

Effect of Anxiety on Sleep Quality among College Students

Bedanta Kishor Kalita¹, Shraddha Basu²

¹BA Applied Psychology, The Assam Royal Global University, Guwahati, Assam

²Assistant Professor, Department of Psychology, The Assam Royal Global University, Guwahati, Assam

Corresponding author: Shraddha Basu

Email – sbasu@rgu.ac

ABSTRACT

Background: College students often experience heightened stressors, academic pressures, and lifestyle changes, contributing to elevated levels of anxiety. Understanding the implications of anxiety on sleep quality is crucial, as it can detrimentally affect mental well-being. By investigating this relationship, the study aims to provide important perceptions into the specific ways anxiety may compromise the sleep quality of college students.

Methodology: 60 students, evenly distributed between males and females, from the city of Guwahati were drawn from a range of institutions, including The Assam Royal Global University, Guwahati University, Cotton University, The Assam Don Bosco University, and Assam Engineering College. The age range of the participants was 18-25 years. Snowball Sampling Technique was utilized to select the sample for this study. The research employed Beck's Anxiety Inventory and the Pittsburgh Sleep Quality Index to measure anxiety levels and sleep quality, respectively.

Results: The results indicated no significant difference in anxiety levels and sleep quality between males and females and suggesting that both genders face similar challenges. However, a strong correlation was observed between anxiety and sleep quality in both genders, with a high correlation in females and a moderate one in males. Furthermore, anxiety was found to significantly affect sleep quality, with a 37% effect in females and a 34% effect in males.

Conclusion: These findings underscore the importance of addressing anxiety to improve sleep quality among college students. The study concludes with recommendations for educational institutions, mental health professionals, policy makers, and students, and suggests areas for further research.

Keywords: Anxiety, Sleep Quality, College Students, Pittsburg Sleep Quality Index, Beck's Anxiety Inventory.

(Paper received – 31st July 2024, Peer review completed – 18th August 2024, Accepted – 28th August 2024)

INTRODUCTION

The American Psychological Association (APA) describes anxiety as “an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure” [1]. Anxiety is a standard reaction to stress. It can prepare us to threat and help us to get ready and pay attention. Anxiety denotes to expectation of a forthcoming apprehension and is more allied with muscle strain and escaping behaviour. Since the earliest days of civilization, the style of predators and arriving hazard sets off alarms in the body and allows elusive act. The danger reasons a flash of adrenaline which in turn activates these anxious responses in a procedure called the “fight-or-flight’ response [2].

Sleep is a basic human need and is critical to both physical and mental health. Human body typically works on a 24-hour cycle (circadian rhythm) that helps one to know when to sleep. According to the National Sleep Foundation, most adults want about seven to nine hours of relaxing sleep each night [3]. Sleep quality is a multifaceted concept that encompasses various aspects of sleep. It's not just about the quantity of sleep, but also the quality of sleep that matters. Most adults need somewhere between seven and nine hours a night to wake up feeling refreshed. The quality of sleep ensures that the person get the essential physical, mental, and emotional benefits they need from their slumber. Good quality sleep is related for the health and

wellbeing of an individual. It is the main for next day freshness, energy, enthusiasm and saneness. Complexity, peacefulness of sleep and feeling freshness after awakening are some of the noticeable distinctive sleep qualities. Quality sleep and getting sufficient of it as the right times is essential to survive as food and water. Sleep is significant to several brain functions, including how nerve cells (neurons) connect with each other [4].

Epidemiological evidence shows association of sleep disorders with psychiatric morbidities. Poor sleep quality is linked with poor cognitive performance and emotional dysfunction. Bad sleep quality is reflected in next day fatigue and concentration. College students often experience heightened stressors, academic pressures, and lifestyle changes, contributing to elevated levels of anxiety. Understanding the implications of anxiety on sleep quality is crucial, as inadequate or disrupted sleep can detrimentally affect cognitive functioning, academic performance, and overall well-being [5]. Researchers [6] conducted a study which aimed to evaluate quality of sleep and anxiety among university students, findings showed that there is positive relation between Anxiety and Sleep Quality. According to regression analysis, some characteristics effect sleep quality. Others conducted research [4] where the Findings of the study revealed that poor sleep quality was significantly associated with elevated levels of stress. Chang-Myung and others [8] conducted a study on a population-based study, aiming to explore the relationship between sleep disturbance and psychiatric comorbidities, specifically anxiety and depression, in individuals with a high risk for insomnia. The findings revealed that 10.5% of respondents were classified as high risk for insomnia, with anxiety and depression being more prevalent in this group. Particularly, individuals with both anxiety and depression exhibited worse scores on sleep-related scales. Importantly, poor sleep behaviors mediated the relationship between anxiety, depression, and insomnia severity. Despite the prevalence of anxiety and sleep-related issues among college students in India, there is a noticeable lack of comprehensive research studying the effect of anxiety on sleep quality in this demographic, particularly with a focus on regional differences within India and in North-East India. Understanding the relationship between anxiety and sleep quality in different regions of India could lead to more effective, culturally and regionally sensitive interventions. This could ultimately improve the mental health support provided to college students across India.

METHODOLOGY

The sampling size of the research work consists of 60 students (30 Male and 30 Female) of Guwahati city from various institutes including The Assam Royal Global University, Guwahati University, Cotton University, The Assam Don Bosco University, Assam Engineering College between the ages of 18-25 years. Snowball Sampling Technique was applied for the selection of the sample. Permission was taken from the university and consent was taken from the students to participate in the study. A total of 80 participants were selected for the present study but 60 data sheets were analyzed for the present study, 20 data sheets were rejected due to being incomplete. Exploratory research design will be applied for this research. Exploratory research design attempts to explore the areas where there are limited research works published and it dives into understanding behaviors and motives in a vast quantitative and qualitative aspects. Here in this research through quantitative analysis the researcher tries to explore the vast aspects of the cause-and-effect phenomenon between anxiety and sleep quality among male and female students. Before the data collection pilot survey was done and after pilot survey the data were collected and explored.

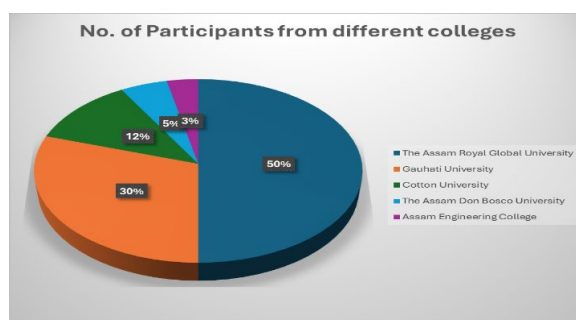


Fig 1: No. of Participants from different colleges of Guwahati City

Ethical considerations

The study was approved by the scientific committee and institute ethics committee of The Assam Royal Global University.

Statistical analysis

To study the effect of anxiety on sleep quality on college students of Guwahati city, the following statistical techniques were used to analyze the collected data; mean, standard deviation, t-test and correlation. Correlation and Regression Analysis was applied for data analysis. Data analysis was done by using Statistical Package for Social Sciences Software (SPSS) version 17.

Measurements

Socio-demographic sheet: Semi-structured proforma that contained details of demographical information. Socio Demographic sheet was constructed by the researcher. It will contain the socio demographic related information like: Name, Age, Sex, Name of college/university, Course enrolled in currently, Area of residence, Phone No, Email.

The Pittsburgh Sleep Quality Index (PSQI): The Pittsburgh Sleep Quality Index is a widely utilized instrument designed to assess sleep quality and disturbances over a one-month period. This self-report questionnaire consists of 19 items, which are categorized into seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Respondents provide information about their sleep habits, and the scores from each component are summed to yield a global sleep quality score, ranging from 0 to 21, with higher scores indicating poorer sleep quality. The PSQI has demonstrated good internal consistency, reliability, and validity across diverse populations and has been extensively used in both clinical and research settings. Its reliability is supported by high internal consistency, and its validity is evidenced by correlations with other established measures of sleep and psychiatric symptoms. The PSQI serves as a valuable tool for assessing and monitoring sleep patterns, aiding in the identification and management of sleep-related issues [16].

The Beck Anxiety Inventory (BAI): The Beck Anxiety Inventory is a widely utilized self-report assessment tool designed to measure the severity of anxiety symptoms in individuals aged 17 and older. This inventory comprises 21 items, each representing common symptoms of anxiety experienced over the past week, and respondents rate the severity of each symptom on a scale ranging from 0 to 3. The total score, obtained by summing the ratings across all items, provides an indication of the individual's overall anxiety level. The BAI has demonstrated strong internal consistency, with high reliability in measuring anxiety symptoms across diverse populations. Its validity is supported by correlations with other established measures of anxiety and psychiatric symptoms, affirming its efficacy in assessing and monitoring anxiety disorders in both clinical and research settings. The Beck Anxiety Inventory is recognized for its practical utility and contribution to the field of mental health assessment [17].

RESULTS

The table 1 shows 30 (50%) male and 30(50%) female participants were included in the study. 12 (20%) of the participants belonged to upper socio-economic class, 43 (71%) participants belonged to upper middle socio-economic class whereas 5 (8.33%) participants belonged to lower middle class. 42(70%) participants were from Hindu religion, 9 (15%) from Islam and 9 (15%) from Christian religion. The participants who belong to tribal ethnicity were 15 (25%) and most of the participants were non-tribal 45 (75%).

Table 2 shows the level of anxiety, and Sleep quality of college students. In anxiety 6 (10%) participants did not have anxiety but 11 (18.33%), 41 (68.33%), 2 (3.33%) participants had mild, moderate and severe level of anxiety respectively. The sleep quality showed that 11 (18.33%) participants had good sleep quality where 49 (81.67%) had poor sleep quality.

The data in the Table 3 indicates that the difference in anxiety levels between males and females is not statistically significant at both the 0.05 and 0.01 levels of significance. This suggests that there is no significant difference in anxiety levels between males and females.

Table-1: Socio-demographic information of the Participants

Variables	N=60	Participants	Percentage (%)
Gender	Male	30	50
	Female	30	50
Socio economic status	Upper socio-economic class	12	20
	Upper middle socio-economic class	43	71
	Lower middle class	5	8.33
Religion	Hindu	42	70
	Islam	9	15
	Christian	9	15
Ethnicity	Tribal	15	25
	Non-Tribal	45	75

Table-2: Prevalence of Anxiety and Sleep quality among college students

Variables	Domains (N-60)	Participants	Percentage (%)
Anxiety	No anxiety	6	10
	Mild anxiety	11	18.33
	Moderate anxiety	41	68.33
	Severe anxiety	2	3.33
Sleep quality	Good	11	18.33
	Poor	49	81.67

Table 3: Mean, SD & t-test of level of anxiety of male and female subjects.

Anxiety	Mean	SD	t	P
Male	20.7	13.81	-0.80	0.42
Female	23.4	12.14		

*p>0.05, **p>0.01

Table 4: Mean, SD & t-test of level of Sleep Quality of male and female subjects.

Sleep Quality	Mean	SD	t	p
Male	7.76	4.05	0.2	0.83
Female	7.56	3.51		

*p>0.05, **p>0.01

Table 5: Correlation between Anxiety & Sleep Quality on female

	PSQI	BAI
PSQI	1	
BAI	0.610**	1

*p<0.05, **p<0.01

The data in the table shows a significant positive correlation of 0.58 between anxiety and sleep quality among males, which is statistically significant at both the 0.05 and 0.01 levels. This indicates a moderate correlation between anxiety and sleep quality in males.

Table 4: Correlation between Anxiety & Sleep Quality in males

	PSQI	BAI
PSQI	1	
BAI	0.58**	1

*p<0.05, **p<0.01

The data in the table indicates a 37% effect of anxiety on the sleep quality of females. This effect is statistically significant at both the 0.05 and 0.01 levels of significance.

Table 5: Regression between Anxiety & Sleep Quality in females

Predict or variable	Criterion Variable: Sleep Quality					
	B	R ²	Standard error of estimate	F value	T	p
	3.43	0.37	2.82	16.6	3.02	0.000**

*p<0.05 **p<0.01

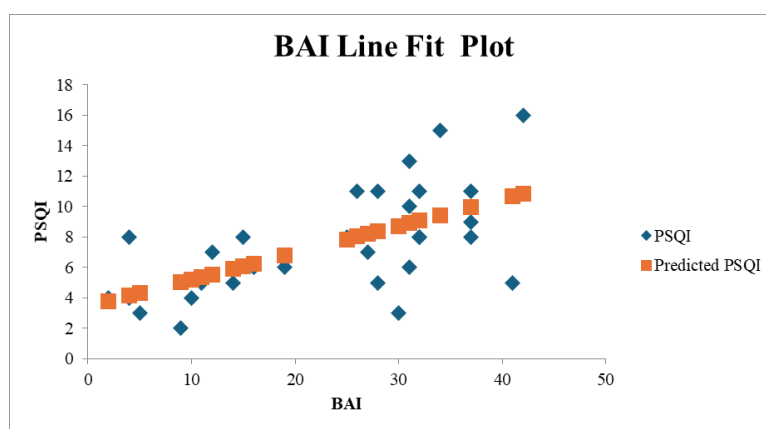


Fig 1: BAI Line Fit Plot for effect of anxiety on sleep quality of female.

Based on the data presented in the table, it is observed that anxiety influences the sleep quality of males by 34%. This effect is statistically significant at both the 0.05 and 0.01 levels of significance.

Table 6: Regression between Anxiety & Sleep Quality in males

Predictor variable: Anxiety	Criterion Variable: Sleep Quality					
	B	R ²	Standard error of estimate	F value	T	p
	4.2	0.34	3.34	14.7	3.7	0.000**

*p<0.05, **p<0.01

DISCUSSION

There is no significant difference in anxiety levels between male and female students. Despite the lack of a significant difference in anxiety levels between males and females, the average scores of 20.7 for males and 23.4 for females suggest that both genders experience moderate levels of anxiety according to Beck's Anxiety Inventory. This observation underscores the prevalence of moderate anxiety among both male and female college students. This finding is particularly important as it suggests that anxiety, a common issue among college students, affects both genders equally. This underscores the need for anxiety management strategies that are effective for all individuals, regardless of gender.

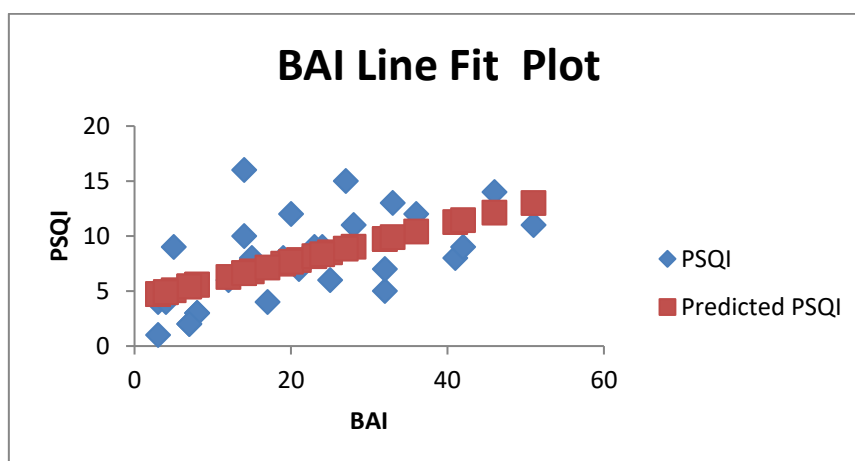


Fig 5: BAI Line Fit Plot for effect of anxiety on sleep quality of male.

It also highlights the importance of creating an environment in educational institutions that acknowledges and addresses anxiety issues among all students. Secondly, there is no significant difference in sleep quality between males and females. Similarly, despite the lack of a significant difference in sleep quality levels between males and females, the average scores of 7.76 for males and 7.56 for females suggest that both genders experience poor sleep quality, as per the Pittsburgh Sleep Quality Index. This observation underscores the prevalence of poor sleep quality among both male and female college students. This finding implies that both genders may face similar challenges regarding sleep quality. It emphasizes the importance of interventions that improve sleep quality for all students, not just those of a particular gender. This could involve promoting good sleep hygiene practices, creating a conducive sleep environment, and addressing lifestyle factors that may affect sleep quality. Thirdly, the study reveals a significant positive correlation between anxiety and sleep quality in both females and males. The correlation was found to be high in females and moderate in males. The observed high correlation between anxiety and sleep quality suggests a strong likelihood that anxiety significantly influences sleep quality in both males and females. This implies that an increase in anxiety levels may adversely affect the quality of sleep, underscoring the intertwined nature of these two variables. These findings highlight the strong interplay between anxiety and sleep quality in both genders. It suggests that addressing anxiety could be a key strategy in improving sleep quality among college students. It also points to the need for further research to understand the mechanisms underlying this relationship and how it may be influenced by other factors such as stress, academic pressure, and lifestyle habits. Finally, there is a significant effect of anxiety on sleep quality in both females and males. Specifically, anxiety was found to affect sleep quality by 37% in females and 34% in males. These findings underscore the importance of addressing anxiety issues to improve sleep quality in this demographic. It suggests that interventions aimed at managing anxiety could have a significant impact on improving sleep quality among college students. The study found no significant difference in anxiety levels and sleep quality between males and females, suggesting that both genders face similar challenges. However, a strong correlation was observed between anxiety and sleep quality in both genders, with a high correlation in females and a moderate one in males. Furthermore, anxiety was found to significantly affect sleep quality, with a 37% effect in females and a 34% effect in males. These findings highlight the importance of addressing anxiety to improve sleep quality among college students. Despite the promising findings from the current study, certain limitations are noted. The sample size was small and is unlikely to be representative of the wider student population across.

CONCLUSION

The results of the study indeed indicate that college students, irrespective of their gender, generally experience moderate anxiety levels and poor sleep quality. The study found a strong correlation between anxiety and sleep quality, with a higher correlation observed in females compared to males. This suggests that heightened anxiety levels could detrimentally impact sleep quality, highlighting the interconnectedness of these two factors. The results underscore the significant interaction between anxiety and sleep quality

across both genders. And finally, the study also revealed a substantial influence of anxiety on sleep quality in both genders. These results emphasize the necessity to address anxiety-related issues to enhance sleep quality in this population. It indicates that strategies aimed at anxiety management could significantly contribute to the improvement of sleep quality among university students. This highlights the urgency for the introduction of effective mental health and sleep hygiene measures within that institutional setting. Future research could delve deeper into the specific factors contributing to these issues and assess potential interventions. It's important to note that while these findings are statistically significant, they represent average experiences and individual variations may exist. This underscores the need for comprehensive mental health support strategies in educational institutions that address both anxiety and sleep quality. The findings of the study could serve as valuable input for policymaking in educational institutions and may also aid in the development of effective mental health support strategies. Furthermore, the study paves the way for future research in this area. The research stands as a testament to the importance of mental health in the context of higher education and could have wide-ranging implications for enhancing the well-being of university students. The research might represent a significant advancement in our understanding of these issues and provides direction towards potential solutions.

REFERENCES

1. Szuhany KL, Simon NM. Anxiety disorders: a review. *JAMA* 2022;328(24):2431-45.
2. American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-5™ (5th ed.), American Psychiatric Publishing, Inc. 2013.
3. Chokroverty S. Overview of sleep & sleep disorders. *Indian J Med Res* 2010;131(2):126-40.
4. N.S. Foundation. "What Is Sleep Quality?," [Online]. Available: <https://www.thensf.org/what-is-sleep-quality/>; 2020.
5. Bootzin RR, Epstein DR. Understanding and treating insomnia. *Ann Rev Clin Psychol* 2011;7(1):435-58.
6. Morin CM, Benca R. Chronic insomnia. *The Lancet* 2012;379(9821):1129-41.
7. Chattu VK, Manzar MD, Kumary S, Burman D, Spence DW, Pandi-Perumal SR. The global problem of insufficient sleep and its serious public health implications. *Healthcare* 2018;20(7).
8. Morin CM, Drake CL, Harvey AG, Krystal AD, Manber R, Riemann D, Spiegelhalter K. Insomnia disorder. *Nature Rev Disease Primers* 2015;1(1):1-8.
9. Orsal O, Orsal O, Alparslan GB, Unsal A. Evaluation of the relation between quality of sleep and anxiety among university students. *Health MED* 2012;6(7):2244-55..
10. Almojali AI, Almalki SA, Allothman AS, Masuadi EM, Alaqeel MK. The prevalence and association of stress with sleep quality among medical students. *J Epidemiol Global Health* 2017;7(3):169-74.
11. Oh CM, Kim HY, Na HK, Cho KH, Chu MK. The effect of anxiety and depression on sleep quality of individuals with high risk for insomnia: a population-based study. *Front Neurol* 2019;10:849..
12. Dinis J, Bragança M. Quality of sleep and depression in college students: a systematic review. *Sleep Sci* 2018;11(4):290-301.
13. Kp S, Joseph N, Sreenivasan GK. Sleep quality and anxiety level among college students. *Int J Res Rev* 2021;8(10):271-6.
14. Alotaibi AD, Alosaimi FM, Alajlan AA, Abdulrahman KA. The relationship between sleep quality, stress, and academic performance among medical students. *J Fam Commun Med* 2020;27(1):23-8.
15. Wang F, Bíró É. Determinants of sleep quality in college students: A literature review. *Explore*. 2021;17(2):170-7.
16. Buysse DJ, Reynolds III CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatr Res* 1989;28(2):193-213.
17. Fydrich T, Dowdall D, Chambless DL. Reliability and validity of the Beck Anxiety Inventory. *J Anxiety Disord* 1992;6(1):55-61.

Acknowledgements – Nil.

Conflict of Interest – Nil

Funding – Nil