

SLEEP QUALITY, STRESS AND COGNITIVE PERFORMANCE IN COLLEGE STUDENTS

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ABSTRACT

Sleep quality refers to how well you sleep and the overall satisfaction you feel after waking up. Poor sleep quality can lead to increased stress and psychological pain levels, which can impact cognitive performance. It can affect our attention, memory, and problem-solving abilities. The aim of the study was to find out the relationship between sleep quality, stress, and cognitive performance in college students. Cross-sectional correlation research is used. The sample was comprised of 150 college students ranging between 16 and 19 years of age. Convenient sampling was used to collect data. The measurement tools were the Sleep Quality Scale (Yi et al., 2006) to assess sleep quality, the Perceived Stress Scale (Cohen et al., 1983) to assess stress, and the Cognitive Failures Questionnaire (Broadbent et al., 1982) to assess cognitive performance. Results revealed a significant positive relationship between sleep quality, stress, and cognitive performance among college students. Gender differences were non-significant in sleep quality, stress, and cognitive performance among college students.

I. INTRODUCTION

The quality of sleep is an individual satisfaction with everything in the sleep process. There are four characteristics of sleep quality, which include sleep efficiency, sleep latency, sleep duration and wake after sleep onset. Sleep quality is a concept that is used in reference to how easy it is to sleep and remain asleep every day. Individuals that are unable to sleep hours after bedtime or wake up every now and then during the night are reported to have a poor quality of sleep otherwise referred to as insomnia (Gillis and El-Sheikh, 2019). The level of satisfaction with the experience of sleep is termed as the sleep quality and it incorporates factors of sleep initiation, sleep maintenance, amount of sleep and refreshment upon waking. Stress may be described as a state of concern or a mental tension that is brought about by a challenging circumstance. Stressful situations are normal reactions of humans that make us fight challenges and threats in our lives. Stress is experienced by everyone to some extent. Stress refers to the mental, physical as well as behavioral manifestation of an individual, when he or she feels that there is no balance between the task required of him or her and his or her capacity to discharge the task, which ultimately causes ill-health after some time (Chu et al., 2024).

Cognitive performance is our mental activities or cognitive skills. This involves such things as our attention, memory, reaction speed, problem solving capacity among others. Cognitive performance is a measure of how well our brain functions. Students go through physical and mental transformations during their college years, and during this time, they get drawn to a wide range of things. Its purpose is to look into how college students'

cognitive function is affected by their stress levels and quality of sleep. Reduced sleep duration is linked to poor cognitive function. We hypothesized that adults' cognitive function is influenced by both short sleep duration and high-quality sleep (Miyata et al., 2013). We can investigate potential treatments or tactics to enhance sleep, lessen stress, and eventually improve cognitive capacities by comprehending this association. The findings of this study may have applications in helping college students succeed academically and generally. Students' sleep patterns are disturbed by stress throughout the college transition, which also has an impact on their cognitive function.

Stress impairs the quality of their sleep, which in turn affects higher-order cognitive functions, including memory, learning, and reasoning. College students' cognitive performance might be positively impacted by getting enough restorative sleep and controlling stress levels. Better cognitive performance can result from college students managing their stress levels and placing a high priority on getting quality sleep. This is due to the fact that getting enough sleep improves concentration, helps solidify memories, and sharpens problem-solving skills. Furthermore, stress management lowers cognitive load and improves pupils' ability to concentrate on academic work. Observed all aspects of trait mindfulness were found to be entirely or partially mediated by stress in the connection between perceived This is because getting enough sleep improves concentration, helps solidify memories, and sharpens problem-solving skills. The current study investigating the relationship between sleep quality, stress, and cognitive performance in college students can provide insights into the underlying mechanisms of these interrelated factors. Stress and an inadequate quality of sleep are severe and widespread issues among college students that may have a negative impact on the academic success. The international students might find it more challenging than domestic students due to the necessity to cope with the challenges of the move to a new culture as well (Kenneth, 2022). Furthermore, stress management lowers cognitive load and improves pupils' ability to concentrate on academic work. The connection between all aspects of trait mindfulness and perceived cognitive functioning was either totally or partially mediated by perceived stress (McBride et al., 2023).

II. METHOD

Participants

A cross-sectional survey design was used. The data were collected from 150 college students between the ages of 16-19 years, including 75 males (50%) and 75 females (50%). A convenient sampling technique was used to gather data from college students.

Measures

For assessment in the current study, the Sleep Quality Scale was developed by Yi et al. (2006) was used. This scale contains 28 items with a 4-point Likert scale ranging from (rarely, sometimes, often, and almost always), with high scores indicating high levels of sleep quality. The Perceived Stress Scale was created by Cohen et al. (1983), was used to identify stress. This scale contains a 10-item scale with a 5-point Likert scale ranging from (never, rarely, Sometimes, fairly often, very often). The Cognitive Failures Questionnaire was created by Broadbent et al. (1982) to measure how frequently people made mistakes in their vision, memory, and motor skills, among other areas of cognitive performance. The twenty-five items on this scale are divided into three subscales: forgetting (1, 2, 5, 7, 17, 20, 22, 23) the propensity to lose knowledge of things familiar or planned e.g. labels, intentions, appointments and words. Interrupting processing of cognitive and motor actions was mainly mediated by item 8, 9, 10, 11, 14, 19, 21 or 25 that are distractible primarily in the social situation or when one is interacting with other people such as being absentminded or easily distracted in ones focused attention, and false triggering (item 2, 3, 5, 6, 12, 18, 23, and 24).

Procedure

Before starting the data, permission was taken from the Head of Department and also from the authors of the tools that were used in the current investigation. The participants of this study were enrolled through purposive sampling techniques from different areas of Raiwind and Lahore city. After explaining the aim of the research, consent was taken from them. Only those who have satisfied the requirements for inclusion and exclusion were included in the research. Participants were also informed that their confidentiality was maintained and that they

could withdraw at any time. After data collection, data were analyzed, and results were generated using a SPSS (version-27).

III. RESULTS

Table 1: Psychometric Properties of Study Variables

Variables	<i>M</i>	<i>SD</i>	Range	α
Sleep Quality	64.88	14.07	28-112	.86
Stress	26.33	7.22	0-40	.78
Cognitive Performance	44.91	14.12	0-100	.86

The psychometric properties of scales used in the current study showed good reliability, i.e., $>.70$.

Table 2: Correlation between sleep Quality, stress, and Cognitive Performance

Variables	1	2	3
1. Sleep Quality	--		
2. Stress	-.56**	--	
3. Cognitive Performance	.46**	-.42**	--

** $p < .01$

The correlation coefficients of table 2 show that there is a significant negative relationship between sleep quality and stress whereas significant positive relationship between sleep quality and cognitive performance. Furthermore, there is a significant negative relationship between stress and cognitive performance among college students.

Table 3: Gender Differences in Sleep Quality, Stress, and Cognitive Performance

Variables	Women		Men		<i>t</i> (148)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Sleep Quality	65.69	13.41	64.07	14.76	.70	.48	.11
Stress	26.37	6.73	26.29	7.73	.06	.94	.01
Cognitive Performance	44.48	14.80	45.33	13.50	.36	.71	.06

The above table showed that there are non-significant gender differences in terms of sleep quality, stress, and cognitive performance among college students.

IV. DISCUSSION

The findings revealed that sleep quality is positively correlated with cognitive performance. The earlier study showed that there was statistically significant positive correlation between sleep quality and cognitive performance. That is, a high Sleep quality level corresponded to a high level of cognitive performance. Our results align with the existing studies that demonstrated that sleep quality can be one of the key determinants of academic performance of adolescents. More interventional studies should be clarified to understand how sleep is associated with academic performance among the young population (Morgenstern, 2020). The findings also indicated that there was a positive correlation between sleep quality and stress. Poor sleep quality is associated with increased stress levels and decreased cognitive performance in college students. When poor sleep is associated, then stress levels also increase, and cognitive performance decreases. Findings showed that the poorer sleep quality increased stress and decreased cognitive performance. Previous researches show that poorer sleep quality and higher stress levels are associated with decreased cognitive performance. Healthy aging is determined by reduced sleep quality and reduced sleep time and more wakefulness after sleep onset. The older adults wake up more often and mostly wake up without rapid eye movement (REM) sleep but with non-rapid eye movement

(nREM) sleep as compared to young adults. Poor neuropsychological functioning is usually related to poorer sleep quality in cross-sectional studies (Şenturk et al., 2022). Findings also reveals that there are no significant gender differences in sleep quality, stress, and cognitive performance among college students. This indicates that both male and female students experience similar patterns of sleep and stress, which equally affect their cognitive functioning. These findings align with recent studies suggesting minimal gender-based variance in sleep-stress dynamics among young adults (Almusharraf et al., 2024; Becker et al., 2023), supporting the notion that lifestyle and academic pressures, rather than gender, are stronger determinants of sleep quality and mental performance in students.

V. CONCLUSION

The findings of the study showed that when the quality of sleep was increased stress level was decreased. When sleep quality decreases, stress also increases. The result also showed that there was a significant relationship between sleep quality and cognitive performance. When sleep quality is higher, cognitive performance is also increased. However, gender differences were non-significant in all study variables. By recognizing that high sleep quality is essential for effective stress management and optimal cognitive function. The relationship between sleep quality, stress, and cognitive performance in college students has significant implications for academic success and mental health.

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