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A Study on Sleep Quality and Mental Fatigue among College Students

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Abstract

College students are adept at surviving on caffeine, stress, and too little sleep. Nonetheless, how much is this affecting their brains, is the question that needs to be answered. It often feels like a relentless balancing act, racing against assignment deadlines, tackling endless tests and

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presentations. Academic pressures along with social and personal responsibilities frequently result in poor quality of sleep along with higher mental fatigue levels. The current study highlights the impact of inadequate or disturbed sleep on mental exhaustion among college students. A sample of 30 university going students between the ages of 18 and 24 were taken from Mohali, Punjab. Standardized scales were used, the short Pittsburgh Sleep Questionnaire Index (short PSQI) (Famodu et al., 2018) was administered to measure sleep quality and Mental Fatigue Scale (MFS) (Johansson et al., 2009) to measure mental fatigue. Results revealed that poor sleep quality shows significant positive association with mental fatigue. By analyzing the responses regarding sleep patterns, perceived fatigue levels, and their correlation with overall well-being, the research underscores the critical role of sleep in maintaining mental clarity and productivity. The findings emphasize prioritizing sleep to alleviate mental fatigue and improve the daily functioning of college students.

Keywords: *Sleep quality, Mental Fatigue, College Students*

Introduction

Sleep quality and mental fatigue are intricately linked, influencing cognitive function, emotional well-being, and physical health. Sleep is a fundamental physiological process essential for maintaining overall health and well-being. When sleep quality is compromised—due to insufficient sleep, frequent awakenings, or disturbed sleep—mental fatigue often follows. This can lead to diminished concentration, impaired decision-making, and reduced stress management abilities. Sleep, directly linked to health and quality of life, supports our biological, psychological, social, and cultural functions (Cates et al., 2015). The feeling of being refreshed and energized after sleep is often described as good sleep quality (Karatay et al., 2016). However, poor sleep

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quality, such as that observed in university students, has been shown to have a range of adverse effects, including impaired cognitive performance, mood disturbances, weakened immune function, and chronic health conditions like hypertension, obesity, and diabetes (Vail-Smith et al., 2009). Additionally, Ara and Srivastava (2024) assert that sleep disorders are common among college students and are linked with various negative effects. These effects can include academic performance and higher stress levels.

Mental fatigue, distinct from physical fatigue, refers to a state of tiredness or lack of energy that affects cognitive abilities, emotional regulation, and overall productivity. While physical fatigue is caused by repeated muscle exertion (Mizuno et al., 2011), mental fatigue arises from prolonged cognitive demands, leading to irritability, mood disturbances, and increased vulnerability to stress (Van der Linden et al., 2003). A major contributor to mental fatigue is inadequate or poor-quality sleep. Insufficient or disrupted sleep hinders the brain's ability to recover and replenish cognitive resources, impairing cognitive performance (Hershkowitz et al., 2015). The cumulative effects of chronic sleep deprivation further exacerbate mental fatigue, significantly impacting academic performance, workplace productivity, and mental health (Miyake et al., 2000).

The current research explores the relationship between sleep quality and mental fatigue, examining the consequences of poor sleep on mental and physical health. Through a review of existing literature and ongoing research, the study aims to deepen understanding of sleep quality and mental fatigue as critical factors influencing individual well-being and performance, with the goal of highlighting the importance of addressing sleep issues to mitigate mental fatigue and promote better cognitive and emotional functioning among college students.

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Sleep Quality

According to Nelson, Davis and Corbett (2021) sleep quality is defined as, "an individual's self-satisfaction with all aspects of the sleep experience." Pilcher, Ginter and Sadowsky (1996) defined sleep quality as, "a composite score of sleep quantity, length of time to fall asleep, number of awakenings at night, length of time to fall back asleep after awakening, a feeling of fatigue/restfulness upon awakening in the morning, and general satisfaction with sleep."

Smith, Felts and Becker (2009) conducted a study on 859 undergraduates at a southeastern university and their result concluded that 76.6% reported intermittent sleep disturbances and 11.8% experienced low-quality sleep. Li et al. (2020) studied the widespread nature of disrupted sleep among college students in Jilin Province, China. They conducted the study on 6284 participants, and they grouped 31% of participants in the poor sleep quality group.

Mental Fatigue

Craik (2014) defined Mental Fatigue as, "a psychobiological state of tiredness caused by prolonged periods of performing demanding, cognitive-load-inducing activities, and it reduces efficiency in cognitive performance" (Tanaka, Ishii, Watanabe, 2014). According to Chaudhuri and Behan (2000), mental fatigue represents "a failure to complete mental tasks that require self-motivation and internal cues in the absence of demonstrable cognitive failure or motor weakness."

Al-Rawwad, Al-Adamat and Rbabah (2023) conducted a study on 336 first year university students at Al-Hussein Bin Talal University. The results concluded that the mental fatigue of the students was at a medium level. Kunasegaran et al. (2023) conducted a study on mental fatigue assessments and found out that environmental factors like financial strain, high-pressure jobs, long working hours can lead an individual to develop mental fatigue.

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Purpose

The purpose of the study is to investigate the relationship between sleep quality and mental fatigue among college students.

Hypothesis

Poor sleep quality is significantly positively correlated with mental fatigue.

Method

Sample

The study sampled 30 College Students aged between 18-24 years from Mohali, Punjab.

Measures

Short Pittsburgh Sleep Questionnaire Index (short PSQI): The Short Pittsburgh Sleep questionnaire (Famodu et al., 2018) is a developed 14 item self-report measure. Respondents were asked to answer 4 Subjective items and 10 objective items on a 4-point scale ranging from 1(not during the past month) to 4(Three or more times a week.

Mental Fatigue Scale (MFS): The Mental Fatigue Scale (Johansson et al.,2009) is a developed 15 item self-report measure. Respondents were asked to rate the 15 items on a 4-point scale ranging from (0) No problem to (3) Serious problems. If they found that their problem fell between two statements, there are also figures to indicate this.

Procedures

The participants were informed about the purpose of the research, and the questionnaires were filled face to face. Each participant was thanked for their cooperation and any queries they

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had about the tests were cleared. Standardized psychological tests were administered to the participant.

Analysis of Data

Results

Table 1: *N, Mean and Standard Deviation*

	Poor Sleep Quality	Mental Fatigue
N	**30**	**30**
Mean	**10.2**	**10.3**
Standard deviation	**5.95**	**6.45**

Table 2: *Correlation between Poor Sleep Quality and Mental Fatigue*

	Poor Sleep Quality	Mental Fatigue
Poor Sleep Quality	**—**	
Mental Fatigue	**0.613*** **	**—**
Note. * p < .05, ** p < .01, *** p < .001		

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Discussion of Results

The current study aimed to investigate the relationship between poor sleep quality and mental fatigue. The results found out that poor sleep quality demonstrates a significant positive correlation with mental fatigue ($r = 0.613$, $p < .001$).

The research findings were aligned with Åkerstedt et al. (2004) who studied the relationship between mental fatigue, work related factors and disturbed sleep among 5720 people in the greater Stockholm area and they found that poor or disturbed sleep is a strong predictor for mental fatigue and it is more significantly correlated than factors like work load and exercise, which were thought to be more important before.

Lavidor, Weller and Babkoff (2003) employed a cross-sectional design on a random sample of 278 adults and they found that mental fatigue is significantly predicted by subjective sleep quality, whereas quantitative sleep characteristics like sleep latency, nocturnal awakenings, and early morning arousals do not show a predictive relationship.

Yasin, Mushtaq and Karamat (2024) explored the association between bedtime procrastination, sleep disturbance, fatigue, and mental health problems among 182 female university students. Their results included correlational analysis which revealed a significant positive association among sleep disturbance, mental fatigue, amongst others. The finding of the regression analysis indicated that bedtime procrastination, sleep disturbance, and fatigue were significant predictors of mental health problems

Abdali, Nobahar and Ghorbani (2019) studied sleep quality, fatigue and emotional intelligence amongst 400 Iranian medical students from Semnan University of Medical Sciences and results revealed a significant relationship between sleep quality and fatigue with emotional intelligence and a significant relationship between sleep quality and fatigue.

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Conclusion

After conducting a thorough study, this research confirmed that poor sleep quality significantly increases mental fatigue, with a strong positive correlation observed between the two variables. Factors such as academic pressures, social commitments, and personal responsibilities were identified as key contributors to disrupted sleep patterns, which in turn exacerbate mental exhaustion. This study effectively highlighted the detrimental impact of inadequate or disturbed sleep on the mental well-being of college students. Through an analysis of sleep patterns, perceived fatigue levels, and their relationship with overall well-being, the research underscored the crucial role of quality sleep in sustaining mental clarity and productivity.

The findings emphasize the importance of fostering healthy sleep habits to mitigate mental fatigue among college students. Gradual adjustments to sleep schedules, avoiding stimulants like caffeine before bedtime, and incorporating regular physical exercise into daily routines can significantly improve sleep quality and reduce fatigue. Moreover, adhering to consistent sleep and wake times can establish a stable circadian rhythm, promoting both mental and physical health. By prioritizing sleep hygiene, students not only stand to improve their academic performance and productivity but also safeguard their long-term well-being. Addressing sleep-related challenges is, therefore, a critical step toward ensuring a healthier, more resilient student population, ultimately enhancing their quality of life and academic future.

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