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The Impact of Sleep Deprivation on Cognitive Function, Academic Performance, Stress Level Among College Students

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Abstract

Sleep deprivation is among the leading problems that have been affecting college students in recent years. These students have been putting pressure on themselves academically, making certain lifestyle choices, and excessively using digital devices. Hence this study dives into the issues that sleep deprivation poses to cognitive function, academic motivation, and stress among college students. The study used a quantitative design and data were collected from 199 participants through psychological tests. The analysis of the data involved descriptive statistics, Spearman's correlation, and Independent Samples t-test. The data expose that insufficient sleep was the main factor that led stress to be elevated and mental and academic performance to be lowered, and these changes were statistically significant. Sleep-deprived students were less attentive, had a poorer memory, and were less motivated compared to those who maintained a proper sleep/wake pattern. There is a strong indication that bad sleep habits not only weaken mental and academic functions, but also call for the necessity of schools engaging in the support of students' awareness of the practice of hygienic sleep. Essentially, the research conveys that sleeping well, enough, and regularly is the primary determinant that can elevate students' concentration, emotional stability, and learning capacity. The paper's authors consider time management workshops, counseling programs, and sleep education initiatives as the interventions resulting in the improvement of students' academic performance and psychological health.Sleep-deprived students were less attentive, had a poorer memory, and were less motivated compared to those who maintained a proper sleep/wake pattern. There is a strong indication that bad sleep habits not only weaken mental and academic functions, but also call for the necessity of schools engaging in the support of students' awareness of the practice of hygienic sleep.

Keywords: Sleep deprivation, Cognitive Function, Academic Performances, stress level

1. Introduction

Overview

This research is mainly centered on figuring out the ways in which lack of sleep Deprivation the cognitive functions, academic achievements, and self-reported stress of college students. Sleep, which is a basic requirement of life, plays the major role in memory consolidation, the regulation of emotions, and psychological well-being of the mind. However, a great number of students because of academic pressure, lifestyle habits, and excessive use of technology have poor sleep quality or they are unable to get enough

rest. Prolonged sleep deprivation may lead to cognitive dysfunctions, among which decreased attention, poor concentration, forgetfulness, and reduced problem-solving ability may be mentioned. These, eventually, may become the cause of academic outcomes going in the negative direction. What is more, irregular sleep is most often accompanied by increased stress and emotional instability. Therefore, the present study through the first objectives is looking for the relationships between sleep quality, cognitive failures, academic achievement, and stress levels in order to delineate the role of sleep in students' mental health and Educational performance.

Sleep is among the most important biologically and psychologically necessary processes of human life and yet it is also one of the most overlooked aspects of the student's lifestyle. To sleep is to carry out reparative functions in which the body restores itself physically and also the brain engages essential psychological systems like memory, focus, and emotional control. Sleep combined with exercises and a balanced diet is one of the five indispensable health pillars. Similar to neurophysiology, the sleeping and waking are a part of the body's circadian and homeostatic rhythms that control melatonin production and brain wave activities (Carskadon & Dement, 2011). Any disruption in natural sleep rhythm, such as late bedtimes, excessive artificial light, or irregular sleeping habits, can damage one's physical and psychological capacities seriously. Even though it is extremely important, sleep is among the most overlooked needs in the modern world, especially among the youth that is a subsector of higher education.

Society suffers from a problem of insufficient sleep which is quite common in the modern world. Inadequate sleep or a sleep of a poor quality can lead to health and mental well-being issues of an individual (Walker, 2017). Due to strict schedules, changing daily routines, social activities, and almost an all-time habit of watching a screen before going to sleep, college students are usually the most affected group of people (Hershner & Chervin, 2014). According to the American College Health Association, over 60% of students are sleeping less than the recommended number of hours. The issue of not sleeping enough only goes as far as exhaustion. Poor sleep has been associated with poor learning, increased levels of stress, and low performance. Almost a quarter of students in college were reported to have sleep disorders such as insomia and sleep apnea by Gaultney (2010). This implies that sleepless nights and the lack of quality of sleep is only part of the problem.

Increased education level in India is among the most common factors of hostel lifestyle. With it comes a heavy and distinct burden of pressure. Dorm students appear to be the most affected by noise and activity changes – wild parties and people changing from night to day workers, all operating without regard for 'quiet hours' – for most of the night, and maybe longer. These disruptions not only disturb the sleep of some people but also hamper their performances. Apart from those countless noise-related issues, invisible barriers in the form of less-protected beds, unregulated watches over the students' dorm styles, and unregulated bedtimes, especially in cities, which over the years have facilitated the trend of junior students living in dorms for the first time, are also there.

The people who are disrupted in their nightly scheduled bedtimes are the ones who have least likely sleep disciplines well rehearsed. These disruptions mostly hit sleep interruptions, and more in terms of disturbances to longer sleep cycles especially in subsequent hours. Have the same likelihood of sleep disruption problems as those that are confined within a closed classroom. These students seem to be inclined toward an acute shortage of sleep and plunge headfirst towards 'late night' shifts, thus killing and

starving themselves of, a very familiar, 'shut-eye' for those more regular and fading branches of rest found during the day. However, the nightly hours seem to be far too close and near the time of retreat and silence for a great number of students. There are only a few who delight in the absence of the distance in the daytime. Even fewer of them are likely to comprehend the extreme technological link that students in India and worldwide have. Asleep-Machines, if looked at from a broader perspective, are becoming more and more beautiful and vumping themselves of flight hours. Beauty tools like wristbands (fashion) and smartphones, which are limitless, all have their place. They are the bound, set and locked within a 'double screen' of advancing, set, and targeting screens. Beyond the merciless capture from within have eclipsing devices, staring, unheralded, and invited, is head of the leash, vowing, especially, to sleep longer, within, four.

The Indian higher education system is known for hostel life, which generally aggravates these kinds of sleep problems. Frequently, those who reside in hostels are subject to loud surroundings. For instance, the noise from roommates, parties, or even the use of a common facility that goes on until late night can keep them awake. The space is hardly enough, and the time for rest is hardly checked especially in colleges located in the cities where students go to live on their own for the first time. All these factors have the effect of disturbing the body clocks and cause students to have irregular sleeping patterns which then have an impact on their mental abilities, emotional stability, and academic progress. As a matter of fact, students living in hostels may divide the time for studying into different shifts, remain awake until dawn, and then get up for the early classes or exams, thus, creating a repetitive cycle of sleep deprivation.

Moreover, another significant cause of lack of sleep among Indian students of higher education is over the top use of technology-based means of communication and information. The problem is that the use of these facilities from the late hours up to bedtime is a significant postponement of the actual sleeping time. People are seemingly glued to different social media sites like WhatsApp, Instagram, and YouTube where the interaction and entertainment level is very high, and this makes sticking to particular sleeping regimes very difficult (Kaur & Singh, 2021). The cause of the sleep deprivation lies in the emission of blue light from the monitors which prevent the production of melatonin hormone that is associated with sleep. On top of that, the conjunction of anxiety due to the academic pressure with this situation results in a sleep pattern that is shorter and consists of more wake-ups. Such a cycle finally results in a reduction of the brain's executive functions such as logical thinking and memory of facts.

Long-term insufficient sleep in India has also been affected by social factors. Although the balance between work and life plus the personal side is emphasized in some Western countries, students in India rather see lack of sleep as something that must go along with attaining success. The attitude of strengthening one's efforts is mainly because of the rivalry. The habit of burning the midnight oil to work on assignments is a kind of pressure that, regardless of one's health condition, is hard to give up. Besides this, urbanization and changes in lifestyles like taking up part-time jobs, participating in extracurricular activities, and traveling at night have further shortened the time left for sleep.

The outcomes of these behaviors have been highly influential. Chronic sleep deprivation among students in India, has been associated with lowered academic achievement, increased levels of stress, emotional instability, and even a higher possibility of developing mental health problems such as anxiety and depression. In addition, sleep deprivation negatively affects physical health, as it leads to a weakened immune system and an increased risk of becoming easily tired and catching diseases caused by lack of

rest (AlDabal & BaHammam, 2011). The results of such research speak to the fact that sleeplessness in India is not to be dismissed as a mere lifestyle choice but rather a complicated psychological and educational problem that requires its own set of solutions. The institutions of learning, the family units, and the policy-makers cannot but see the significances of promoting good sleep habits, planning academic schedules in a practicable manner, and creating an environment, which is supportive and, among others, encourages enough rest. Proper rest is key not only to the student's academic achievement, but also to their general physical and mental health and well-being.

Sleep is an important factor that is directly related to cognitive functions. Studies in brain science reveal that memory consolidation, which is a mechanism that converts short-term experiences into long-term knowledge, takes place during sleep. This is particularly the case for slow-wave and REM stages (Diekelmann & Born, 2010). The brain is unable to encode and retrieve information without it being given enough rest. Hence students, who stay up late to cram for exams, often find it difficult to recall things during their tests. Pilcher and Huffcutt (1996) in their meta-analysis argued that even minor sleep loss could result in lowered abilities in tasks requiring memory and focus. Further, neuroimaging results indicate that after sleep deprivation the prefrontal cortex, which is responsible for decision-making, attention, and problem-solving, exhibits lower activity(Yoo et al., 2007). The same is true, according to research conducted in India. Kaur and Singh (2021) reported that among college students, sleep deprivation negatively affects working memory and executive functioning, which are both essential for academic achievement.

Grades, assignments, and class participation are the things which often reflect academic performance. One's sleep quality is an important factor that can even change the outcomes of the performance mentioned above. The research conducted by Gilbert and Weaver (2010) concluded that students who suffer from insufficient sleep are the same students who are more inclined to skip classes and less likely to get a good grade as compared to students who sleep well. Hershner and Chervin (2014) argue that students who are sleep-deprived and underachieve are not so because they don't try hard; the truth is, due to lack of sleep, such students experience reduced concentration, diminished learning, and decreased motivation levels. Mahapatra et al. (2022) carried out a study in India which revealed that, among the teenagers, excessive use of the phone at night and academic-related stress were the major factors that led to poor sleep quality. It was identified that this poor sleep hampered motivation. Hence, the paradox arises here that students give up their sleep for better academic performance but, in reality, this very decision backfires and lowers their academic success.

Sleep deprivation refers to the situation when one does not get enough sleep to maintain good physical, mental, and emotional health (Hirshkowitz et al., 2015), and it plays a major role in the way people handle their stress. Stress is a reaction to new situations that may pose challenges or threats to us. In short, it happens when people feel they do not have the resources necessary to meet the challenges (Lazarus & Folkman, 1984). Students in colleges are mostly stressed by heavy academic loads, exams, competitive environments, personal relationships, and worries of getting a job after finishing their studies. When students are short of sleep, they become less emotionally stable. This makes them perceive the stressful situations as more difficult, and they find it harder to cope with them. Lemma et al. (2012) discovered that poor sleep quality was a leading cause of psychological stress that the university students in Ethiopia faced and thus, the relationship between sleep and stress has been established not only in

different cultures but also across the globe. Besides that, Taylor et al. (2003) also found that long-term sleeplessness causes more stress and depression, anxiety, and lack of motivation to do academic tasks.

The interrelation of sleep and stress frequently results in such an exchange of energies that this cycle keeps renewing itself. Stress basically doubles sleep problems, and sleeplessness on the other hand makes emotional and cognitive functions even more vulnerable. The consequences of these negative spirals catch students in ongoing tiredness, less motivation for study, and lower academic performance. The most important thing about this issue is that it can be solved by recognizing the duality between lack of sleep and stress, which in turn assists in mental health promotion, coping strategy improvement, and overall well-being enhancement among college students.

1.2 Statement of the Problem

Sleep deprivation is a problem that has gradually spread worldwide among students. The puzzle about this issue has been focused on which of the departments of the organism between cognition, academic outcomes, and stress has been affected. Previous studies have only discussed the individual implications of sleep deprivation on cognition, academic outcomes, or stress, and very few studies have acknowledged the simultaneous relationship of these three. However, it is a big gap, especially in India, where students are under psychological pressure due to the hostel situation, highly competitive academic standards, irregular scheduling, as well as social and extracurricular demands.

Moreover, most of the research works consider only the cognitive functioning and sleep quality of the participants based on their self-reports, which are not very trustworthy. To date, very few studies have employed instruments like cognitive tests, biological measures of physiological stress, or even sleep tracking apps, hence, it is not feasible to have precise or generalizable interpretations of the effects of sleep deprivation. The consideration of all the simultaneous and influential effects of sleep deprivation on cognition, academic outcomes, and stress is absolutely necessary when making large-scale interventions, especially among a sample of Indian students who are exposed to several distinctive cultural and academic challenges. There is a possibility to consider these connections by using both subjective and objective measures, thereby giving researchers a deeper insight into the way sleep deprivation affects mental functioning, learning outcomes, and emotional functioning in this group of students.

1.2 Objectives

1. To measure the level of sleep of college students and recognize the most common patterns of sleep deprivation.

2. To analyze the effect of sleep deprivation on the occurrence of daily cognitive lapses that are memory loss and lack of concentration in college students?

3. To investigate the impact of sleep deprivation on academic performance through learning engagement and task completion.

4. To find out how sleep deprivation influences the stress level in college students.

1.3 Research Questions

1. How sleep quality affects educational performance of college students?

2. In what way lack of sleep escalates the stress level of students?

3. In what manner does sleep deprivation impact the occurrence of daily cognitive lapses that are forgetfulness and inattention among university students?

1.4 Hypothesis

H1: Sleep quality and cognitive function of college students have a significant negative correlation.

H2: Sleep quality and academic performance of college students have a significant positive correlation.

H3: The quality of sleep of male students is significantly different from that of female students.

1.5 Operational definition of the Key terms

Sleep deprivation:

Sleep Deprivation is a condition when a person does not have proper or enough sleep, which results in low energy, lack of focus, and difficulty in functioning throughout the day.

Cognitive function:

Cognitive function is the brain's ability to understand, remember, and use information in an appropriate way. This ability involves using the brain for concentration, memory, problem-solving, and decision-making. Reduced cognitive function, which is a side effect of sleep deprivation or mental fatigue, may also be accompanied by forgetfulness and lack of attention, which are typical manifestations. These lapses, in turn, may deteriorate students' academic performance.

Academic performance:

Academic performance is the level to which a student meets their learning goals and educational objectives in school, college, or university. The measurement of this is mostly done by grades, test scores, assignments, class participation, and the overall academic achievements.

Stress:

Stress is a person's mental or emotional reaction to academic or personal pressure that causes discomfort or unhappiness.

1.6 Theoretical frame work

According to the famous Cognitive Load Theory (Sweller, 1988), the human brain only has a very small pool of memory and other mental abilities that it can draw upon each moment to process new information. This condition of sleep deprivation in students harms their attentional and memory skills which in turn exhausts their cognitive resources even more. The thorough cognitive load depletion may make one unable to perform even very simple learning tasks, as the brain struggles to effectively register, process and store information at the same time. To give a clear example, after a sleepless night a student's brain may not only fail to remember the material studied but also improperly infer a set of instructions or commit an oversight on a problem-solving task. When lack of sleep raises the cognitive load beyond the capacity of working memory, it will have a negative impact on learning outcomes. By now it is evident that cognitive load theory is a helpful framework in explaining why sufficient sleep is indispensable to optimal cognitive functioning and mental load in the case of stressful study routines. As cited in an extensive volume of research literature, students become less attentive, less efficient in processing and memory consolidation deteriorates during sleep deprivation (Diekelmann & Born, 2010; Pilcher & Huffcutt, 1996).

Self-Determination Theory (Deci & Ryan, 1985) suggests that human motivation depends intrinsically on three basic psychological needs: autonomy, competence, and relatedness. The state of sleep deprivation that we are discussing here is a definite barrier to the satisfaction of human needs for autonomy, competence, and relatedness, since it not only exhausts the energy reserve and body but also increases the feeling of fatigue and interferes with emotional stability. A student who under normal circumstances could even have been the main source of motivation for the completion of applications may come to a point where he/she feels less capable, more frustrated, and detached from the peers, and is thus more likely to procrastinate or disengage from the academic context.

As students fail to continue to obtain adequate rest, their sense of competence will be decreased, thus they will tend to lose their preferred goal-directed behaviors. At the same time, their ability to focus will be weakened, which can additionally hamper academic motivation and make the students less persistent in their academic pursuits. Hence, those students who suffer from sleep deprivation declare that they are less intrinsically motivated and interested in learning experiences (Lemola et al., 2011; Kaur & Singh, 2021), thus confirming that sleep can significantly affect support of needs from the Self-Determination Theory perspective.

The Cognitive Appraisal Theory of Stress (Lazarus & Folkman, 1984) maintains that stress is a product of people's perception of a situation being beyond their capacity of coping. Sleep deprivation impairs emotional regulation, diminishes problem-solving skills, and makes students less able to bounce back from adversity - instead, they are more likely to view the academic challenge as overwhelming or threatening. As a result, sleepless students will magnify the stressfulness of the exam and, thus, experience anxiety and psychological strain. If the pressure to study and lack of sleep continue for a long period, eventual insufficient sleep can cause a vicious circle in which stress will increase and sleep hours will decrease leading to more cognitive and emotional struggles (Taylor et al., 2003; Lemma et al., 2012). The stress model underlines that enough sleep is vital not only for emotional self-control but also for a realistic assessment of academic expectations.

The college scene comes with a variety of unique challenges that make it highly probable that students will be deprived of sleep. In the course of their daily activities, students are attending classes which have timetable schemes that look complicated, they also have part-time jobs, and at the same time, their living conditions are rapidly turning into hostel-style, where one can hardly find silence and privacy (Lund et al., 2010). These factors alone can be sufficient to break one's rest, and still, we have to take into account the influences of our "smart", digital, 24-hour a day life. Quite a few students engage themselves with social networking, streaming, or gaming for several hours and thus they end up going to bed very late, i.e. not before 12 or even 1 or 2 am - which in reality is around 2 or 3 am - because they have not interrupted their activity during the night (Exelmans & Van den Bulck, 2017). The Indian education culture has been playing an influential role in student sleep behavior. Students during exams or times of high academic pressure engage in studying while sleep is either neglected or in the worst case scenario, it is something that is sacrificed altogether. Social comparison, peer pressures, and setting all–nighters in their social circles have the effect of normalizing unhealthy sleep habits.

There is a research gap between Western and Indian perspectives in this regard. Western university-based research such as Curcio et al. (2006) and Dewald et al. (2010) have provided new evidence for the effects of sleep deprivation on children's cognitive abilities and academic performance. In contrast, very few studies have been conducted in India that have looked at these correlations in this country. The Indian students' additional stressors, such as parental expectations, competitive exams, and hostel living, could also contribute to the impact of insufficient sleep. We, as academic literature, have ignored discussing these contextualized stressors. While we intervene and offer awareness programs concerning sleep, we rely on an academic understanding that is socially and culturally western for the intervention. This, in turn, allows Indian students to develop any academic or contextualized sleep issues on their own.

Sleep plays a major role not only in your immediate academic performance but also, it leaves positive and negative physical and psychological health effects that last for a long time. Nearly every chronic sleep deficiency study identifies that such deficiency is linked to a higher risk for various severe health problems. For instance, the lack of sleep is at the root of cardiovascular problems (like hypertension and heart diseases) due to elevating stress hormones and inflammation (AlDabal & BaHammam, 2011). Moreover, long-term sleep deprivation has been linked to metabolic disruption that makes one prone to obesity and type 2 diabetes. Sleep deprivation negatively affects or interferes with glucose control, appetite-regulating hormone leptin and ghrelin, and may even have a connection with food addiction. A person who is chronically sleep-deprived may also, to some extent, experience a weakened immune system and slowed recovery from diseases as well as increased susceptibility to infections.

The psychological implications of chronic sleep deprivation are usually just as powerful and substantial as well. Chronic sleep deprivation has been found to be very closely related to a wide range of mood disorders (including depression and anxiety) (Lo et al., 2016). Besides the mental health symptoms, depleted sleepers also suffer from irritability, disinhibited emotions, lack of emotional strength, increased social withdrawal, poorer relationships, and overall quality of life and ability to function. Burnout means a state when somebody loses emotional and physical energy. Mostly very young college students and professionals who cannot function well due to overwork are cases of burnout, and one of the reasons is

extreme sleep deprivation in which the loss of cognitive and other functions necessary for life stress and academic workload management has already occurred.

Students who frequently have trouble sleeping may take to certain unhealthy behaviours such as over-use of caffeine, energy drinks, and changing their eating habits without realizing the detrimental effects on their health. Furthermore, sleep deprivation can hamper memory consolidation, learning, and decision-making skills, thus leading to a vicious cycle of academic performance decline and student wellbeing deterioration.

Firstly, sleep must not be considered as a mere passive state that has implications for performance but rather as an active state which has considerable implications for overall wellbeing. Furthermore, such proactive measures as sleep education programs, scheduling and structuring, meditation and relaxation exercises, and promotion of awareness regarding the effects of insufficient sleep are indispensable in college environments. Sleep improvement efforts among students hold a promise not only of safeguarding them from dreadful physical and psychological disorders but also of elevating their general functioning and inculcating them with the healthful lifestyle habits extending well beyond their academic tenure.

One typical issue that college students have nowadays is neglecting their sleep which moreover, affects other areas of their lives such as social and emotional wellness besides the physical and academic side. This research together with others highlights the demand for understanding sleep deprivation as a multidimensional (constellational) problem that has a significant impact on the brain, motivation, capability of stress management, and general health. The lack of sleep has a considerable impact on students' ability to learn and perform as well as the adaptation to handling challenges in higher education. Every single one of these chronic or ongoing sleep deprivations can lead to all the stated issues of attention being lowered, memory consolidation being impaired, and intuitive problem-solving being hindered, all of which are academic cumultivated or instilled. Moreover, sleep deprivation weakens emotional regulation in students which causes them to be more vulnerable to stress, anxiety, and changes in their normal mood; hence, it intensifies the cycle that influences negative personal development consequences learned by students.

By using recognized psychological instruments and integrating psychological theories/constructs (such as Self-Determination Theory, and Cognitive Appraisal Theory), this study would turn the association between insufficient sleep and students' motivation, goal-directed behaviors, and coping strategies into a more in-depth one. Such a study among Indian college students would offer valuable information since most of the research works on this subject have been done on the Western populations. In explaining how student's lifestyle habits, stressors, and social contexts affect sleep behavior, this research would also look into the interaction among these factors to be able to account for the well-being context.

This study mostly has a lot of implications that can be practically applied in real life. The students, who seem to be the victims of sleep deprivation, will understand through the study that they have to take care of themselves first and also manage their time well, and this will lead them to healthier routines. Various academic institutions and educationalists will find the need to introduce school rules and regulations that will be the starting point for good sleep practices, by preventing academic overload and providing easy access to mental health resources, to name just a few examples. Psychologists and policy-

makers can benefit from this study in that they will learn some evidence-based and informed suggestions for spawning a variety of programs aimed at sleep hygiene in schools, working out targeted interventions for at-risk students, and spreading the awareness of conditions for academic and psychological resilience.

In the end, this research confirms that sleep is an essential component of holistic education and, once again, reminds that student academic potential, as well as general health and well-being, are closely linked with adequate restorative sleep. The study, by opening the door for the elucidation of the connection between sleep, cognition, motivation, and stress, aims at eventually creating healthier educational environments, easing the work of counselors, and providing directions for public health initiatives to facilitate student academic success to be realized as whole-person mental, emotional, and physical wellness determinants.

Not getting enough sleep is a global issue that has spread widely, yet it is very underrated. Research keeps showing that insufficient sleep will harm memory, concentration, motivation, and will increase stress, thus academic performance and well-being will be lowered. While this problem is common to the entire world, in India, it is a matter of life and death because of the culture, tradition, social structure, and academic pressures. Despite the fact that sleep has attracted more and more research attention globally, there is still a lack of coordinated research regarding the multi-faceted interaction of sleep, cognition, academic performance, and student stress in the Indian context. This research intends to contribute a small piece to the puzzle by developing healthier school environments that consider the holistic needs of students.

1.7 Significance of the research

This study is significant as it highlights a problem that gradually becomes sleep deprivation among college students but is still rarely acknowledged. According to the findings in the paper, one of the consequences of the insufficient sleep is students' lowered cognitive performance, academic motivation, and increased stress levels. These, along with being the vital factors of successful learning, are also the basic elements of the personal well-being of a human being. The research, actually, unpacks the mental functioning, motivation, and emotional stability webs and how they're all interconnected with sleep quality.

The findings are particularly valuable to the students as they can see the direct link between their sleep patterns and academic performance as well as emotional balance. In doing so, they feel competent to alter their lifestyle and time management so that their learning and mental health get strengthened. The study is also extremely valuable for educators and academic institutions. It equips them with the evidence-based knowledge they can use to support different initiatives such as the engagement activities about sleep, counseling services, and stress management workshops to facilitate students' better performance as a result of good sleep hygiene.

When one considers the situation from a psychological point of view, the study becomes a source of knowledge that is necessary for education and health psychology. These areas of science get enriched by the research having the physiological basis for the linkage of sleep to emotional and cognitive functioning. It is like a welcome mat for future interventions and studies which will see holistic student development as the ultimate goal rather than merely academic achievement.

Simply put, the research's worth is its ability to change the paradigm of how sleep is regarded as a health factor in schools. When sleep is recognized as a major factor of mental agility, emotional control, and learning effectiveness, both students and institutions will be able to start the changes leading to better academic performance and general well-being.

2. REVIEW OF LITERATURE

2.1 Empirical Review

Sleep deprivation has become a major issue among college students as a result of the pressure from academics and bad sleeping habits. The researchers have broadly considered the issue in relation to its effects on the cognitive process involved in attention as well as memory and also on the academic performance of a person. Contributions to the pool of knowledge have implied that lack of sleep leads to low levels of motivation and stress gets heightened while learning becomes less efficient. This chapter presents some of the points drawn from the articles in the field of sleep and the academic functioning interaction.

The study by Younas et al. (2025) ended up with a detailed analysis of a situation where insufficient sleep was the main cause of brain fog, cognitive decline, and increased risk of cardiovascular diseases in young adults, these being the most significant effects. Their experimental results revealed that lack of sleep depressed general cognitive faculties, especially in a context of attention and memory, which were the most heavily impacted. As you see, this research has illuminated the necessity of performing tasks that improve students' sleep habits in order to prevent cognitive decline and raise academic performance.

As per the Times of India, in 2025, the situation of students not getting enough sleep has been characterized as a major crisis. The causes of this crisis are primarily the academic pressure and the increased use of the screen. Students hardly manage to sleep for 5-6 hours, and, thus, they experience symptoms such as tiredness, lack of concentration, memory problems, and even other serious health risks.

Do you consider this as an unequivocal indication for schools to come and help out, taking into account that sleep deprivation is one of the leading causes that negatively affect students' cognitive ability and academic performance?

Recent research by Zimmerman et al. (2024) found that regular and stable sleep of at least 7 hours per night led to improvements in working memory and response inhibition in healthy adults. Moreover, the authors suggested that sleep should be considered the primary condition for cognitive performance to be sustained. In your opinion, is this a crucial moment that schools should redirect their efforts towards promoting proper sleep habits as a way of unlocking the full potential of cognitive functioning for academic success? Guadiana (2020) conducted a study that involved the investigation of sleep deprivation and cognitive performance of college students. The data obtained from the study pointed out that sleep deprivation had a negative impact on cognitive functioning, particularly attention, memory, and problem-solving skills. From the vantage point of the intervention, this signals the need to work out sleep promoting activities targeting college students to improve cognitive performance and raise academic attainment.

Based on Kreger's work (2025), the most convincing evidence for the claim that a single night of sleep deprivation can lead to impaired cognitive abilities and increased stress levels in college students is to be found in his results which resemble those of Guadiana. Kreger's research pointed out that the closest correlation identified was between sleep deprivation and cognitive performance decline, along with the increase of stress. What you think of this is that it puts the question of whether enough sleep is necessary for proper cognitive function and stress management in academic settings.

Ren et al. (2025) studied the influence of sleep deprivation on impairments of cognitive abilities in healthy adults and used auditory P300 event-related potentials along with subjective reaction time as measures of cognitive function. They claimed that to deprive of sleep resulted in deterioration of cognitive performance in general because the authors of the paper also pointed out that most of the tasks requiring sustained attention were heavily affected. In your opinion, this research leads to the necessity of retaining a good rest to be able to cognitive capacity at the optimum level which is obviously of great significance for academic performance.

A randomized crossover study with 64 university students demonstrated that reaction time was significantly delayed after one night of sleep deprivation, however, there were no significant differences in working memory or Stroop performance (Lorenzo et al., 2017). From the standpoint of students, this means that in case you are only capable of pulling an all-nighter, sleep deprivation will mostprobably lead to a slowing down of note-taking during the lecture, answering the exam questions, or making quick clinical decisions while higher-order functions will most likely remain unaffected.

Gupta and Mitra (2025) experimented with different levels of lack of sleep and studied the influence of such deficiency on the frequency of cognitive errors in daily activities. They first selected 139 students to fill out the Pittsburgh Sleep Quality Index (PSQI) and Cognitive Failures Questionnaire (CFQ). A very significant positive correlation was found between the two measurement tools ($r = 0.50$, $p < .001$): sleep and cognitive failures, especially in cases of memory lapses or distraction, were very closely related. If we consider things from your perspective, this definitely goes along with the idea that cognitive failures are associated with sleep disturbances and not only sleep deprivation.

Sun et al. (2025) went deeply into the research while performing an experiment on prolonged sleep deprivation and its impact on the brain. They showed that due to the reduced blood flow in the prefrontal areas of the brain, cognitive flexibility was the one that suffered most in the deprived individuals. This, from your point of view, is a very convincing argument to account for why sleep is absolutely necessary for cognitive flexibility, which is a capacity both for learning new information and for problem-solving skills in academic situations.

In particular, Ren et al. (2025) aimed to figure out how lack of sleep influences the cognitive performance of healthy adults and they mainly carried out the measurement of P300 auditory event-related potentials and subjective reaction time. The study showed that the cognitive abilities of a person deteriorate in a sleep deprivation situation, particularly when the person has to focus on a given task. For you, this may mean that getting enough sleep is necessary if we want to be able to work at our best cognitive level, which is very important for academic success.

The latest research findings highlight the strong link between sleep quality and academic performance. In fact, the study by Ren et al (2025) revealed that university students with poor sleep quality

negatively impacted their academic performance to such an extent that it was reflected in lower learning efficiency or learning motivation. The researchers found that students' sleep problems or short sleep duration increased the probability of them getting lower GPA scores. So, their findings confirmed that a daily restful sleep is a must for students' academic performance.

Furthermore, Zimmerman (2024) supported this idea by noting that students with less than six hours of sleep per night had a significantly lower academic performance, thus raising sleep duration as a factor that influences overall cognitive efficiency/quality. The results serve as a foundation for the learning process, which essentially means that it depends on the quantity and quality of sleep.

Sleep and stress have a complex and multi-sided relationship with each other. For example, a 2024 study came to the conclusion that the most direct, or worst, source of stress, as perceived by college students, was the main reason for the decrease of overall sleep quality. The authors of the article revealed that the connection between the highest stress level and sleep worsening was influenced by depressive symptoms and life dissatisfaction. In other words, the results say that apart from being beneficial for psychological health, controlling stress is a necessary condition for being able to maintain proper sleep habits which, at the same time, are the basis of cognitive function (BMC Psychology, 2024).

Additionally, Ampofo et al (2025) reported that in high-stress areas like college, the documented high-stress levels were the main reason for the students' sleep being most affected. The writers pointed out that changes in lifestyle and the introduction of stress-relief activities could help solve students' sleeping problems.

Taj et al. (2024) investigated the effect of stress on students' academic performance. Their research led to the conclusion that stress is a major factor that causes a decline in students' academic performance. So, the authors decided to give the stress a definite role in academic performance and thus it is a responsibility of the institutions to help students out with their stress management by giving the counseling service.

Akanpaadgi (2023) conducted a study on how stress impacts the academic performance of university students. The research revealed that stress was the major factor that led to the students' academic performance deterioration, and therefore the management of students' stress would result in good academic performance. Charan (2025) carried out a survey to find the relationship between academic stress, academic anxiety, and academic burnout. The findings showed that academic stress was closely and positively related to cognitive behavioral outcomes. Also, academic stress exerted a negative effect on academic performance which meant that stress was the main cause of the negative side of student academic success.

Zhao (2024) analyzed how stress influences the academic performance of university students. His research uncovered the relationship between elevated stress levels and not only poor academic performance but also worsened general health. The students they studied appeared to be quite weak, especially in time management and self-management. The article goes on to say that if college students are to succeed in the future, they must be provided with effective ways of alleviating stress.

Taj et al. (2024) studied the impact of stress on students' academic performance. Various types of stresses were found in every set of research, to be correlated with student academic performance,

by the authors. As a few examples of stressors, the academic workload and a never-ending employment could be mentioned. The pieces of work have verdicts that have demonstrated the negative sides of academic stress that have become the cause of students' academic performance being lowered, thus, students struggling in their academic work. By putting the studies. findings into practice, schools will be the ones to lose less when the performance crash happens, and students' immediate, direct, and proper engagements with the problem will take place.

Zhang (2025) conducted an investigation about the stress that college students face and their academic burnout. It is absolutely necessary to highlight that the most significant factor in the prediction of academic burnout is the stress effect and that it changes students' learning in a very bad way. To make the point clearer, if we were able to take away stress entirely or at least reduce it, then I guess that we would be capable of lowering students' academic burnout which would result in more academic success.

Akanpaadgi (2023) carried out a research study on stress and the effect that it has on the academic performance of university students. The proof was on the side of the fact that stress drove the students' academic performance in a negative way. The study pointed to the imperative of becoming aware of stressful situations and using the methods that would effectively help in dealing with or handling the way stress influences students' academic performance.

Kuhn (2025) investigated how these three factors intertwined, sleep, mental health, and gender, to influence the academic performance. The study found that the performance of the academic was affected negatively both by lack of sleep and too much sleep. In addition to that, the research found that the person's stress level is one of the factors that have a significant impact on academic performance, and depression also causes academic performance to become negative. However, the paper also referred to the interaction of gender and stress to academic performance.

Almarzouki (2024) studied the relationship between stress and the working memory of university students. The primary takeaway from the paper was that stress had a harmful impact on the working memory. Hence, working memory negatively influenced academic performance. Accordingly, this article infers that students who receive support in stress management will possess better cognitive control, which is the key factor for success in academia.

Pérez-Jorge et al. (2025) conducted a mixed methods study with 256 university students and was extensively used to investigate the severely negative impact of academic stress on the well-being of students that were sometimes taken to extremes. The study findings indicate that the academic environment is responsible for the decline of students' health in the social, physical, emotional, and academic aspects as a result of the predominance of the manifestation of insomnia, anxiety, and performance lowering among them. This places the issue of academic stress at the origin of the problem that needs to be solved in order to implement the well-being and thus form a climate of confidence and academic success.

Khan (2023) revealed that sleep deprivation alters the glymphatic system from its normal state and eventually causes the buildup of toxins in the brain, thus leading to cognitive, motor, and behavioral pattern impairments. Simply put, sleep is a major factor in cognitive health, and the research ends with the suggestion that students should sleep well if they want to have the best brain functioning.

Ampofo (2025) investigated the connection between sleep quality and cognitive functions for university students in Tokyo and London. Poor sleep quality was found to have a very strong negative correlation with cognitive performance, which includes verbal learning, attention, and executive function. The research proposes that culturally appropriate interventions be adopted by university students to improve sleep quality and cognitive performance.

According to Guadiana (2020), insufficient sleep limits the performance of college students. The results of the survey show that students who were continuously sleep-deprived scored lower in academic grades and demonstrated fewer cognitive abilities, thereby indicating that sleep may have a negative impact on academic performance.

Johri (2025) conducted a systematic review identifying sleep deprivation as the main causal factor of adolescent mental health issues. The review emphasizes that sleep deprivation is closely linked to the increased risk of mood disorders, cognitive, and academic difficulties.

As per study report, an experiment following Indian medical students for a period of three months, brought to light that students who were sleeping less than five hours on average and had a regular sleep pattern, suffered a significant decrease in memory, attention, and critical thinking after three months. The report speaks about the influence of sleep deprivation as one more factor which negatively affects the learning process. The results highlight that the link between cognition and sufficient sleep as well as academic performance (Saroha, 2025). Students who want to succeed in a program which is heavily demanding on cognitive skills, like medicine where cognitive performance is directly related to results, it is thus, very necessary that they make sure they are well asleep.

Sleep deprivation has been associated with reduced blood flow to the prefrontal areas of the brain which results in the prefrontal cortex and cognitive flexibility are being impaired, which are very important to making new changes in a learning task. Younas's (2025) study was very clear about this connection between sleep and brain functions, he stated that sleep deprivation diminished students' working memory and mental processing when they had to switch to a different task. The outcomes of these studies, first of all,, underline the importance of sleep as a means of retaining the ability of flexible thinking and problem-solving skills.

One can easily trace the interconnection between sleep, cognition, and health as lack of sleep results in brain fog, premature cognitive decline, and higher chances of cardiovascular diseases. According to Younas (2025), when one is sleep-deprived, the person finds it very hard to understand new information and make decisions, and to note that these two activities are the core of both academic and non-academic daily life. These research works serve as a basis for the need of proper sleep among students.

In addition, without enough rest over a period of time, one's memory recall and academic performance will be impaired, which, as a consequence, will result in reduced learning and lower grades in examinations. Med students with irregular and insufficient sleep who are more prone to get low grades due to lack of rest, as stated by Patel et al. (2018). Hence, it would be beneficial to deploy more effective interventions that promote healthy sleep patterns as a support for learning and cognitive functions in academic programs of high demands.

The improvement of working memory, attention, and response inhibition was the result of regular and unbroken sleep of at least seven hours each night, thus cognitive functioning in general became better. Zimmerman (2024) discovered that students' cognitive functions decline due to their bad and/or irregular sleeping habits, which might be disengagement and lack of participation in the learning process. Therefore, educators who support sleep hygiene among their students can become a source of cognitive functions improvement among university students.

The students who have slept the least are also, at the same time, the ones that are most likely to develop mental health issues such as anxiety and depression and to experience cognitive inefficiencies which will eventually affect their academic performance. Vestergaard (2024) affirms that sleeping well is very essential for both mental health and cognitive functioning. Therefore, if we want to be good to mental health and make learning efficient in the young, we have to increase sleep duration without fail.

Kim (2025) carried out research on the connection of sleep patterns with cognitive function among South Korean adolescents. The research findings showed that the lack of sleep was strongly associated with the occurrence of various health problems. In fact, the report also stated that the adolescents whose sleep was insufficient had cognitive impairment. Hence, different researchers, through their recognition of the problem, will be involved in seeking solutions to improving adolescent sleep patterns via their interventions.

Zhu (2023) researched the relationship between sleep quality and cognitive function of students majoring in healthcare-related fields. Zhu found that cognitive function declined when sleep quality was poor, and he also put forward the concept that getting enough sleep would lead to better cognitive function of healthcare students. The potential that his research has is to demonstrate how improving sleep quality can lead to better cognitive functioning of students pursuing healthcare degrees.Only a single night of sleep deprivation is enough to have a serious impact on college students' cognitive performance and stress levels, thus drastically reducing their ability to focus and study.

Kreger (2025) shows that even minimal sleep can be the cause of some memory, decision-making and emotional regulation dysfunction. As a result, it would be reasonable to argue that interventions aimed at increasing sleep could not only boost students' cognitive performance but also alleviate their stress.

Impulsivity is one of the factors that disturb sleep and, consequently, may lead further deterioration of cognitive function and lower the academic performance of college students. Rehman (2025) explains the role of cognitive arousal as a connecting factor between the two, thus, illustrating the combined effect of impulsivity and sleep quality on mental function. The reduction of impulsivity as well as the improvement/regulation of sleep through certain strategies may not only facilitate sleep in students but also increase their cognitive capacity.Even a single night of limited sleep results in decreased ability to sustain attention and increased perception of sleepiness, thus leading to poor classroom performance and inability to carry out daily tasks of living.

Wüst (2024) shows the short-term impacts of sleep restriction on cognitive functions. In particular, a very significant impact was noticed for attention and alertness. These results emphasize the significance of regular and unbroken sleep that is the basis for learning and cognitive functions.

Sleeping problems of university students are highly correlated with mental health issues such as ADHD and depression, and these disorders affect mental function to different degrees and in different ways, thus, they can deteriorate academic performance. Mbous (2022) revealed that insomnia was strongly associated with these problems, which also suggests that poor sleep might have a deep impact. Thus, it would be great for mental health and a student's cognitive capacity if sleep disorders were alleviated.

Insufficient sleep has at all times been shown to have a very strong association with mood disorders and lower cognitive skills among adolescents and young adults. In addition to that, Johri (2025) has very explicitly mentioned that sleep deprivation or lack of sleep adversely affects a student's learning, memory, and other ways of academic success, but the long-term effects over time are even more disheartening to the student.

A good and regular sleep of not less than seven hours per day has been found to be associated with a higher subjective feeling of performance, more working memory demonstrated, and the ability to overcome fewer cognitive performance impairments by response inhibition. Zimmerman (2024) brought evidence that attention and cognition suffer from sleep deficit (or sticky, irregular) and suggests that potential sleep patterns may have a restorative function in cognitive variables.

Firstly, the main point that the sleep-deprived studies have been suffering from is a consistent demonstration of the fact that lack of sleep severely impairs cognitive functions such as executive functioning, memory, and attention that are essential for academic success. In addition to this, poor sleep has been associated with increased stress levels, lowered academic motivation, and more class absences as well as lower grades. Some researchers have pointed out that continuous sleep problems may, in the long run, affect academic performance and emotional well-being, while even short sleep deprivation can result in cognitive decline noticeable. In sum, these results call loud and clear that educational institutions should take it as their responsibility to promote good sleep hygiene and provide interventions aimed at improving students' sleep quality as a way of enhancing their psychological and academic performance.

2.2 Research Gap

While many studies have delved into the adverse effects of sleep deprivation, stress, and academic performance, these variables have only been understood separately. Essentially, in college students, limited research has figured out the interconnection of these factors. The majority of prior studies have been based on Western scenarios, thereby, completely ignoring students from India who are burdened with academic pressure and face challenges in hostels. Hence, through this investigation, the researcher intends to unite scattered pieces of research and scrutinize how lack of sleep affects brain function, causes tension, and thus, hampers academic performance in college students.

3. METHOD

Overview

This research used a quantitative correlational design to determine the relationship of sleep deprivation, cognitive function, stress, and academic performance in college students. Two hundred participants aged 18-25 years were chosen through a stratified random sampling method to equally

represent both genders and different academic levels. The data were gathered through a structured online questionnaire. It had standardized instruments like Pittsburgh Sleep Quality Index (PSQI) for measuring sleep quality, Cognitive Failures Questionnaire (CFQ) for evaluating cognitive function, Perceived Stress Scale (PSS-10) for assessing stress level, and Academic Performance Scale (APS) for measuring academic behaviors and performance. Besides, all participants signed informed consent, and the ethical approval was granted by the institutional review board.

The data obtained were subjected to analysis using SPSS software, and descriptive statistics, Spearman's correlation, and Independent Samples T-Test were the statistical tools used to determine relationships and group differences. The methodological approach taken here is an accurate and reliable way of assessing the extent to which lack of sleep frustrates students' cognitive efficiency, stress, and academic outcomes.

3.1 Research design

A quantitative correlational research design will be used. The study includes 200 college students aged 18–25 from various departments, selected through stratified random sampling to ensure demographic diversity.

3.2 Participants

The study sample was made up of 200 college students of different academic departments whose ages ranged from 18 to 25 years. They were selected through stratified random sampling so that the proportion of males and females and the year of study would be the same in the sample. None of them were short-term or exchange students. All students, whether undergraduates or postgraduates, were registered in regular academic programs. Among the inclusion criteria were good command of English and the readiness to sign an informed consent form. In order to get more accurate and reliable data, the researchers excluded those with sleep disorder histories, those with psychiatric or neurological diagnoses, and those who take medication that affects sleep or cognition from the study.

3.3 Sampling

Inclusion criteria and Exclusion Criteria

The selection of participants involved a stratified random sampling approach to the study, thus representing equally the two sexes and levels of the academic career. Four hundred college students, males and females, between the ages of 18 and 25 years, were selected from different academic departments. The sample was limited to students enrolled in undergraduate or postgraduate programs and only those proficient in English since all instruments were administered in this language. Participants who suffered from any type of sleep disorders, psychiatric or neurological conditions, and those who were on medications that could affect sleep or cognitive functioning were not allowed. Besides, only those individuals who voluntarily offered informed consent were taken into consideration for participation, thus assuring the ethical aspect, as well as the protection of the participants' rights during the entire study.

3.4 Procedure

Once the institution approves the permission based on ethical standards, the students from various academic departments will be chosen by a stratified random sampling method. The collection of data will be done only after the consent of the participants. The participants will fill out an online questionnaire consisting of PSQI, CFQ, AMS-C 28, and PSS-10 along with basic demographic information. In addition to briefing the participants about the procedure, confidentiality will also be assured. Each participant will be allotted around 10-15 minutes for data collection. The obtained responses will be stored in a safe place and then processed with SPSS software.research ethics

Participants will be enlisted through institutional forums. Data will be gathered through an online survey conducted anonymously. Informed consent will be secured. Participants will be promised that their data will be kept confidential and that they have the right to participate voluntarily. Ethical approval will be given by the college.

3.5 Tools Of the Study

The Pittsburgh Sleep Quality Index (PSQI) is a popular standardized instrument used to measure overall sleep quality over a period of one month, created by Buysse et al. (1989). It is made up of seven components covering subjective sleep quality, sleep latency, duration, habitual sleep efficiency, Sleep disturbances, use of sleep medication, and daytime dysfunction, which are derived from its 19 items. The total global score varies from 0 to 21, with larger values indicating poorer sleep quality. Scores on the seven components each range from 0 to 3. A global score of more than 5 is indicative of clinically significant sleep problems. The PSQI is characterized by a Cronbach's alpha of 0.83, which denotes a high level of reliability and good internal consistency. Its validity is evidenced by the comparisons with structured clinical interviews and sleep diaries.

The Cognitive Failures Questionnaire (CFQ) is an instrument designed to measure everyday common cognitive errors that Broadbent et al. (1982) dealt with in the development of the questionnaire, such as forgetfulness, inattention, and mistakes related to action. One can arrive at a total score in the range from 0 to 100 by rating each of the 25 items of the questionnaire on a 5-point Likert scale from 0 (Never) to 4 (Very often). Higher scores represent a higher frequency of cognitive failures. The CFQ is a single measure of general cognitive performance in everyday situations, albeit it has no clearly defined subscales. The tool has a good reliability and excellent internal consistency as evidenced by its Cronbach's alpha of 0.91. Furthermore, it has demonstrated strong validity as it correlates positively with the assessments of attentional capacity, mental effort, and real-world functional performance.

The Academic Performance Scale (APS) to identify learning-related activities and academic behaviors of students with the help of the Academic Performance Scale (APS). It was created by Carson Birchmeier. The scale comprises eight items that evaluate a wide range of factors of academic performance, such as work completion, motivation, effort, class preparedness, and participation. Usually, an individual's reply is rated on a Likert scale, and the sum of scores indicates the student's general

academic achievement level. Higher scores indicate stronger academic performance and involvement. The scale's Cronbach's alpha of 0.89 is indicative of excellent reliability and strong internal consistency. Despite its brevity, the APS has been effectively leveraged in student-centered educational research and provides a focused and precise measure of academic functioning.

The Perceived Stress Scale (PSS-10) was devised by Cohen and his colleagues in 1983. It is a widely used psychological instrument to measure the stress that people feel in the general population. The ten items aim to measure the degree of the respondents' feeling of life during the last month concerning unpredictability, uncontrollability, and overload. The total score can be between 0 and 40. And the highest scores stand for the most severe stress perception. The responses to items are recorded on a 5-point Likert scale, where 0 stands for "never," and 4 stands for "very often." The PSS-10 demonstrates excellent internal consistency and reliability with Cronbach's alpha values ranging from 0.84 to 0.86. It is a reliable instrument to assess the level of stress as it is in line with biological stress markers like cortisol, as well as symptoms of anxiety and depression.

3.6 Research ethics

The current study complied with the ethical norms specified for research with the involvement of human subjects aimed at their protection and respect. Every individual provided their consent to participate in the study prior to the data collection, and they were assured that their participation was voluntary and that they could withdraw at any time without any negative consequence. The participants' privacy and confidentiality were respected at all times, and the information obtained was solely for academic purposes. The research did not, in any way, cause psychological or emotional distress to the participants and their privacy was, also, respected throughout the research process. The investigation was given the green light by the local committee in charge of the institutional review prior to its commencement.

3.7 Statistical Analysis

Descriptive and inferential statistical methods will be utilized to analyze the data collected for this study. Descriptive statistics like mean, standard deviation, frequency, and percentage will be implemented to describe the overall sleep quality, cognitive function, and academic performance of college students. These summaries will illuminate the distribution of the responses and facilitate the recognition of the trends or anomalies in the data. The study utilized three primary statistical techniques: Descriptive Statistics, Spearman's Correlation, and an Independent Samples T-Test. These approaches were used to figure out how sleep deprivation affects cognitive function, stress level, and academic performance of college students. Descriptive statistics were used to present the central tendencies and the variability of the data through mean, median, standard deviation, minimum, and maximum values. In this way, it depicted very clearly the participants' scores in all variables. The Shapiro-Wilk test was employed for assessment of data normality. As the normality of some variables was rejected, Spearman's rho correlation was used to determine the association strength and the direction between sleep deprivation, stress, cognitive function, and academic performance. The results showed significant correlations among variables, which can be interpreted as poor sleep leading to high stress, and thus, low academic performance. Besides that, an Independent Samples T-Test was implemented to compare the mean

differences between groups, i.e., students with good and poor sleep quality. This test was one of the means to discover whether sleep quality has a notable effect on cognitive function, stress, and academic performance. The statistical methods used in the study basically were able to demonstrate how sleep deprivation resulted in the decline of mental performance, the increase in stress, and the reduction of academic functioning in college students.

4. RESULTS & DISCUSSION

Over view

The survey data related to the different aspects of the student environment showed that the students had an average level of cognitive function, stress, sleep deprivation, and academic performance. The correlation results showed that insufficient sleep was related to higher stress levels and lower academic performance. Moreover, the worsening of sleep deprivation was accompanied by the decline of cognitive function. The t-test demonstrated a significant difference in SNS scores between the groups, but there was no significant difference in sleep deprivation levels. In general, the results reveal that sleep deprivation decreases students' cognitive ability, increases their stress levels, and reduces their academic achievements.

4.1 Results

Table- 1
Descriptive

	Cognitive function	Stress level	Sleep deprivation	Academic performance
N	199	199	199	199
Missing	0	0	0	0
Mean	41.8	14.2	17.7	17.5
Median	44	15	17	17
Standard deviation	15.7	3.83	7.20	3.39
Minimum	0	0	3	8
Maximum	85	21	37	25
Shapiro-Wilk W	0.992	0.902	0.986	0.981
Shapiro- Wilk P	0.385	<.001	0.039	0.009

The descriptive statistics indicate that the data of all 200 participants were complete. The average cognitive function score (M = 41.8, SD = 15.7) was moderate and the distribution was normal (p = 0.385). The mean stress level (M = 14.2, SD = 3.83) was that of moderate stress, however, the data were not normally distributed (p < .001). Both sleep deprivation (M = 17.7, SD = 7.20) and academic performance (M = 17.5, SD = 3.39) were also moderate, but slight non-normality was observed in both (p = 0.039 and

p = 0.009, respectively). So, the participants demonstrated moderate levels of all variables and only cognitive function was normally distributed.

Table – 2
Correlation Matrix Test

		Cognitive function	Stress level	Sleep deprivation	Academic performance
Cognitive function	Spearma's rho	-			
	df	-			
	p- value	-			
Stress level	Spearma's rho	-0.044	-		
	df	197	-		
	p- value	0.535	-		
Sleep deprivation	Spearma's rho	0.317	0.191	-	
	df	197	197	-	
	p- value	<.001	0.007	-	
Academic performance	Spearma's rho	-0.179	-0.129	-0.146	-
	df	197	197	197	-
	p- value	0.011	0.070	0.040197	-

The correlation findings revealed that cognitive function was hardly associated with stress (ρ = –0.044, p = 0.535) but showed a moderate positive correlation with sleep deprivation (ρ = 0.317, p < .001). Stress had a weak but statistically significant correlation with sleep deprivation (ρ = 0.191, p = 0.007). Academic performance had weak negative correlations with cognitive function (ρ = –0.179, p = 0.011) and sleep deprivation (ρ = –0.146, p = 0.040), whereas the relationship with stress was not significant (ρ = –0.129, p = 0.070).

Table -3
Independent sample t- test

Variable	*t*	*df*	*p*	Mean Difference	95% CI for Mean Difference	Effect Size (Cohen;s d)	95% CI for d
Cognitive Function	3.96	199	< .001	5.89	2.96, 8.83	0.57	[0.28, 0.86]
Sleep Deprivation	0.12	197	0.907	—	—	0.02	—

The independent samples t-test showed that the difference between the two groups in cognitive function scores was statistically significant, t(199) = 3.96, p < .001, and the size of the difference was

moderate (Cohen's d = 0.57). Therefore, one group was significantly better than the other in terms of cognitive function. Conversely, the difference in sleep deprivation between the two groups was not statistically significant, t(197) = 0.12, p = 0.907, and the effect size was negligible (Cohen's d = 0.02), which means that the two groups experienced similar levels of sleep deprivation.

Discussion

4.2 Statistical findings

The outcome of a correlation study confirms the results of the study and shows that there are strong correlations between sleep deprivation, cognitive function, and academic performance. There was a big difference in cognitive function between the groups as proved by the independent samples t-test, however the level of sleep deprivation turned out to be insignificant between the groups. This means that the causes of the differences in cognitive performance could be things other than just the amount of sleep, for example, individual coping mechanisms or study habits.

The study mainly, but also indirectly, demonstrated that college students' sleep deprivation, stress levels, cognitive function, and academic achievement are interconnected in a complicated way. The findings confirm that these elements are closely linked and together have a profound impact on students mental, emotional, and academic well-being. Besides, the present research sheds the light on the impact of sleep deprivation and psychological stress on cognitive efficiency and academic performance of students in higher education.

Cognitive function is the term that defines human mental processes that are the basis for thinking, learning, and memorizing. One of the most significant observations that the researchers, who have been conducting studies for a long time, have come across while reviewing the literature is that sleep is a very important factor for good cognitive functioning. Younas et al. (2025) and Ren et al. (2025) indicated that sleep deprivation results in reduction of attention span, working memory impairment, and a delay in reaction time. Likewise, the current research supports that students who lack sleep get tired easily, struggle with mental tasks, and have problems with memory recall during exams.

The findings of the study are in line with the previous works showing that sleep deprivation hampers our brain from processing information and memorizing it effectively. In fact, Guadiana (2020) revealed that when we deprive ourselves of a good night's rest, it is the prefrontal cortex - the part of our brain that helps us in reasoning, making decisions, and solving problems - that gets affected. This is why, students can be their own victims of "brain fog, " which then results in lowered concentration and clarity of mind.

Sun et al. (2025) through their research discovered that a lack of sleep decreases blood circulation and oxygenation not only to crucial areas of the brain but also the impairment of neural plasticity that is vital for learning and adjustment. The above-mentioned research conclusively illustrates sleeping is not a matter of comfort but a biological imperative to keep one's mind cultured, creatively inclined, and intellectually performing.

There is no doubt that lack of sleep forces attention withdrawal and makes one prone to blunders while doing academic work. As per the insights of Ren et al. (2025), cognitive tiredness can have a detrimental effect even on the highest spirits of the students. So, this research is a strong reminder of the close link between a good nights sleep and improved brain functioning of students.

The link between sleep deprivation and stress is quite complicated and mutually affecting. Stress may cause sleeping difficulties, whereas sleep deprivation might add to the stress level. In fact, the outcomes of this research suggest that students who feel stressed the most tend to report that their sleep is disturbed. This goes with what BMC Psychology (2024) and Ampofo et al. (2025) found, that academic stress, social demands, and lifestyle are the major factors that lead to disrupted sleeping patterns. Kreger (2025) pointed out that stress causes an increase in cortisol which keeps the body in a state of heightened alertness and hence makes it difficult to relax and fall asleep whereas if such conditions persist, one is likely to suffer from chronic sleep deprivation, fatigue and irritability.

On the other hand, Johri (2025) discovered that stress disrupts not only the quantity of sleep but also the quality, resulting in sleep that is hardly ever refreshing. Moreover, sleep interruption seriously weakens the ability to regulate emotions which causes the individuals to become more vulnerable to stress. This leads to a vicious circle in which stress and sleep deprivation mutually sustain one another. The current research findings are in line with Ampofo et al. (2025) who claim that one of the ways to improve sleep quality and overall well-being is through efficient stress management.

Academic performance is an essential factor in determining the students capability to use knowledge and skills properly. Past research by Zimmerman et al. (2024) and Gupta and Mitra (2025) demonstrated that lack of sleep and brain aging are two major causes that quantitatively influence the level of the academic achievements.

This study is consistent with these findings and it showing tha how sleep-deprived students suffer from less concentration, slow information processing, and problem-solving ability breakdown. According to Saroha (2025), students who sleep for less than five hours perform worse on memory-related tasks than those who have a regular sleep schedule. Also, Johri (2025) uncovered that irregular sleeping leads to low energy, lack of motivation, and procrastination. These behavioral patterns, in fact, indicate that sleep deprivation affects not only cognitive functioning but also emotional stability, and academic engagement.

Besides, stress is considered a very strong factor influencing academic performance. Although a little stress may help students be more productive, too much stress can cause burnout, emotional exhaustion, and disengagement. Prolonged stress has a very negative impact on the focus, memory, and self-esteem of students, which are the basic components of the successful academic performance, as Taj et al. (2024) and Zhang (2025) stressed in their research.

The current research suggests that stress has an indirect influence on academic success by altering sleep and mental processes. Highly stressed students may find it particularly difficult to manage their schedules, to focus and to keep their spirits up. Charan (2025) pointed out that such factors might eventually lead to students staying away from schoolwork and thus performing at a lower level. Besides,

feelings of anxiety or frustration may change the way students switch on to their lesson environments. Almarzouki (2024) remarked that if stress is long-term, the desire to work, as well as a students general pleasure with school, may both decrease. For that reason, it is important for students to learn how to control their stresses effectively so that they can keep both their mental health and school grades at a good level.

As far as melatonin production, the sleep-regulating hormone, is concerned, exposure to screens may disturb it and in this way interfere with sleep. Poor sleeping habits and inconsistent cycles are the leading causes of sleep deprivation in students. Sleep deprivation results to a major extent in reduced attention, memory performance and less efficient cognitive functioning.

When students stick to regular sleep schedules and get enough rest, they're more likely to have better focus, be in a better mood, and perform better in school. Such results highlight the role of healthy sleep habits in enhancing students' thinking and emotional states. In a nutshell, this research reveals that a lack of sleep has a major impact on one's thinking abilities, causes stress, and lowers academic performance. It further points out that a student's success is not only dependent on their intellectual capabilities but also on lifestyle factors such as sleep and stress management.

Aside from getting enough sleep, students' well-being can be further improved by teaching them how to manage stress effectively and live healthy lifestyles or habits. Learning time management, doing relaxation exercises, and creating a well-balanced day are some ways through which individuals may develop healthier habits. To sum up, getting sufficient sleep, managing stress properly, and living healthy daily lives are the basics of enhancing one's cognitive functions and being successful in studies. However, taking good care of oneself, understanding one's emotions, and having enough sleep are three things that can greatly help in one's overall well-being and academic success.

5. SUMMARY & CONCLUSION

5.1 Summary

Insufficient sleep has escalated to be one of the most frequent and frightening issues of college students. Students pressured with the increased academic workload, tempted by the social distractions, and stimulated by the late-night use of digital devices, they pluck up the courage to make a truce with sleep, sacrifice it, and thus get serious repercussions for their mental and emotional health. This study identifies the relationship between sleep deprivation and the students' cognitive skills, i.e. memory, attention, and concentration, together with academic motivation and stress levels. The research is devoted to understanding the way in which lack of sleep not only reduces the ability of learning but also changes the emotional state of students, thus causing anxiety, decreasing focus, and lessening the feeling of academic competence.

The study was an attempt to understand the connection between sleep, stress, and motivation. It recognizes that students who lack sleep may have difficulties in memory, time management, and handling the academic pressure. This, gradually, leads to exhaustion, demotivation, and even educational burnout. The research also emphasizes that insufficient sleep is not just a physical problem - it significantly influences the emotional balance, self-control, and decision-making of the individual. Students, who are

deprived of dormitory, hence, become more overwhelmed, irritated, and feel that they are less capable of solving problems in a calm way.

The work set out to map the objective psychological parameters, of sleep quality, cognitive functioning, stress, and drive, through the administrations of psychological evaluation instruments. The core idea to prove it is that sufficient sleep leads to better cognitive functioning, more energy, and better emotional regulation. The results are planned to be the kind of a loud alarm for schools and colleges that a good night's sleep is an indispensable condition for better learning outcomes. By endorsing sleep-awareness campaigns, providing time management tips, and offering mental health services, students will be in a position to develop good habits and make academic progress. In the end, the study is kind of forced to convey that rest should not be viewed as a weakness, but rather as the basis of success and general well-being.

5.2 Conclusion

This research conveys that sleep is not just a physical necessity but rather the basis of mental clarity, emotional composure, and stellar academic performance. Insufficient sleep, over time, affects students' cognitive faculties and they end up with limited concentration, problem-solving skills, and stress resistance as well as lack of motivation. On the contrary, regular and adequate sleep stimulates the creative side of the brain, emotional development, and efficient learning. Students who think that by giving up sleep to study more they will get better results are actually weakening the skills that success requires the most. Hence, the issue of better sleep should not be considered only from the perspective of an individual student but rather as an indispensable educational obligation. Schools and colleges must become actively engaged in spreading the knowledge about the importance of sleep, organizing the counseling support, and facilitating time management skills so that students can find harmony in their lives. When institutions treat sleep as one of the main determinants of psychological well-being and intellectual growth, they become the cultivators of confident, competent and healthy students.

5.3 Implication of the study

This research offers a great deal of valuable information to educational institutions and college students' mental health. It is one of the main things the study points out that sleep should not be considered just a physiological process but, rather, a necessary factor for cognitive functions, emotional regulation, and overall academic performance. The document also mentions that lack of sleep makes students to lose focus, forget things, think illogically even if it becomes more difficult, at the same time, their motivation gets decreased, and their anxiety level increases. Therefore, it is the responsibility of schools and universities to incorporate sleep care into their student development programs rather than leaving it as a matter of personal choice.

The study that came out at the forefront of this particular topic, denotes that lack of sleep impairs those mental functions which are necessary for school achievements. Obviously, students deprived of proper sleep are victims of cognitive overload, in which scenario the brain becomes exhausted and the learning process slows down. Therefore, the students' academic achievements and emotional well-being are affected twice as much since poor sleep also raises the students' levels of stress and anxiety. These findings suggest that college counseling services should not only include sleep education but also offer it as a part of their mental health programs directed to students.

From an academic management perspective, research findings could be used by higher education institutions to create initiatives that encourage time management, self-care, and mindfulness. Awareness programs might become a means for students to realize the connection between good sleep and learning ability. Moreover, dormitories and hostels can establish quiet hours and ban parties at night to ensure that sleep routines are not interrupted. In addition, professors might also be asked to consider how their students' sleep and health are affected by the juggling of tasks, the tightness of deadlines, and the early hours of classes.

This research, overall, is a valuable deposit to the global understanding of the influence of sleep patterns on the performance of students. It is, basically, a landmark educational psychology paper as it merges cognitive, motivational, and emotional factors of a single model, related to sleep deprivation. Its impact, however, is not confined to the academic field only. The study, in fact, envisions that correct sleep habits could be the students' source of energy, emotional regulation, and social skills development. Therefore, the research results encourage educators and the administration to consider sleep as the primary pillar of a student's comprehensive well-being.

5.4 Limitations and Future Research Directions

The research paper thoroughly demonstrates that insufficient sleep diminishes cognitive functions, intensifies stress, and lowers academic motivation. However, the research team mentions a few limitations to their study. They indicate bias resulting from self-report questionnaires as a major limitation of their study, arguing that participants might have underestimated or overestimated even making up their sleep quality and stress level. Additionally, as the study only examined one group of college students, the findings cannot be generalized to different groups of students with different lifestyles, cultural backgrounds, and educational systems. Moreover, due to the correlational design, the paper only depicts the relationships between different variables, thus the directions of these relationships between sleep quality and cognitive performance remain unknown.

Also, the findings in this study were limited due to the time chosen for data collection, which may have overlapped with an extremely busy period of students. academic life such as the time of exams when students. sleep patterns were disrupted but only for a short period of time. Moreover, there are some factors like diet, exercise, screen time, and mental health, which were not accounted for and might have affected the results. Thus, researchers in the future should also take into account these factors to increase the accuracy of their studies.

The next research could integrate mixed-method and longitudinal designs to figure out students' sleep patterns and how that affects their cognitive abilities and academic performance over time. An experimental study might switch different interventions-purposes-attention, such as mindfulness training, sleep hygiene education, or limitation of nighttime screen use, to find out which ones are effective in increasing sleep and motivation. Furthermore, objective physiological measures brain imaging, reaction time, or heart rate monitoring can also elevate the results' confidence level.

Moreover, culture- and gender-based comparative research can help understand how different backgrounds and academic disciplines influence sleep habits. Finally, psychologists should investigate different aspects like resilience, emotional intelligence, and self-efficacy, which could be the

psychological mediators linking sleep quality to academic performance, thus, giving a deeper insight into the students' ways of handling sleep deprivation and academic stress.

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APPENDIX A
INFORMED CONSENT
RESEARCH SUBJECT INFORMATION SHEET

This informed consent form is for the participants, who have been invited to participate in research on the title "The Impact of Sleep Deprivation on Cognitive Function, Academic Performance, and Stress Levels among College Students.".

Name of principal investigator & department: Pakkiyaraj Sujeni

Research Supervisor: Dr. Diganta Baishya

Name of Organisation: Kristu Jayanti (Deemed to be University), Bangalore

I am Pakkiyaraj Sujeni, studying as a postgraduate student in the Department of Psychology at Kristu Jayanti (Deemed to be University), Bangalore. I am conducting a research study to understand how sleep deprivation affects cognitive function, academic performance, and stress levels among college students. I will give you adequate information and invite you to be a part of this research. You can decide whether or not you will participate in the research. Before you decide, Please feel comfortable talking to me about the research.

This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them, I will be providing my contact details for the same.

Purpose of the research:

The study investigates the impact of sleep quality and duration on memory, concentration, academic motivation, and stress level of the students. This research is intended to identify the strong connection between mental and academic well-being that results from good or poor sleep habits of college students.

For Demographic Factors:

Only persons of 18–25 years of age who are either in undergraduate or postgraduate programs at recognized colleges or universities are eligible for the program.

You are invited to be part of this research as your answers will be instrumental in understanding the relationship of sleep patterns to cognitive function, academic performance, and stress levels of students. Participation is entirely your decision, and you can discontinue your involvement at any time without any unfavorable consequences.

The information recorded is confidential, your name will not be included in the data collected, and no one else except me and my supervisor will have access to the form. Nothing that you share today or with me will be made public with anybody outside the research, and nothing will be attributed to you by name.

Participation in this study does not pose any risks. There will be no direct benefit to you, but your participation will help us identify the factual details of the concerned experiment.

I am now available to answer any questions.

If you have any questions, you would like to ask later, you may contact me at
Email ID: 24mpsc 40@kristujayanti.com
Pakkiyaraj Sujeni, Department of Psychology
This research proposal has been reviewed and approved by the Department of Psychology that includes the research scholar and the supervisor at Kristu Jayanti (Deemed to be University), Bangalore the rights of the research participants are protected.

CERTIFICATE OF INFORMED CONSENT

I have been invited to participate in research on the title "The Impact of Sleep Deprivation on Cognitive Function, Academic Performance, and Stress Levels among College Students.".

I have read the foregoing information, and it has also been read to me. I have had the opportunity to ask questions about it and any questions I have been answered to my satisfaction, I understand that participation is voluntary and it has been explained that choosing not to participate will not cause any consequences. I understand that I have the right to withdraw at any point during the data collection.

- ☐ I consent voluntarily to be a participant in this study.

APPENDIX B

DEMOGRAPHIC DETAILS

Name/Initials (eg: Pakkiyaraj Sujeni)

_____

Age

- ☐ 18
- ☐ 19
- ☐ 20
- ☐ 21
- ☐ 22
- ☐ 23
- ☐ 24
- ☐ 25

Gender

- ☐ Male
- ☐ Female
- ☐ Other
- ☐ Prefer not to say

Educational Qualification*

- Bachelor's
- Master's
- MPhil
- PhD

Socio-economic status

- Upper
- Upper Middle
- Lower Middle
- Upper Lower
- Lower

Place of Residence

- Rural
- Urban
- Semi-urban

Monthly Family Income
Rs. 10,000 – 25,000
Rs. 25,000 – 50,000
Rs. 50,000- 75,000
More then 100,000
Other :_____

State you belong to

_____

APPENDIX C

INSTRUMENTS

1. **Pittsburgh Sleep Quality Index (Daniel J. Buysse, Charles F. Reynolds III, Timothy H. Monk, Susan R. Berman, and David J. Kupfer (1989.)**

PSQI Scoring (0–3 each component)

1. 0 = No difficulty
2. 1 = Mild difficulty
3. 2 = Moderate difficulty
4. 3 = Severe difficulty

1. During the past month, what time have you usually gone to bed at night?

2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?

3. During the past month, what time have you usually gotten up in the morning?

4. During the past month, how many hours of actual sleep did you get at night? (This may be different from the number of hours you spent in bed.)

Questions	Not During the Past Month (0)	Less Than Once a Week (1)	Once or Twice a Week (2)	Three or More Times a Week (3)
5. During the past month, how often have you had trouble sleeping because you...				
a. Cannot get to sleep within 30 minutes				
b. Wake up in the middle of the night or early morning				
c. Have to get up to use the bathroom				
d. Cannot breathe comfortably				
e. Cough or snore loudly				
f. Feel too cold				
g. Feel too hot				
h. Have bad dreams				
i. Have pain				
j. Other reasons (please describe): _____				
6. During the past month, how often have you taken medicine to help you sleep (prescribed or "over-the-counter")?				
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?	No problem at all	Only a very slight problem	Somewhat of a problem	A very big problem
8. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?	Very good	Fairly good	Fairly bad	Very bad
9. During the past month, how would you rate your sleep quality overall?	Very good	Fairly good	Fairly bad	Very bad

2. Cognitive Failures Questionnaire (CFQ) Donald E. Broadbent, Peter F. Cooper, Peter FitzGerald, and Keith R. Parkes (1982)

Scoring Instructions

1. 0 = Never
2. 1 = Very Rarely
3. 2 = Occasionally
4. 3 = Quite Often
5. 4 = Very Often

No.	Question	Very Often (4)	Quite Often (3)	Occasionally (2)	Very Rarely (1)	Never (0)
1	Do you read something and find you haven't been thinking about it and must read it again?					
2	Do you forget why you went from one part of the house to the other?					
3	Do you fail to notice signposts on the road?					
4	Do you confuse right and left when giving directions?					
5	Do you bump into people?					
6	Do you forget whether you've turned off a light, fire, or locked the door?					
7	Do you fail to listen to people's names when meeting them?					
8	Do you say something and realize afterwards it might be taken as insulting?					
9	Do you fail to hear people speaking to you when doing something else?					
10	Do you lose your temper and regret it?					
11	Do you leave important letters unanswered for days?					
12	Do you forget which way to turn on a road you know well but rarely use?					
13	Do you fail to see what you want in a supermarket (though it's there)?					
14	Do you suddenly wonder					

3. Perceived Stress Scale (Sheldon Cohen, Tom Kamarck, and Robin Mermelstein 1983.)

Scoring Instructions

1. 0 – Never
2. 1- Almost Never
3. 2 - Sometimes
4. 4 – Very often

Reverse score questions 4, 5, 7, and 8 as follows: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0

No.	Question	0 = Never	1 = Almost Never	2 = Sometimes	3 = Fairly Often	4 = Very Often
1	In the last month, how often have you been upset because of something that happened unexpectedly?					
2	In the last month, how often have you felt that you were unable to control the important things in your life?					
3	In the last month, how often have you felt nervous and stressed?					
4	In the last month, how often have you felt confident about your ability to handle your personal problems?					
5	In the last month, how often have you felt that things were going your way?					
6	In the last month, how often have you found that you could not cope with all the things that you had to do?					
7	In the last month, how often have you been able to control irritations in your life?					
8	In the last month, how often have you felt that you were on top of things?					
9	In the last month, how often have you been angered because of things that happened that were outside of your control?					
10	In the last month, how often have you felt difficulties were piling up so					

	high that you could not overcome them?					

4. Academic Performance Scale (By Dr. (Mrs.) A. L. Verma.)

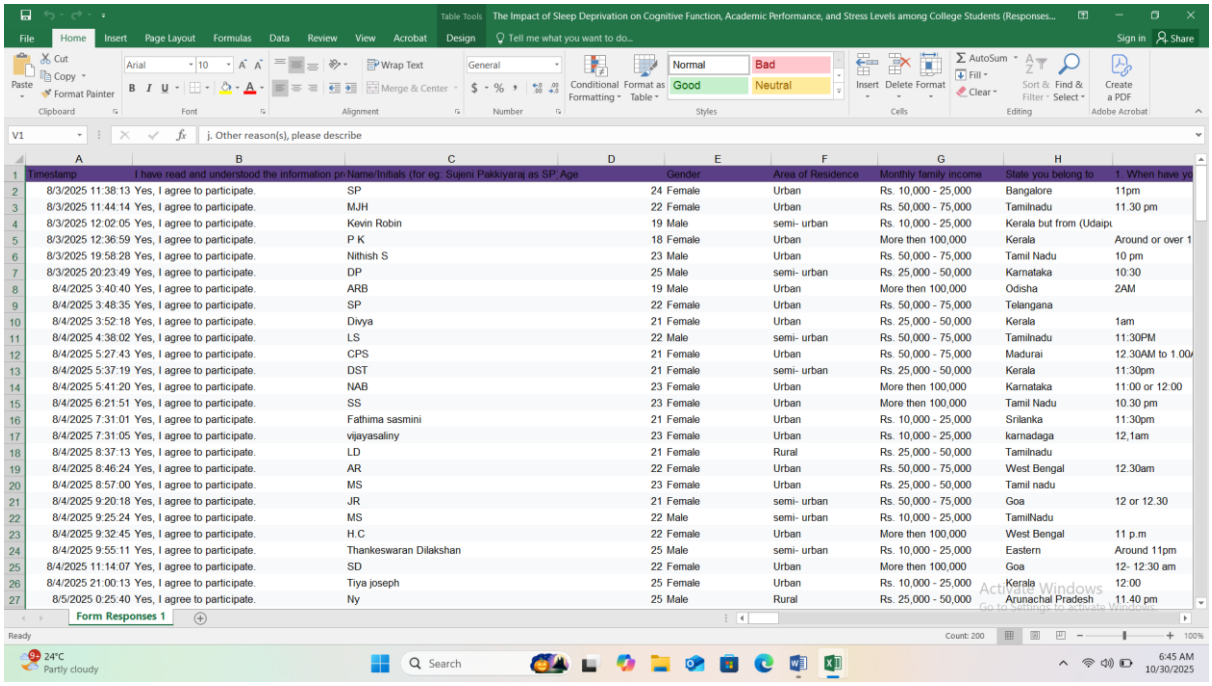
Scoring Instructions

1. Strongly Agree = 5
2. Agree = 4
3. Neutral = 3
4. Disagree
5. Strongly Disagree = 1

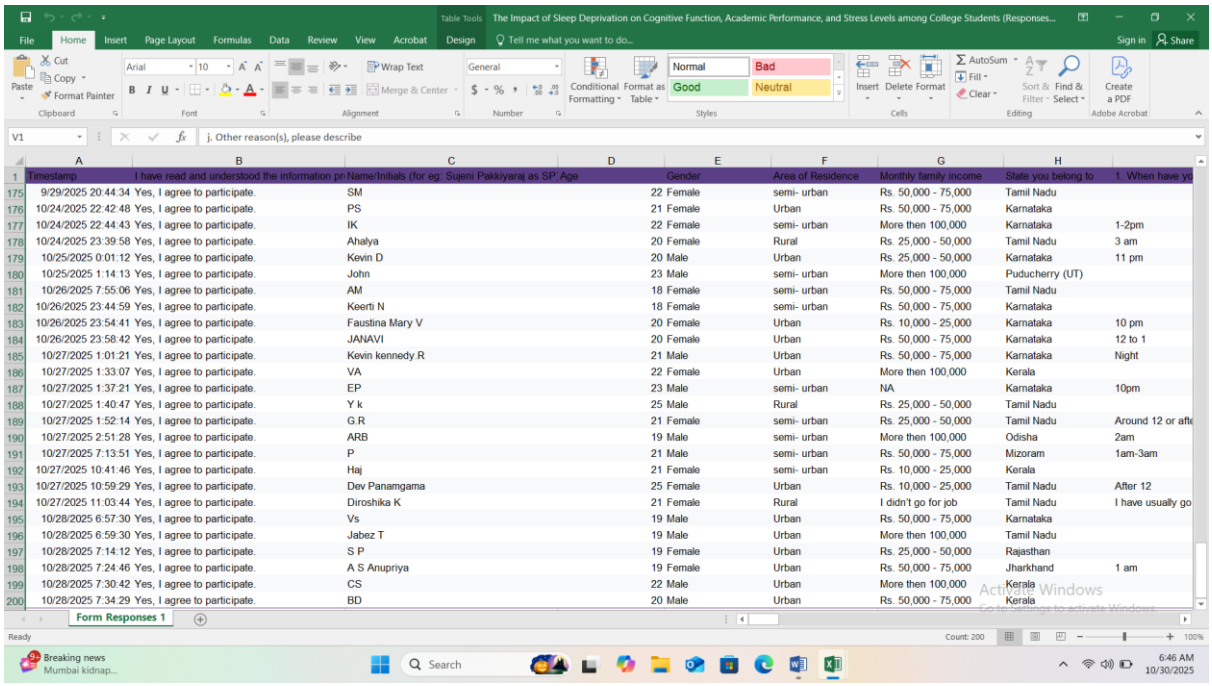
No.	Question	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
1	I made myself ready in all my subjects.					
2	I pay attention and listen during every discussion.					
3	I want to get good grades in every subject.					
4	I actively participate in every discussion.					
5	I start papers and projects as soon as they are assigned.					
6	I enjoy homework and activities because they help me improve my skills in every subject.					
7	I exert more effort when I do difficult assignments.					
8	Solving problems is a useful hobby for me.					

APPENDIX D

DATA IN EXCEL SHEET



Timestamp	I have read and understood the information pr	Name/Initials (for eg: Sujeni Pakkiyaraj as SP	Age	Gender	Area of Residence	Monthly family income	State you belong to	1. When have yo
8/3/2025 11:38:13	Yes, I agree to participate.	SP	24	Female	Urban	Rs. 10,000 - 25,000	Bangalore	11pm
8/3/2025 11:44:14	Yes, I agree to participate.	MJH	22	Female	Urban	Rs. 50,000 - 75,000	Tamilnadu	11.30 pm
8/3/2025 12:02:05	Yes, I agree to participate.	Kevin Robin	19	Male	semi- urban	Rs. 10,000 - 25,000	Kerala but from (Udaipu	
8/3/2025 12:36:59	Yes, I agree to participate.	P K	18	Female	Urban	More then 100,000	Kerala	Around or over 1
8/3/2025 19:58:28	Yes, I agree to participate.	Nithish S	23	Male	Urban	Rs. 50,000 - 75,000	Tamil Nadu	10 pm
8/3/2025 20:23:49	Yes, I agree to participate.	DP	25	Male	semi- urban	Rs. 25,000 - 50,000	Karnataka	10:30
8/4/2025 3:40:40	Yes, I agree to participate.	ARB	19	Male	Urban	More then 100,000	Odisha	2AM
8/4/2025 3:48:35	Yes, I agree to participate.	SP	22	Female	Urban	Rs. 50,000 - 75,000	Telangana	
8/4/2025 3:52:18	Yes, I agree to participate.	Divya	21	Female	Urban	Rs. 25,000 - 50,000	Kerala	1am
8/4/2025 4:38:02	Yes, I agree to participate.	LS	22	Male	semi- urban	Rs. 50,000 - 75,000	Tamilnadu	11:30PM
8/4/2025 5:27:43	Yes, I agree to participate.	CPS	21	Female	Urban	Rs. 50,000 - 75,000	Madurai	12.30AM to 1.00
8/4/2025 5:37:19	Yes, I agree to participate.	DST	21	Female	semi- urban	Rs. 25,000 - 50,000	Kerala	11:30pm
8/4/2025 5:41:20	Yes, I agree to participate.	NAB	23	Female	Urban	More then 100,000	Karnataka	11:00 or 12:00
8/4/2025 6:21:51	Yes, I agree to participate.	SS	23	Female	Urban	More then 100,000	Tamil Nadu	10.30 pm
8/4/2025 7:31:01	Yes, I agree to participate.	Fathima sasmini	21	Female	Urban	Rs. 10,000 - 25,000	Srilanka	11:30pm
8/4/2025 7:31:05	Yes, I agree to participate.	vijayasaliny	23	Female	Urban	Rs. 10,000 - 25,000	karnadaga	12,1am
8/4/2025 8:37:13	Yes, I agree to participate.	LD	21	Female	Rural	Rs. 25,000 - 50,000	Tamilnadu	
8/4/2025 8:46:24	Yes, I agree to participate.	AR	22	Female	Urban	Rs. 50,000 - 75,000	West Bengal	12.30am
8/4/2025 8:57:00	Yes, I agree to participate.	MS	23	Female	Urban	Rs. 25,000 - 50,000	Tamil nadu	
8/4/2025 9:20:18	Yes, I agree to participate.	JR	21	Female	semi- urban	Rs. 50,000 - 75,000	Goa	12 or 12.30
8/4/2025 9:25:24	Yes, I agree to participate.	MS	22	Male	semi- urban	Rs. 10,000 - 25,000	TamilNadu	
8/4/2025 9:32:45	Yes, I agree to participate.	H.C	22	Female	Urban	More then 100,000	West Bengal	11 p.m
8/4/2025 9:55:11	Yes, I agree to participate.	Thankeswaran Dilakshan	25	Male	semi- urban	Rs. 10,000 - 25,000	Eastern	Around 11pm
8/4/2025 11:14:07	Yes, I agree to participate.	SD	22	Female	Urban	More then 100,000	Goa	12- 12:30 am
8/4/2025 21:00:13	Yes, I agree to participate.	Tiya joseph	25	Female	Urban	Rs. 10,000 - 25,000	Kerala	12:00
8/5/2025 0:25:40	Yes, I agree to participate.	Ny	25	Male	Rural	Rs. 25,000 - 50,000	Arunachal Pradesh	11.40 pm



Timestamp	I have read and understood the information pr	Name/Initials (for eg: Sujeni Pakkiyaraj as SP	Age	Gender	Area of Residence	Monthly family income	State you belong to	1. When have yo
9/29/2025 20:44:34	Yes, I agree to participate.	SM	22	Female	semi- urban	Rs. 50,000 - 75,000	Tamil Nadu	
10/24/2025 22:42:48	Yes, I agree to participate.	PS	21	Female	Urban	Rs. 50,000 - 75,000	Karnataka	
10/24/2025 22:44:43	Yes, I agree to participate.	IK	22	Female	semi- urban	More then 100,000	Karnataka	1-2pm
10/24/2025 23:39:58	Yes, I agree to participate.	Ahalya	20	Female	Rural	Rs. 25,000 - 50,000	Tamil Nadu	3 am
10/25/2025 0:01:12	Yes, I agree to participate.	Kevin D	20	Male	Urban	Rs. 25,000 - 50,000	Karnataka	11 pm
10/25/2025 1:14:13	Yes, I agree to participate.	John	23	Male	semi- urban	More then 100,000	Puducherry (UT)	
10/26/2025 7:55:06	Yes, I agree to participate.	AM	18	Female	semi- urban	Rs. 50,000 - 75,000	Tamil Nadu	
10/26/2025 23:44:59	Yes, I agree to participate.	Keerti N	18	Female	semi- urban	Rs. 50,000 - 75,000	Karnataka	
10/26/2025 23:54:41	Yes, I agree to participate.	Faustina Mary V	20	Female	Urban	Rs. 10,000 - 25,000	Karnataka	10 pm
10/26/2025 23:58:42	Yes, I agree to participate.	JANAVI	20	Female	Urban	Rs. 50,000 - 75,000	Karnataka	12 to 1
10/27/2025 1:01:21	Yes, I agree to participate.	Kevin kennedy.R	21	Male	Urban	Rs. 50,000 - 75,000	Karnataka	Night
10/27/2025 1:33:07	Yes, I agree to participate.	VA	22	Female	Urban	More then 100,000	Kerala	
10/27/2025 1:37:21	Yes, I agree to participate.	EP	23	Male	semi- urban	NA	Karnataka	10pm
10/27/2025 1:40:47	Yes, I agree to participate.	Y k	25	Male	Rural	Rs. 25,000 - 50,000	Tamil Nadu	
10/27/2025 1:52:14	Yes, I agree to participate.	G.R	21	Female	semi- urban	Rs. 25,000 - 50,000	Tamil Nadu	Around 12 or afte
10/27/2025 2:51:28	Yes, I agree to participate.	ARB	19	Male	semi- urban	More then 100,000	Odisha	2am
10/27/2025 7:13:51	Yes, I agree to participate.	P	21	Male	semi- urban	Rs. 50,000 - 75,000	Mizoram	1am-3am
10/27/2025 10:41:46	Yes, I agree to participate.	Haj	21	Female	semi- urban	Rs. 10,000 - 25,000	Kerala	
10/27/2025 10:59:29	Yes, I agree to participate.	Dev Panamgama	25	Female	Urban	Rs. 10,000 - 25,000	Tamil Nadu	After 12
10/27/2025 11:03:44	Yes, I agree to participate.	Diroshika K	21	Female	Rural	I didn't go for job	Tamil Nadu	I have usually go
10/28/2025 6:57:30	Yes, I agree to participate.	Vs	19	Male	Urban	Rs. 50,000 - 75,000	Karnataka	
10/28/2025 6:59:30	Yes, I agree to participate.	Jabez T	19	Male	Urban	More then 100,000	Tamil Nadu	
10/28/2025 7:14:12	Yes, I agree to participate.	S P	19	Female	Urban	Rs. 25,000 - 50,000	Rajasthan	
10/28/2025 7:24:46	Yes, I agree to participate.	A S Anupriya	19	Female	Urban	Rs. 50,000 - 75,000	Jharkhand	1 am
10/28/2025 7:30:42	Yes, I agree to participate.	CS	22	Male	Urban	More then 100,000	Kerala	
10/28/2025 7:34:29	Yes, I agree to participate.	BD	20	Male	Urban	Rs. 50,000 - 75,000	Kerala	