

# The Relation Between Anxiety and Sleep Cycle Among College Students of Faridabad

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## ABSTRACT:

The American Psychological Association (APA) anxiety as "an emotion characterised by feelings of tension, worried thoughts, and physical changes like increased blood pressure." The present study aimed to find the relationship between anxiety and sleep cycle among college students. Objective is to assess the difference between male and female young adults on anxiety and sleep cycle and to study the relationship between anxiety and sleep cycle among college students. A cross-sectional questionnaire-based study was conducted among young adults. A total of 100 subjects participated in the study. Data pertaining to quality of sleep, and anxiety were collected using validated and reliable questionnaires of Beck Anxiety Inventory and sleep quality scale. The result shows that (34%) of the participants have low level of anxiety, (45%) of the participants have a moderate level of anxiety, (21%) of the participants have a high level of anxiety. The result indicates (45%) of the participants have a low level of sleep quality, (28%) of the participants have moderate level of sleep quality, (27%) of the participants have a high level of sleep quality. Mean of anxiety in present study was found to be 16.80 and 17.20 for male and female. The significant p-value (.728) reported that anxiety is not affected by gender. It demonstrates a positive correlation between sleep cycle and anxiety (.764\*\*). Half of the sample is suffering from poor quality of sleep. Anxiety and sleep cycle were correlated to each other. Quality of sleep is decreased when anxiety is increased in respondents. There is no significant difference in anxiety among males and females. In conclusion our study sheds light on the relationship between anxiety and sleep patterns. Through extensive data analysis and participant assessments, we have identified a significant correlation between elevated anxiety levels and disrupted sleep quality. Specifically, individuals with higher anxiety levels tend to experience more frequent awakening, longer sleep latency and decreased overall sleep efficiency.

**KEYWORDS:** Anxiety, Sleep quality, College students.

## INTRODUCTION

Anxiety is a natural response to stressful or uncertain situations, but it can become overwhelming for those with anxiety disorders. These conditions are marked by persistent worry, tension, and fear about the future, often to an excessive and uncontrollable degree. Anxiety can have a negative impact on both physical and mental health, often leading to mood and sleep disorders. While some level of anxiety can be productive and help us perform better, excessive anxiety, or distress, can lead to confusion and hinder intelligent action. Anxiety is a common experience for most people, but those with anxiety disorders suffer from excessive and debilitating anxiety, often triggered by everyday situations. These feelings can significantly disrupt daily life and make it challenging to manage routine tasks. Symptoms of anxiety disorders include nervousness, a sense of impending danger, hyperventilation, sweating, trembling, and obsessive thoughts

about the fear trigger. If anxiety is seriously affecting a person's life or relationships, it's crucial to seek medical assistance. Lifestyle changes, coping strategies, therapy, or medication may be recommended to manage the symptoms. Sleep is regulated by neurotransmitters in the brain, such as serotonin and norepinephrine, which keep us awake, and adenosine, a molecule that accumulates during wakefulness, promoting tiredness. As we sleep, these chemicals shift, allowing us to progress through five sleep stages: stages 1, 2, 3, 4, and REM sleep. Stage 1 is light sleep, characterised by slow eye movements and reduced muscle activity, often accompanied by fragmented visual images and occasional muscle jerks. Stage 2 sees eye movements cease, with brain waves exhibiting sleep spindles. Stage 3 and 4 involve slow delta waves, with deep sleep-in stage 4 being difficult to wake from, sometimes leading to bed-wetting or sleepwalking in children. REM sleep features rapid eye movements, muscle paralysis, and vivid dreaming, often accompanied by physiological changes like increased heart rate and blood pressure.

#### Review of literature:

Alivian et.al., (2022) We conducted a study to assess the effectiveness of murottal recitation and prayer in alleviating anxiety and sleep disturbances among elderly participants in Pamijen Village. The study included 60 participants, with 30 in the murottal group and 30 in the prayer group. Pre- and post-treatment assessments revealed significant improvements in sleep patterns for both groups ( $p = 0.00$ ). However, anxiety scores did not significantly change after prayer ( $p = 0.869$ ). In summary, murottal therapy effectively reduced anxiety and enhanced sleep quality among the elderly.

Hamilton et.al., (2021) We conducted a study with 160 undergraduate students to investigate the Sleep Anxiety Performance Process (SAPP) model in the context of a psychology statistics exam. Two days before the exam, participants completed measures and Sleep Mood Study Diaries (SMS). Path analysis revealed a bidirectional relationship between Sleep Quality and restfulness (Q&R) and test anxiety. Morning test anxiety predicted exam performance. Prior exam performance, being a non-native English speaker (ESL), and class performance motivation also influenced exam performance.

Stanković, et.al (2021) In a study with university students, we investigated the link between extensive smartphone use and depression using multiple regression and path analysis. Our results revealed that smartphone use is negatively correlated with anxiety, stress, and sleep quality. Extensive smartphone use is associated with depression, mediated by stress, and there's a bidirectional relationship with depression leading to increased smartphone use. This supports a bi-directional hybrid view on the connection between smartphone use and depression, mediated by stress.

Hetkamp, et.al (2020) In a study following the COVID-19 outbreak in Germany, 16,245 respondents reported sleep disturbances, COVID-19 fear, and generalised anxiety disorder over 50 days. COVID-19-specific fear rose with infection rates but wasn't related to the number of deaths. Initially, 13.5% experienced reduced sleep quality and 7.2% had moderate generalised anxiety, which increased over time, affecting more than twice as many respondents.

Raskin, et.al (2018) In this research, we aimed to explore the relationship between sleep difficulties in anxious children and those experienced by their mothers. The study involved 101 participants, comprised of children aged 8 to 18 years and their mothers. Among the participants, 66 children were clinically diagnosed with anxiety disorders, with an average age of 11.45 years and a standard deviation of 2.79 years, while the control group consisted of 35 age- and sex-matched healthy controls.

Sandor & Shapiro (2018) examine the relationship between sleep and the two disorders as well as the effects of antidepressants and anxiolytics on sleep architecture. The effects on sleep of various neurotransmitter systems implicated in depression and anxiety are outlined. Sleep is invariably disrupted

in patients who have depression and in patients with anxiety disorders. Depression and anxiety frequently coexist and are associated with disturbances in various neurotransmitters.

Cohen, et.al (2017) examine the effect is affected by the temporal proximity between SD and the stressful event or whether it was related to the prevention of sleep in the first resting phase following the exposure. Rats were exposed to stress at the onset of their active phase. Then, they were prevented from sleeping immediately thereafter [forced wakefulness (FW)], or during the first resting phase (SD). The behaviour in the elevated plus-maze and acoustic startle response paradigms were assessed seven days post-exposure for retrospective classification into behavioural response groups. We found that resting phase SD (with or without FW) decreased PTSD-like phenotype, whereas immediate FW had no significant effect. The long-term anxiolytic effects of SD appear to stem from a diurnal cycle-dependent mechanism, such that preventing sleep during the first natural resting phase following the traumatic exposure is beneficial in preventing the traumatic sequelae.

Lucchesi, et.al., (2016) We examined clinical features, daily functioning, sleep patterns, and psychological factors in 75 episodic and 75 chronic migraine patients. Chronic migraine patients showed higher scores in fatigue, sleep quality, anxiety, depressive symptoms, and BMI compared to episodic migraine patients. There was a positive correlation between the monthly frequency of migraine attacks and these factors. These findings suggest that migraine exists on a continuum, with chronic migraine associated with more profound fatigue, poorer sleep quality, anxiety, depressive symptoms, and higher BMI. Further research is needed to understand the underlying mechanisms of this transformation from episodic to chronic migraine.

Demirci,et.al., (2015) examine the relationship between smartphone use severity and sleep quality, depression, and anxiety in university students. In total, 319 university students (203 females and 116 males; mean age =  $20.5 \pm 2.45$ ) were included in the study. Participants were divided into the following three groups: a smartphone non-user group (n = 71, 22.3%), a low smartphone use group (n = 121, 37.9%), and a high smartphone use group (n = 127, 39.8%). All participants were evaluated using the Pittsburgh Sleep Quality Index, Beck Depression Inventory, Beck Anxiety Inventory; moreover, participants other than those in the smartphone non-user group were also assessed with the Smartphone Addiction Scale. The findings revealed that the Smartphone Addiction Scale scores of females were significantly higher than those of males. Depression, anxiety, and daytime dysfunction scores were higher in the high smartphone use group than in the low smartphone use group. Positive correlations were found between the Smartphone Addiction Scale scores and depression levels, anxiety levels, and some sleep quality scores.

Shanahan, et.al., (2014) In the Great Smoky Mountains Study, involving 1,420 children assessed multiple times from ages 9 to 16, we examined the relationship between sleep problems and psychiatric disorders. Sleep problems were prevalent, with restless sleep and difficulty falling asleep being common symptoms. Cross-sectional analysis showed that sleep problems often co-occurred with various psychiatric disorders. Longitudinal analysis revealed that sleep problems predicted an increased prevalence of later generalised anxiety disorder (GAD) and high GAD/depression symptoms, as well as oppositional defiant disorder (ODD). Conversely, GAD, depression, and ODD predicted an increase in sleep problems over time.

Chorney,et.al., (2008) investigate the association between sleep, anxiety, and depression in children and provide recommendations for future research. A literature search was conducted using MED-LINE and PsychINFO computerised databases and bibliographies of relevant articles. A surprisingly small but growing research base exists on the relation between sleep disturbance, anxiety, and depression in paediatric populations. Existing research indicates a significant symptom overlap between anxiety,

depression, and sleep. This overlap may complicate proper assessment and treatment of children with these disorders.

Mellman (2008) examine the Sleep disturbances are commonly associated with anxiety disorders, particularly generalised anxiety disorder, panic disorder, and PTSD. Core features of panic disorder and post-traumatic stress disorder occur in relation to sleep (sleep panic attacks, re-experiencing nightmares). These sleep episodes can usually be distinguished from primary sleep disorders on clinical grounds. Such conditions may coexist, however, and anxiety symptoms seem to benefit from treatment of sleep respiratory conditions.

Hall, et.al., (2009) In this cross-sectional survey of 650 pregnant women in their third trimester, we aimed to explore the relationships between childbirth fear, sleep deprivation, anxiety, and fatigue. Results showed that 25% of women reported high childbirth fear, and 20.6% slept less than 6 hours per night. These factors were positively correlated, with anxiety and fatigue linked to childbirth fear. Women under midwife care reported less childbirth fear compared to those under obstetrician care. High childbirth fear was associated with more daily stressors, anxiety, and fatigue, and less available support. Additionally, higher anxiety levels predicted greater childbirth fear.

Vollert, et.al., (2011) In our study, we investigated the impact of acute sleep deprivation (SD) on anxiety-like behaviour in rats, focusing on the involvement of oxidative stress mechanisms and the potential protective role of treadmill exercise. We found that SD increased oxidative stress in the cortex, hippocampus, and amygdala, while prior treadmill exercise prevented this increase. SD also elevated serum corticosterone levels, which were normalised in exercised sleep-deprived rats. Furthermore, anxiety-like behaviour significantly increased with SD but was prevented by prior treadmill exercise. Protein expression of antioxidant enzymes GLO-1 and GSR-1 increased after 24 hours of SD in these brain regions, but their levels were normalised in exercised sleep-deprived rats. Our findings suggest that oxidative stress, potentially through the regulation of GLO-1 and GSR-1, may be involved in sleep deprivation-induced anxiety-like behaviour.

## **Methodology**

**Aim** - THE RELATION BETWEEN ANXIETY AND SLEEP CYCLE AMONG THE MALE AND FEMALE YOUNG ADULTS.

**Objective** - To assess the difference between male and female young adults on anxiety and sleep cycle and to study the relationship between anxiety and sleep cycle among young adults.

**Hypothesis** - (H1) There is a significant difference between male and female young adults on anxiety and sleep cycle. (H1) There is a significant relationship between anxiety and sleep cycle among young adults.

**Population** - The sample is selected through a simple random sampling method. A total sample of 100 participants (50 males and 50 females) was selected for the collection of data. Only adults were included. The age range of participants was above 18 to 25 years. All the participants belong to Faridabad. Research approach Qualitative Research approach was utilised in this study.

**Research design** - Descriptive research design was used.

### Tools for data collection

**Beck Anxiety Inventory:** Beck anxiety inventory is used to measure the level of anxiety. This scale was developed by Aron T. Beck and his colleagues.

**Reliability** - The Beck Anxiety Inventory (BAI) demonstrated a high level of internal consistency, with a Cronbach's alpha coefficient of 0.94, indicating strong reliability.

**Validity**- The Beck Anxiety Inventory demonstrated convergent and discriminant validity.

**Sleep quality scale:** This scale developed by Shahid et al. in 2012. This scale helps to measure the sleep quality of an individual.

**Reliability** - The internal consistency of the Cronbach's alpha coefficient was measured at 0.92, and the test-retest reliability was found to have a correlation coefficient of 0.81.

**Validity** – Sleep quality scale has high construct, and criterion validity.

**Norms** -Beck anxiety inventory is a 21-item scale with four alternative options: “NOT AT ALL”; “MILDLY”; “MODERATELY”; and “SEVERE”. A score of (0) is given to “NOT AT ALL”; (1) is given to “MILDLY”; (2) is given to “MODERATELY”; (3) is given to “SEVERE”. High scores indicate high anxiety.

Sleep quality scale is a 28-item scale with 4 alternative options: Rarely; Sometimes; Often and Almost always. High scores indicate more acute sleep problems.

**Procedure** - The data was collected from the students studying in undergraduate and postgraduate degree courses at Faridabad Colleges. The data was collected using questionnaire method.

**Results** - A study of 100 college students examined the link between anxiety and sleep patterns, focusing on gender differences. Findings showed 34% had low anxiety, 45% moderate anxiety, and 21% high anxiety. About 45% had low sleep quality, 28% moderate, and 27% high. Gender didn't significantly affect anxiety levels ( $p=0.728$ ), with similar scores for males (16.80) and females (17.20). A strong positive correlation ( $r=0.764$ ) revealed that as anxiety increased, sleep quality decreased, indicating a link between higher anxiety and poorer sleep quality.

**Discussion** – This study sheds light on the complex relationship between anxiety and sleep patterns among college students. With 45% reporting moderate anxiety and 21% experiencing high anxiety levels, it underscores the prevalence of anxiety in this population. Equally concerning is that almost half of the participants reported poor sleep quality, emphasising the need to address sleep disturbances. Surprisingly, gender didn't significantly impact anxiety levels, highlighting the unique characteristics of this study.

The strong positive correlation between anxiety and sleep quality suggests a bidirectional link, emphasising the importance of interventions focusing on both mental health and sleep improvement. Educational institutions should prioritise mental health services and sleep education programs to support students effectively. Future research should explore intervention strategies to alleviate anxiety and improve sleep quality among college students, recognising the importance of a holistic approach for their well-being and academic success.

This study uncovers the link between anxiety and sleep patterns in college students. It found that a significant portion experienced moderate to high anxiety levels and nearly half reported poor sleep quality. Importantly, there was no significant gender difference in anxiety levels. The strongest discovery was a



positive correlation between anxiety and sleep quality, implying that addressing anxiety can improve sleep in college students. This highlights the need for interventions focusing on both anxiety and sleep to enhance students' well-being and academic performance.

Limitation and suggestion - Only 18-25 years of age participants were included in the study, and urban area participants were included. Self-reporting questionnaires remain the most widely used tools in community surveys. The self-report method reflects the interviewee's own perspective, which may be more suitable for reporting subjective disorders. The questionnaires were formulated in a "multiple-choice" and scale pattern to facilitate response and have shorter interview duration in order to avoid disturbing the students, in the hope that the simplicity of the questionnaire would make it easier for the respondents to give accurate informations.

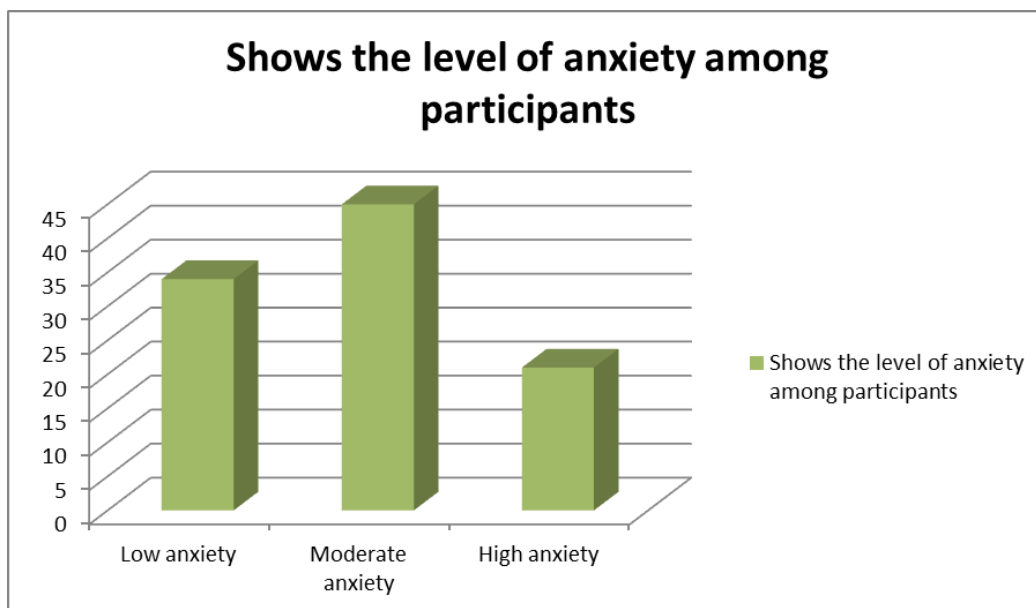
Suggestions: There should be proper conduction of webinars, seminars and workshops regarding harmful effects of anxiety and disturbed sleep cycle. There should be proper functioning of psychiatric department for better treatment of anxiety and disturbed sleep cycle. There should be programs for relaxation techniques those who suffers lot from anxiety and disturbed sleep pattern.

**Result:**

*Table 1: Information of participants with respect to the anxiety.*

Level	Scores	N	%
Low anxiety	0 – 21	34	34%
Moderate anxiety	22 – 35	45	45%
High anxiety	36 above	21	21%

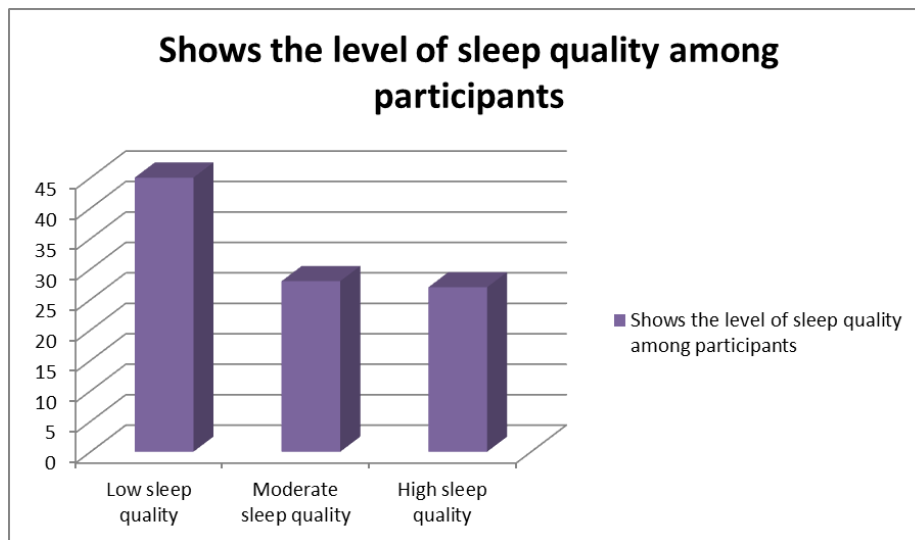
The result shows that 34 (34%) of the participants have low level of anxiety, 45 (45%) of the participants have moderate level of anxiety, 21 (21%) of the participants have high level of anxiety.



**Table 2: Information of participants with respect to the sleep quality.**

Level	Scores	N	%
Low sleep quality	0 – 28	45	45%
Moderate sleep quality	29 – 57	28	28%
High sleep quality	57 - 84	27	27%

The result shows that 45 (45%) of the participants have low level of sleep quality, 28 (28%) of the participants have moderate level of sleep quality, 27 (27%) of the participants have high level of sleep quality.



**Table 3: Standard deviation, Mean, t-value and p-value of anxiety by demographic variables of students (N = 100).**

Variables	Sub variables	N	Mean	S.D	t-value	p-value
Gender	Male	50	16.80	5.47	-.348	.728
	Female	50	17.20	6.45		

The mean of the anxiety was found to be 16.80 and 17.20 for male and female group. The significant p-value (.728) reported that anxiety does not differ by gender. It means anxiety is not affected by gender.

The mean of the sleep cycle was found to be 15.90 and 16.20 for male and female group. The significant p-value (.000) reported that sleep cycle does not differ by gender. It means sleep cycle is not affected by gender.

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