35.6%) screen time is 2-4 hours, 46 student (17.4%) screen time is greater than 06 hours, 15 students (5.7%) screen time is 1-2 hours on daily basis.

A study at Charles Sturt University reported that 55% of respondent used phones for texting and 30% for talking with friends and families and 65% students think that usage of smart phones has affect on their academic performance.

A study conducted by Balaji Arumugam et al<sup>6</sup>. reports the similar findings. In a study done by Soyemi Jumoke et al they discovered that use of smart phones, neglecting their academic activities results in poor academic performance among students in tertiary institution.

According to study of Duygu Akcay et al<sup>5</sup>, 18.2% students thinks that delay in sleeping time or delay in going to sleep is due to smart phone usage. In our study, 20.97 % of students reported delay in sleeping time due to phone usage.

In a study conducted by Sara Thomee et al<sup>7</sup>., 23 % of the men and 34 % of the women indicated sleep disturbance When we questioned the participant, related to life without mobile phones, 82 % of participants replied that they feel uncomfortable without mobile phones. In another study conducted in Poland by Szyjkowska et al.<sup>8</sup> reported headache problem in 70% of the students.

A study by Rajshree et al<sup>9</sup>. at Saifai on 184 students showed that the Screen time of Smartphones exceeds 3 hours in 44.6% students. 91.3% used their smartphone after 10 pm and 27.7% students reported difficulty in eyes or refractive error due to smartphone usage. 46.7% suggested negative impact of smartphone usage on their sleep quality.<sup>10</sup>

## CONCLUSION

Since the development of sophisticated technology, younger generations—primarily students in the 17–25 age range—have become increasingly reliant on electronic devices, particularly smart phones. The younger generation, having been raised in an age of advanced technology, finds it impossible to function without a mobile connection. Chronic cellphone usage and its strong correlation with addiction are the main reasons for their inability to focus, health-related behaviors and academic performance. Our study focused on a small sample in a specific location, which may not accurately represent the situation globally.

Medical studies have always involved academic stress. Although it is rarely given priority, it is frequently mentioned and eventually becomes commonplace to everyone. This study highlights the serious issues of smart phone addiction, excessive academic stress, and how these affect medical/paramedical undergraduates sleep quality. The study's findings provide a foundation for additional multi-centric research.

## **LIMITATION**

1. This was a single centred cross sectional study with modest sample size (n= 250). As a result, drawing any definitive conclusions from this study is difficult.\
2. This study is highly subjective (based on students' self report).

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