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The Impact of Social Media Use on Sleep Disturbance and Mental Health Among University Students

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ABSTRACT

Social media is a virtual network that consists of websites and interactive applications enabling users to connect, communicate, create, and share content with just a few clicks. The availability and usage of social media platforms are increasing day by day, especially among university students. However, extensive research is needed to understand the impact and consequences of social media indulgence. The current study aims to understand the effects of social media usage on two very important aspects of students, i.e., sleep and mental health. Findings have suggested a significant correlation among the present variables, which makes it important to study in Pakistan's cultural context. The present research is cross-sectional survey-based research employing the Pittsburgh Sleep Quality Index (PSQI) and Depression, Anxiety and Stress Scale (DASS-21) to measure the effect of social media usage on sleep disturbances and mental health of students. All the ethical considerations were followed along with the students' participation consent. The data collected was then transferred to SPSS, and statistical analysis, i.e., Chi Square and Correlation, was applied. The results indicate a significant gender difference in social media usage patterns, i.e., women with a higher mean. Although a significant association was not observed in the present research among social media consumption, sleep, and mental health, it was noted that individuals who spent less time on social media reported better quality of sleep and mental health outcomes. Further longitudinal researches are recommended on social media usage to understand its long-term impact, especially on students. .

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INTRODUCTION

The increasing use of social media by university students is becoming a concern, especially in terms of its effects on sleep and mental health (Osman, 2025). A Chinese study indicated that most of the students who used social media for more than 3 hours a day reported disturbed sleep and high levels of anxiety (Yu & Zhang, 2023). Alonzo et al. (2021) presented in their systematic review that out of 36 cross-sectional studies, 24 reported a significant correlation between extensive social media use and poor sleep quality (Zaheer, et al., 2021; ul Haq, 2017; ul Haq, 2012). Another Chinese study reported that students who used their phones more than 5 hours a day showed poorer sleep quality as well as difficulty controlling their cravings (Huang et al., 2020). Findings suggest that compulsive social media usage, especially late nights, resulted in sleep timing and continuity disturbances leading to insomnia and tiredness during the day (Vesalainen, Sivertsen, & Hysing, 2025).

Social media and sleep, both being significant predictors of mental health, indicate that extensive use of social media and disturbed sleep can eventually result in symptoms like depression, anxiety, and stress. Ahmed et al. (2024) reported a minor yet significant positive relationship between social media activities and adverse psychological symptoms, as well as overall low well-being (Oad, Zaidi, & Phulpoto, 2023). It was further observed that 33 out of 36 studies in the systematic review indicated a strong correlation between excessive social media usage and poor psychological symptoms (Alonzo et al., 2021). A study conducted in Iran stated that disproportionate social media usage predicted high scores in the Depression Anxiety Stress Scale (DASS-21) (Lebni et al., 2020). A similar pattern is observed globally however, there are a few findings that suggest a weak or no relationship among sleep, social media, and mental health outcomes (Orben & Przybylski, 2019).

Some studies suggest that poor quality sleep can worsen the effect of social media usage on an individual's mental well-being (Ahmad, et al., 2021; Ahmad, 2018). Research indicated strong mediation between the negative impact of online activities and students' mental health (El Abiddine et al., 2022). Sleep disturbances are already established as a risk factor for depression, which, if added to problematic social media indulgence, can lead to a vicious cycle of disturbed mood, anxiety, and insomnia (Woods & Scott, 2016). Many findings from different longitudinal studies also show that excessive social media use results in sleep problems and poor mental health outcomes (Heffer et al., 2019).

Similar findings have been observed among university of students of Pakistan as well. Kaleem

et al. (2023) conducted a study with 231 students studying medicine and reported that there is a strong relationship among excessive social media usage, procrastination, and insomnia, especially in males. Another research from Bahawalpur with 203 undergraduate students showed that problematic social media usage was significantly correlated with sleep disturbances and low well-being, with females belonging to upper and upper-middle class backgrounds being more affected (Khan et al., 2022). On the other hand, another research study held in Karachi with 120 university students indicated no significant relationship among hours spent on social media with sleep and, stress, depression, or anxiety (Tajjamul & Aleem, 2022). Overall, Findings suggest a complicated interplay and significant association among excessive social media use, sleep, and mental health. Further research should be conducted to understand the adverse effects of social media on the sleep and mental health of students to ensure better mental health outcomes and overall well-being.

RESEARCH OBJECTIVES

1. To explore the daily time spent on social media websites and platforms by university students.
2. To explore the impact of social media use on sleep disturbances among university students.
3. To explore the impact of social media use on the mental health of university students.
4. To explore the correlation among social media use, sleep disturbances, and mental health in university students.

LITERATURE REVIEW

SOCIAL MEDIA USE AND SLEEP DISTURBANCE

Many studies have outlined a significant correlation between social media use and sleep disturbances, particularly in university students. A cross-sectional study including 702 medical students of Saudi Arabia indicates that more than 66% of individuals experienced sleep disturbances as 88.4% used devices for social media before sleeping (Alsulami et al., 2019). Nwazor et al. (2025) reported that in Nigeria, 260 medical students indicated poor sleep quality due to extensive social media use in a survey (Oad, Zaidi, & Phulpoto, 2023). Another research conducted among 260 physiotherapy undergraduates in Pakistan revealed a significant relationship between social media usage and poor sleep quality, indicating a need for awareness of healthy social media use (Mir, Rana, & Waqas, 2021).

SOCIAL MEDIA USE AND MENTAL HEALTH

Other than sleep, problematic social media use has been a strong predictor of poor mental

health outcomes in university-going students. Findings from Iranian research, including 781 participants, revealed a strong association between social media usage and mental health symptoms through high scores in the DASS-21 scale (Nazari et al., 2023). Primack et al. (2009) state in their research with 1788 US students a strong association between social media and sleep, leading to poor mental health, i.e., anxiety and depression (Rooh, et al., 2025; Naseer, et al., 2024). A study conducted on 87 college athletes found a significant correlation between problematic social media use, sleep, and performance, impacting their mental health (Watkins et al., 2021).

SOCIAL MEDIA USE, SLEEP DISTURBANCES, AND MENTAL HEALTH

Research shows a complex relationship among social media use, sleep, and mental health since causality is not established. It's still unclear if social media affects sleep and mental health negatively or if poor mental health and difficulty in sleeping lead to extensive social media use. Research conducted in Lahore by Hidayatullah, Naz, and Niazi (2023) with 600 undergraduate students showed that students with problematic social media use experienced poor sleep quality and difficulties in managing emotions, mood, and overall health.. Moreover, Abbas et al. (2023) reported in their study with 400 university students that social media addiction was a predictor of sleep disturbances and increased psychological distress. Findings from a study suggest that mobile phone addiction and social media usage affected both sleep and psychological symptoms in 176 nursing students in Islamabad (Bibi et al., 2024).

CONCEPTUAL FRAMEWORK

Figure 1 represents the conceptual framework, which was designed with the help of literature.

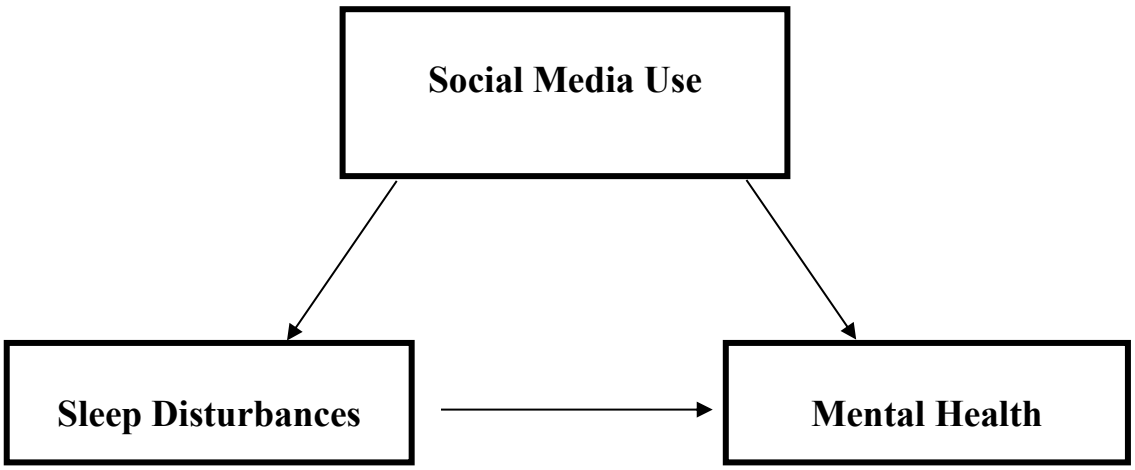

FIG. 1 CONCEPTUAL FRAMEWORK

RESEARCH METHODOLOGY

The present research is cross-sectional research that was conducted in various universities of Karachi, Pakistan. A total of 250 university students from different academic disciplines and levels were recruited using non-probability convenience sampling. Inclusion criteria included full-time enrollment at a university, age between 18 and 25 years, and sign in for at least one social media app or platform. Students with diagnosed sleep disorders or severe mental health conditions requiring immediate intervention were excluded. To collect the data, Participants reported their daily time spent on social media platforms, particularly during the night, and the purpose of their usage (e.g., academic, social, entertainment). Sleep disturbance was assessed by using the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989), which evaluates sleep duration, latency, and overall quality over the past month. It consists of 19 self-rated questions, which are scored from 0-3 (0 = no difficulty and 3 = severe difficulty). The score range is 0-21, higher scores indicate worse sleep quality. Mental health was measured by the Depression, Anxiety, and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995). It is a 21-item, self-report measure including 7 items for stress, anxiety, and depression each and scored on a 4-point Likert scale. The higher the score on each subscale, the higher the intensity (Shah, et al., 2024; Ali, et al., 2024; Kayani, et al., 2023). An online survey was distributed via email and university forums. Participants were required to complete the survey, which took approximately 20 minutes. Consent was obtained electronically before participation, and the data were anonymized. The research adhered to all the ethical guidelines. Participants were informed about the purpose of the research, the voluntary nature of participation, and their right to withdraw at any time without any consequences. Informed consent was obtained before data collection. The anonymity and confidentiality of the participants were maintained throughout the study, and no identifying information was collected. Any participants exhibiting severe mental health symptoms are referred to the counseling services for support. The study do not pose any significant risks to participants, and the results were shared with them upon request. Statistical analysis was done through SPSS 22. Descriptive statistics were used to describe the sample characteristics and the prevalence of sleep disturbance and mental health symptoms. Correlation analyses and chi-square were employed to determine the relationships among social media use, sleep disturbance, and mental health outcomes.

TESTING OF HYPOTHESIS

A total of 253 participants were included in the present research, and data were evaluated

through SPSS. Table 1 outlines the descriptive analysis of demographic information, i.e., age and gender, whereas Table 2 indicates the descriptive analysis of sleep information. Table 3 presents the relationship between social media use and various sleep parameters among participants. A statistically significant difference was observed in terms of gender ($p = 0.006$), with females reporting higher mean scores (38.03) compared to males (36.47), suggesting potential gender-related differences in sleep or social media impact. Overall sleep quality also showed a significant association ($p = 0.015$), with those reporting "Very Good" sleep having the lowest mean score (35.12), indicating less use or different patterns of social media use. Table 4 presents the association between social media use and depression levels. The majority of participants with normal mood (77.8%) reported using social media for ≤9 hours, while a smaller proportion (22.2%) used it for >9 hours. All individuals with severe depression (n=2) fell into the ≤9 hours category. However, the association between social media use and depression was not statistically significant (Chi-square test, p = 0.299). Table 5 shows the relationship between social media use and levels of anxiety among 248 individuals. Across all anxiety categories, a majority of participants reported using social media for ≤9 hours per day. Conversely, a smaller proportion in each category reported using social media for >9 hours, ranging from 19.7% to 29.8%. A Chi-square test revealed a p-value of 0.597, indicating that the association between social media use and anxiety levels is not statistically significant ($p > 0.05$). Table 6 shows that the majority of individuals across all stress categories reported using social media for ≤9 hours per day. Correspondingly, a smaller proportion in each category, ranging from 20.0% to 35.3%, used social media for >9 hours. Overall, 75.2% of participants used social media for ≤9 hours, and 24.8% for >9 hours. A Chi-square test yielded a p-value of 0.592, indicating no statistically significant association between social media use and stress levels ($p > 0.05$).

TABLE 1: DEMOGRAPHIC INFORMATION

Age	**n**	**Percent**
<20	79	31.2
> 20	171	68.8
Gender		
Male	105	41.5
Female	145	58.5

TABLE 2: SLEEP INFORMATION

Bad Time		
11am- 00 am	92	36.8
9-10 pm	18	7.1
Late night	140	56.1
How much time to fall asleep		
Less than hour	210	83.0
1 - 3 hours	39	15.4
Total	249	98.4
Gotten up morning		
before 8 am	239	94.5
After 8 am	12	4.7
Total	251	99.2
Actual sleep time		
less 5 hours	75	29.6
5 - 8 hours	167	66.0
More than 8 hours	7	2.8
Overall Sleep quality		
Bad	39	15.4
Good	154	60.9
Very Bad	25	9.9
Very Good	33	13.0
Trouble driving		
Never	93	36.8
One time a week	67	26.5
Two - three time a week	88	34.8
Sleep with medicine		
Never	22	8.7
One - two week	71	28.1
Not during the last month	157	62.1

TABLE 3: RELATIONSHIP OF SOCIAL MEDIA WITH SLEEP PARAMETER

Parameter	n	mean	std	p-value
Bad Time				
11am- 00 am	93	37.18	5.00	
9-10 pm	18	36.28	4.50	0.412
Late night	142	37.65	4.16	
Age				
<20	79	37.49	3.92	0.794
> 20	174	37.33	4.76	
Gender				
Male	105	36.47	5.25	0.006
Female	148	38.03	3.78	
Gotten up morning				
before 8 am	239	37.28	4.56	
After 8 am	12	38.92	3.42	0.223
Total	251	37.36	4.52	
Actual Sleep time				
less 5 hours	75	37.79	3.98	
5 - 8 hours	167	37.16	4.78	0.531
More than 8 hours	7	38.29	3.73	
Overall Sleep Quality				
Bad	39	37.46	3.73	
Good	154	37.85	3.76	0.015
Very Bad	25	37.88	4.37	
Very Good	33	35.12	7.24	

TABLE 4: ASSOCIATION OF SOCIAL MEDIA USE WITH DEPRESSION

Depression Categories	Social Media Use ≤ 9 Hours	Social Media Use > 9 Hours	Total	p-value
		Frequency (%)		
Normal	137 (77.8)	39 (22.2)	176 (100.0)	
Mild	32 (68.1)	15 (31.9)	47 (100.0)	**0.299**

Moderate	17 (68.0)	8 (32.0)	25 (100.0)
Severe	2 (100.0)	0 (0.0)	2 (100.0)
Total	188 (75.2)	62 (24.8)	250 (100.0)

TABLE 5: ASSOCIATION OF SOCIAL MEDIA USE WITH ANXIETY

Anxiety Category	Social Media Use ≤ 9 Hours	Social Media Use > 9 Hours	Total	p-value
	Frequency (%)			
No Anxiety	80 (73.4%)	29 (26.6%)	109 (100.0)	
Mild Anxiety	33 (70.2%)	14 (29.8%)	47 (100.0)	
Moderate Anxiety	61 (80.3%)	15 (19.7%)	76 (100.0)	**0.597**
Severe Anxiety	12 (75.0%)	4 (25.0%)	16 (100.0)	
Total	186 (75.0%)	62 (25.0%)	248 (100.0)	

TABLE 6: ASSOCIATION OF SOCIAL MEDIA USE WITH STRESS

Stress Category	Social Media Use ≤ 9 Hours	Social Media Use > 9 Hours	Total	p-value
	Frequency (%)			
No/Low Stress	173 (75.9%)	55 (24.1%)	228 (100.0)	
Moderate Stress	11 (64.7%)	6 (35.3%)	17 (100.0)	**0.592**
High Stress	4 (80.0%)	1 (20.0%)	5 (100.0)	
Total	188 (75.2%)	62 (24.8%)	250 (100.0)	
	100.0%	100.0%	100.0%	

DISCUSSION

As per the results of the current study, a statistically significant gender difference is observed in social media usage, with women indicating a higher mean score as compared to men. Even though a significant correlation has not been deduced among social media use, sleep disturbances, and mental health in the present research, qualitative findings suggest that students who spent fewer hours on social media indicated better quality of sleep and mental health outcomes. The findings are consistent with previous literature.

Brockmann et al. (2020) reported that university students who consumed less social media reported better sleep quality, i.e., easily falling asleep and continuity of sleep, as blue screen is known to interfere with circadian rhythm. An investigation done on university

students' sleeping patterns in relation to social media indicates that students with less social media consumption had healthier sleeping patterns, i.e., they were able to maintain sleep for longer hours and experienced fewer sleeping disturbances (Kuss et al., 2014). Alfonsi et al. (2020) elaborate that social media impacts individual cognitively and emotionally, due to which their sleeping process can be disturbed.

Similarly, immense findings report a significant negative correlation between social media and mental health symptoms. Fardouly et al. (2015) reveal in their study that university students with less social media consumption showed lower levels of depression and body image problems. Another study showed that students with lower levels of social media usage experience fewer poor mental health symptoms, i.e., anxiety and depression, as they don't have to worry about maintaining an impressive online presence. Malik et al. (2024) examined the relationship between social media dependence and sleep quality in 650 university-going females and reported that a significantly positive association was found between smartphones and poor sleep quality and indicated that these students experienced higher levels of stress (Shah, et al., 2025; Azhar, Iqbal & Imran 2025).

Many findings have indicated gender differences in the association among social media use, sleep quality, and mental health, which is consistent with the results of the current study. Mandić et al. (2021) stated that females with a higher level of social media consumption experienced more anxiety, depression, and sleep difficulties as compared to males. Another study indicates that males experience less psychological distress induced by social media due to the difference in engagement by both genders (Tandoc et al., 2015). On the contrary, there have been studies that have reported weak or no relationship among social media use, sleep, and mental health. Chaudhry et al. (2024) reported that they observed no significant relationship between social media and the sleep quality of students. A Norwegian study reported that they did not find a significant association between social media consumption and sleep disturbances and mental health issues in university students (Saqib & Gazerani, 2024).

CONCLUSION

The present research indicates a correlation as well as gender differences between social media usage, sleep, and mental health. The qualitative findings reveal that sleep quality and mental health are better for those individuals whose social media usage is less. A plethora of findings have indicated the negative impact of social media use, especially on the lives of students, like academic procrastination and low subjective well-being. It is important to further research the

long-term effects of extensive social media use on sleep and mental health indicators. it is crucial to promote awareness regarding the responsible and limited use of social media and encourage strategies to improve sleep hygiene and mental well-being. Future research should focus on intervention methods to reduce these adverse effects and support healthier digital habits among students, as well as explore the gender differences.

LIMITATIONS AND RECOMMENDATIONS

One of the limitations of the study is the relatively small sample size, which reduces the generalizability of the results. A larger sample size can represent the correlation more effectively as well as increase the reliability of the findings. Research suggests a complex interplay among social media usage, sleep quality, and mental health since causality is not clear. It's not definitive if problematic social media use induces sleep problems and poor mental health, or if it's the other way around. Since the present study is cross-sectional research, deeper insights were not identified. Longitudinal research is recommended on social media use and its impact to establish causality and understand long-term consequences.

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