

## RELATIONSHIP BETWEEN SMARTPHONE ADDICTION AND SLEEP LATENCY AMONG UNIVERSITY STUDENTS

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### Abstract

**Background:** Smartphone addiction has become increasingly common among university students and has been associated with various health problems, particularly sleep disturbances. Prolonged sleep latency is a major indicator of poor sleep quality and is closely linked to insomnia. Excessive smartphone use, especially at bedtime, may delay sleep onset and negatively affect academic performance and overall well-being.

**Objective:** This study aimed to investigate the relationship between smartphone addiction and sleep latency among university students at People's University of Medical and Health Sciences (PUMHS), Nawabshah.

**Methodology:** A descriptive cross-sectional study was conducted among 280 allied health students selected through convenience sampling. Data were collected using a structured questionnaire consisting of demographic information, sleep latency measured by the Pittsburgh Sleep Quality Index (PSQI) sleep latency component, and smartphone addiction assessed using the Smartphone Addiction Scale Short Version (SAS-SV). Data were analyzed using SPSS version 25. Chi-square test was applied to determine associations.

**Results:** The findings revealed a significant association between smartphone addiction and sleep latency ( $\chi^2 = 10.855$ ,  $df = 3$ ,  $p = 0.013$ ). Students with higher levels of smartphone addiction were more likely to experience moderate to severe difficulty in initiating sleep. A large proportion of participants reported delayed sleep onset and frequent nighttime smartphone use, indicating a negative impact on sleep quality.

**Conclusion:** The study concludes that smartphone addiction is significantly associated with increased sleep latency among university students. Excessive and uncontrolled smartphone use, particularly before bedtime, contributes to delayed sleep onset and poor sleep quality.

## INTRODUCTION

Around the world, young adults are sleeping less and taking longer to fall asleep than in the past. What used to be a normal nighttime habit is now a big health problem. Insomnia is one of the most common sleep problem and a central feature of insomnia is prolonged sleep latency which is a technical term used for the length of time it takes you to fall asleep, which is a sign of poor sleep quality<sup>1</sup>. Various studies worldwide have shown that insomnia is prevalent in 10–30% of the population, even some studies recording prevalence as high as 50–60%.<sup>2</sup> Multiple studies showed that quality of sleep is associated with smartphone addiction<sup>3</sup>. Anything beyond its limits becomes poison, There's a saying "The dose makes the poison" originates from the Swiss physician and chemist Paracelsus (1493–1541), that supports the idea that even something is beneficial can become harmful when it exceeds the limits like water and oxygen<sup>4</sup>. Where smartphones has transformed communication, learning, and entertainment on other hand the uncontrolled and excessive usage of these devices has adverse health outcomes, particularly in terms of sleep disturbances.<sup>5</sup> An observational cross-sectional study conducted in China in 2021 examined the mediating role of sleep in the relationship between smartphone addiction and depression among engineering undergraduates. The findings revealed a high prevalence of smartphone addiction, affecting 63.58% of students, with higher rates observed among males (65.68%) compared to females (56.21%).<sup>6</sup> Whereas a large United Kingdom UK study involving over 1,000 young adults found that nearly 40% met criteria for smartphone addiction, which was significantly associated with poor sleep quality. Importantly, this link highlighting addiction patterns, rather than duration of use that cause harmful effects on sleep<sup>3</sup>. Whereas systematic reviews indicate that the prevalence of smartphone addiction varies considerably across different populations, ranging from as low as approximately 2–3% in some groups to as high as 60–67% in others, particularly among young adults and students. Given that the global number of smartphone users exceeds six billion, this implies

that smartphone addiction may potentially affect billions of individuals worldwide<sup>7</sup>

Research conducted in Pakistan examined the association between smartphone addiction, bedtime procrastination, and sleep quality among college students and found a significant positive relationship between smartphone addiction and bedtime procrastination.<sup>5</sup> Now this not only about using the phone too much. But an addiction reflects a compulsive and emotionally driven pattern of use that disrupts the body's ability to rest.<sup>8</sup> Young adults who are addicted to their phones are more likely to stay engaged late into the night, leading to delayed sleep onset, restless sleep, and daytime fatigue.<sup>9</sup> The sleep latency increases is when an individual is using smartphone, he's consumed by it because when one don't know how to control smartphone, smartphone will control him it is because of the way he it uses it like constant checking, late-night scrolling, and difficulty disengaging.<sup>10</sup> This shows that smartphone addiction is a behavioral and psychological factor that directly undermines healthy sleep and overall well-being.<sup>11</sup> In the context of smartphones, this means neglecting essential activities, experiencing distress when separated from the device (nomophobia) and using it compulsively even when it interferes with sleep, social life, or academic performance.<sup>12</sup> One of the most noticeable effects of nighttime smartphone use on sleep quality is the increase in sleep latency normal range for healthy adult is 10-20 minutes.<sup>13</sup> This is partly due to mental stimulation keeping the brain active when it should be winding down and partly due to the blue light emitted by smartphone screens, which suppresses melatonin, the hormone responsible for regulating the sleep-wake cycle.<sup>14</sup> As a result, students may lie awake for extended periods, unable to fall asleep despite feeling physically tired. Over time, this prolonged sleep latency reduces total sleep duration and leads to poor sleep quality, which in turn impairs concentration, memory, and academic performance.<sup>15</sup> However university students are among the most frequent smartphone users, relying on their devices for both personal and academic tasks. However, smartphone addiction especially when devices are used at bedtime is associated with

delayed sleep onset (increased sleep latency) and poorer sleep quality, which can impair learning and health. Research on this topic is limited in Pakistan, making a study of smartphone addiction and sleep latency among university students particularly valuable.

**MATERIAL & METHODS**

This study is Descriptive Cross-sectional used to examine the relationship between smartphone addiction and sleep latency among allied-health students at People’s University of Medical & Health Sciences (PUMHS), Nawabshah, Sindh, Pakistan. Data were collected over two months, from 17 November to 17 January, after approval by the Institutional Review Board. The sample size was determined using Yamane’s formula for finite

populations with a 95 % confidence level and a 5 % margin of error. Participants were recruited through convenience sampling and included students enrolled in the Bachelor of Science in Nursing (BSN), Doctor of Physical Therapy (DPT), Doctor of Pharmacy (Pharm-D), and Bachelor of Science in Public Health (BSPH) programs across all academic years. Eligible students were those enrolled in the specified allied-health programs, who owned and regularly used a smartphone, and who voluntarily consented to participate. Exclusion criteria comprised a known diagnosis of sleep disorders (e.g., chronic insomnia, sleep apnea), current use of medications that markedly affect sleep (e.g., sedatives, antidepressants), or unwillingness to participate.

**RESULTS**

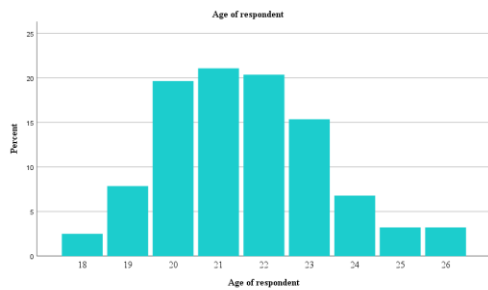


Figure 1: Age of respondents

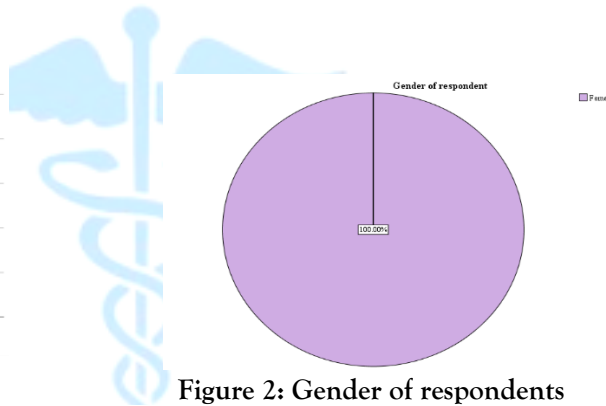


Figure 2: Gender of respondents

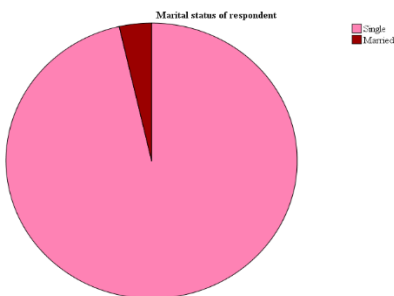


Figure 3: Marital status of respondents

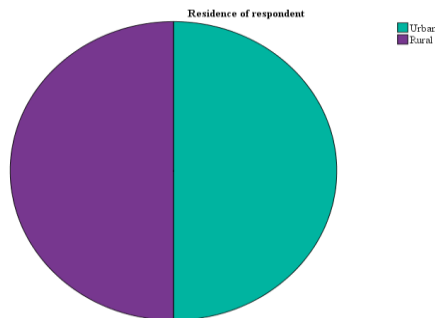


Figure 4: Residence of respondent

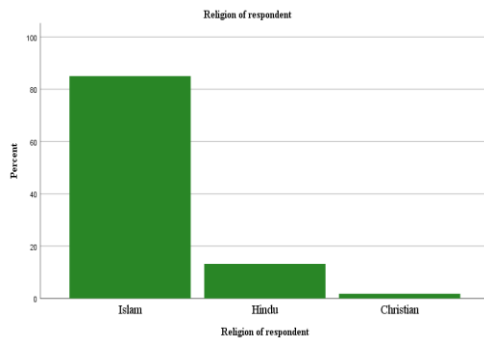


Figure 5: Religion of respondent

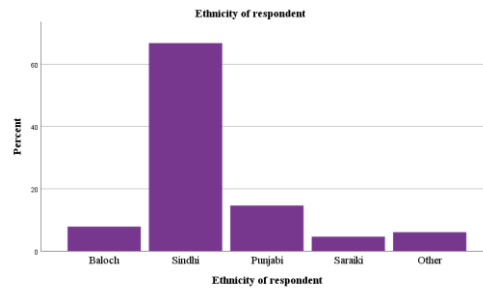


Figure 6: Ethnicity of respondent

Table 1: Relationship between smartphone addiction and sleep latency

Smartphone Addiction	Sleep Latency				Total (%)	$\chi^2$	df	P. V
	No Difficulty	Mild Difficulty	Moderate Difficulty	Severe Difficulty				
Not Addicted	20(66.7%)	66(69.5%)	54(50.0%)	23(48.9%)	163(58.2%)	10.85	3	.013
Addicted	10(33.3%)	29(30.5%)	54(50.0%)	24(51.1%)	117(41.8%)			
Total	30(100.0%)	95(100.0%)	108(100.0%)	47(100.0%)	280(100.0%)			

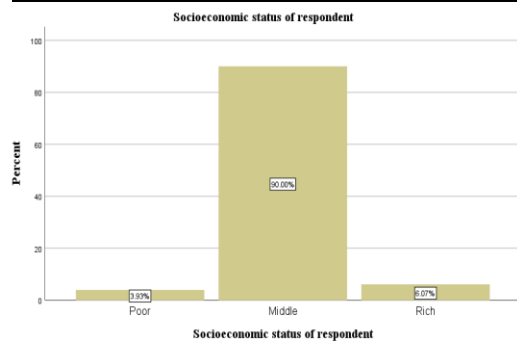


Figure 7: Socioeconomic status of respondent

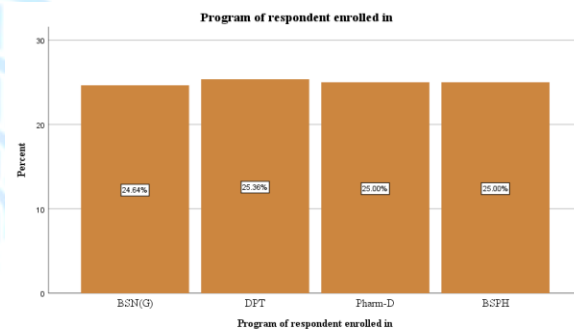


Figure 8: Program of respondent

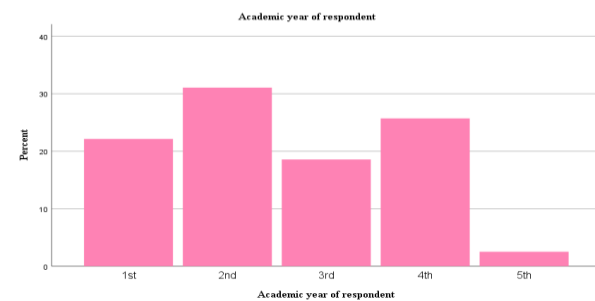


Figure 9: Academic year of respondent

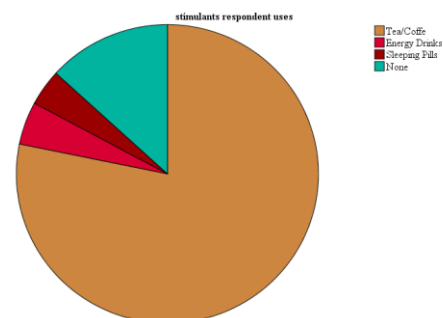


Figure 10: Stimulants respondent uses

**Table: 2 Smartphone addiction and sleep latency**

VARIABLE	N					
	SD	DA	SD	SA	A	SA
Smartphone Addiction						
I miss planned work/study because of smartphone use.	76	57	36	47	39	25
I find it hard to concentrate (class/work/assignment) due to smartphone use.	70	64	40	35	50	21
I feel wrist/neck pain while using smartphone.	63	58	33	55	52	19
I cannot stand being without my smartphone.	58	66	47	42	38	29
I feel restless when not holding my smartphone.	68	73	45	41	34	19
I think about my smartphone even when not using it.	63	67	45	41	47	17
I would not give up smartphone even if it harms my life.	49	80	43	51	33	24
I constantly check social media on my smartphone.	31	66	25	37	77	44
I use my smartphone longer than I intend	33	59	38	41	69	39
People around me say I use smartphone too much.	50	65	28	49	54	34
<b>Sleep Latency</b>						
During the past month, how long has it usually takes you to fall asleep each night?			During the past month, how often have you had trouble falling asleep because you cannot get to sleep within 30 minutes?			
less than or equal 15 minutes	92	Not during past month		45		
16 to 30 minutes	97	Less than once a week		85		
31 to 60 minutes	55	Once or twice a week		78		
60 minutes or above	36	Three or more times a week		71		

## DISCUSSION

This study aimed to investigate the relationship between smartphone addiction and sleep latency among university students at the People's University of Medical & Health Sciences (PUMHS), Nawabshah. The findings revealed a significant association between smartphone addiction and prolonged sleep latency, indicating that students with higher levels of smartphone addiction experienced greater difficulty initiating sleep. This aligns with previous research reporting that increased smartphone addiction is associated with poorer sleep quality and delayed sleep onset in university populations. For example, a large cross-sectional study found that higher smartphone addiction scores were significantly correlated with poorer overall sleep quality as measured by the Pittsburgh Sleep Quality Index (PSQI) among university students.<sup>16</sup> The age distribution in the

current study (predominantly 21–23 years) is consistent with the age groups most vulnerable to problematic smartphone use reported in other research, where high prevalence of addiction and concomitant sleep disturbances have been documented in similar young adult cohorts.<sup>16</sup> Studies have also consistently demonstrated that excessive smartphone use, particularly at night, is associated with shorter sleep duration, increased sleep disturbances, and difficulty initiating sleep.<sup>17</sup> Regarding gender, although this study's sample was entirely female, previous research has identified gender differences in the relationship between smartphone use and sleep disturbances, with some evidence suggesting females may experience more pronounced sleep disruption in association with addiction and negative emotions.<sup>18</sup> Additionally, research on the mediating role of psychological factors such as perceived stress further supports the

notion that emotional distress linked with excessive smartphone engagement can exacerbate sleep problems.<sup>19</sup> Collectively, these findings corroborate global evidence indicating that problematic smartphone use negatively impacts sleep health among university students, reinforcing the importance of interventions that promote responsible smartphone habits and improved sleep hygiene.

## CONCLUSION

This study established a statistically significant association between smartphone addiction and increased sleep latency among university students. The findings indicate that excessive and particularly nighttime smartphone use contributes to delayed sleep onset and compromised sleep quality, thereby posing potential risks to students' psychological well-being and academic performance.

These results underscore the necessity for institutional-level interventions, including structured health education initiatives that promote responsible digital behavior, sleep hygiene, and effective time management. Universities should implement targeted awareness programs, strengthen counseling and mental health support services, and introduce regular screening mechanisms to facilitate early identification and intervention for at-risk students.

Furthermore, future large-scale, multi-center, and longitudinal research across diverse regions of Pakistan is recommended to examine the long-term implications of smartphone addiction on sleep patterns, mental health, and academic achievement. Such evidence would support the development of comprehensive, evidence-based preventive strategies.

## REFERENCES

Shrivastava D, Jung S, Saadat M, Sirohi R, Crewson K. How to interpret the results of a sleep study. *Journal of community hospital internal medicine perspectives*. 2014;4(5):24983.

Rathakrishnan B, Bikar Singh SS, Kamaluddin MR. Smartphone Addiction and Sleep Quality on Academic Performance of

University Students: An Exploratory Research. 2021;18(16).

Sohn SY, Krasnoff L, Rees P, Kalk NJ, Carter B. The association between smartphone addiction and sleep: a UK cross-sectional study of young adults. *Frontiers in psychiatry*. 2021;12:629407.

Collin-Faure V, Vitipon M, Torres A, Tanyeres O, Dalzon B, Rabilloud T. The internal dose makes the poison: higher internalization of polystyrene particles induce increased perturbation of macrophages. *Frontiers in Immunology*. 2023;14:1092743.

Shoukat M, Irshad A, Gillani SA. Relationship between Bedtime Procrastination, Sleep Quality and Smartphone Addiction in College Students. *The Critical Review of Social Sciences Studies*. 2025;3(1):2273-85.

Gao W-J, Hu Y, Ji J-L, Liu X-Q. Relationship between depression, smartphone addiction, and sleep among Chinese engineering students during the COVID-19 pandemic. *World Journal of Psychiatry*. 2023;13(6):361.

Andrade ALM, Scatena A, Bedendo A, Machado WdL, Oliveira WAd, Lopes FM, et al. Excessive Internet and smartphone use and emotional problems in students of psychology and psychologists. *Estudos de Psicologia (Campinas)*. 2023;40:e210010.

Lane H-Y, Chang C-J, Huang C-L, Chang Y-H. An investigation into smartphone addiction with personality and sleep quality among university students. *International Journal of Environmental Research and Public Health*. 2021;18(14):7588.

Troll ES, Friese M, Loschelder DD. How students' self-control and smartphone-use explain their academic performance. *Computers in Human Behavior*. 2021;117:106624.

James RJ, Dixon G, Dragomir M-G, Thirlwell E, Hitcham L. Understanding the construction of 'behavior' in smartphone addiction: A scoping review. *Addictive behaviors*. 2023;137:107503.

- Karaoglan Yilmaz FG, Ustun AB, Zhang K, Yilmaz R. Smartphone addiction, nomophobia, depression, and social appearance anxiety among college students: A correlational study. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*. 2024;42(2):305-21.
- Nelson KL, Davis JE, Corbett CF, editors. *Sleep quality: An evolutionary concept analysis*. Nursing forum; 2022: Wiley Online Library.
- Topal I. The effect of sleep quality on academic performance. 2019.
- Wang P-Y, Chen K-L, Yang S-Y, Lin P-H. Relationship of sleep quality, smartphone dependence, and health-related behaviors in female junior college students. *PLoS one*. 2019;14(4):e0214769.
- Sohn SY, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: a systematic review, meta-analysis and GRADE of the evidence. 2019;19(1):356
- Shrivastava D, Jung S, Saadat M, Sirohi R, Crewson K. How to interpret the results of a sleep study. *Journal of community hospital internal medicine perspectives*. 2014;4(5):24983.
- Rathakrishnan B, Bikar Singh SS, Kamaluddin MR. Smartphone Addiction and Sleep Quality on Academic Performance of University Students: An Exploratory Research. 2021;18(16).
- Sohn SY, Krasnoff L, Rees P, Kalk NJ, Carter B. The association between smartphone addiction and sleep: a UK cross-sectional study of young adults. *Frontiers in psychiatry*. 2021;12:629407.
- Collin-Faure V, Vitipon M, Torres A, Tanyeres O, Dalzon B, Rabilloud T. The internal dose makes the poison: higher internalization of polystyrene particles induce increased perturbation of macrophages. *Frontiers in Immunology*. 2023;14:1092743.
- Shoukat M, Irshad A, Gillani SA. Relationship between Bedtime Procrastination, Sleep Quality and Smartphone Addiction in College Students. *The Critical Review of Social Sciences Studies*. 2025;3(1):2273-85.
- Gao W-J, Hu Y, Ji J-L, Liu X-Q. Relationship between depression, smartphone addiction, and sleep among Chinese engineering students during the COVID-19 pandemic. *World Journal of Psychiatry*. 2023;13(6):361.
- Sohn SY, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: a systematic review, meta-analysis and GRADE of the evidence. 2019;19(1):356.
- Andrade ALM, Scatena A, Bedendo A, Machado WdL, Oliveira WAd, Lopes FM, et al. Excessive Internet and smartphone use and emotional problems in students of psychology and psychologists. *Estudos de Psicologia (Campinas)*. 2023;40:e210010.
- Lane H-Y, Chang C-J, Huang C-L, Chang Y-H. An investigation into smartphone addiction with personality and sleep quality among university students. *International Journal of Environmental Research and Public Health*. 2021;18(14):7588.
- Troll ES, Friese M, Loschelder DD. How students' self-control and smartphone-use explain their academic performance. *Computers in Human Behavior*. 2021;117:106624.
- James RJ, Dixon G, Dragomir M-G, Thirlwell E, Hitcham L. Understanding the construction of 'behavior' in smartphone addiction: A scoping review. *Addictive behaviors*. 2023;137:107503.
- Karaoglan Yilmaz FG, Ustun AB, Zhang K, Yilmaz R. Smartphone addiction, nomophobia, depression, and social appearance anxiety among college students: A correlational study. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*. 2024;42(2):305-21.

- Nelson KL, Davis JE, Corbett CF, editors. Sleep quality: An evolutionary concept analysis. Nursing forum; 2022: Wiley Online Library.
- Topal I. The effect of sleep quality on academic performance. 2019.
- Wang P-Y, Chen K-L, Yang S-Y, Lin P-H. Relationship of sleep quality, smartphone dependence, and health-related behaviors in female junior college students. PloS one. 2019;14(4):e0214769.
- Rathakrishnan B, Bikar Singh SS, Kamaluddin MR, Yahaya A, Mohd Nasir MA, Ibrahim F, et al. Smartphone addiction and sleep quality on academic performance of university students: An exploratory research. International journal of environmental research and public health. 2021;18(16):8291.
- Izquierdo-Condoy JS, Paz C, Nati-Castillo H, Gollini-Mihalopoulos R, Aveiro-Róbaló TR, Valeriano Paucar JR, et al. Impact of mobile phone usage on sleep quality among medical students across Latin America: multicenter cross-sectional study. Journal of medical Internet research. 2025;27:e60630.
- Li S, Deng Y, Cai L, Wu L. The relationship between smartphone addiction and sleep disorder among college students: negative emotions as a mediator and gender as a moderator. Frontiers in psychiatry. 2025;16:1542243.
- Xie Y, Pei Q, Chen Y, Xiao L, Yin D. The influence of smartphone addiction on sleep quality among college students: The parallel mediating roles of perceived stress and health-promoting lifestyle. PloS one. 2026;21(2):e0340852.

