



CORRELATION BETWEEN QUALITY OF SLEEP AND DEPRESSION IN COLLEGE STUDENTS

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Abstract: Sleep is really important for our health and well-being. Not getting enough sleep or having poor sleep can cause problems with how our body processes things like sugar and inflammation. Poor sleep is also linked to depression, and this relationship goes both ways. This study looked at how sleep quality is related to depression in college students of Cuttack, Odisha. The study used a method called snowball sampling and had 71 male and 59 female students participate.

To gather information, the study used two questionnaires: one to measure sleep quality and the other to measure the level of depression. The questionnaires used were- The Pittsburgh Sleep Quality Index for sleep quality and Zung Self-rating Depression Scale for depression level. The study then analysed the relationship between sleep quality and depression using a statistical method called Pearson's correlation. The results showed that there is a significant connection between sleep quality and depression in college students at a 0.01 level of significance. In simpler terms, the study's findings suggest that there is a strong relationship between the sleep quality and depression levels of college students.

Keywords. Sleep quality, Depression, College students, Cuttack

I.INTRODUCTION

Sleep is a special state where we are not fully aware, but our brain is still working. Good sleep quality is one of the five essential factors to evaluate mental health. Sleep is crucial for our overall well-being, and its deprivation or disturbance can negatively impact our health, including affecting metabolic and inflammatory processes. Regarding sleep quality, studies have found that the worst quality is linked to higher rates of death, health problems like metabolic syndrome, diabetes, hypertension, heart disease, and depression. Sleep is vital for our health, daily functioning, and quality of life. When students transition from high school to college, they face psychological challenges and adjustments, making sleep quality an important factor to consider in this population.

Depression is a serious condition that can cause ongoing sadness, lack of interest, and problems with daily activities. Symptoms can range from mild to severe and may include: persistent sadness, loss of interest in enjoyable activities, changes in appetite leading to weight loss or gain, trouble sleeping or sleeping too much, loss of energy or increased fatigue, increased physical activity or slowed movements and speech, feeling worthless or guilty, difficulty thinking, concentrating, or making decisions, and thoughts of death or suicide.

These symptoms can interfere with work and home life, making it important to seek help if experiencing them. When difficult emotions remain present for more than two weeks, are felt nearly every day, and remain present for most of the day, they may be related to a group of mood disorders called depressive disorders.

Sleep quality refers to the restfulness and restorative nature of one's sleep. It is different from sleep satisfaction, which is a subjective judgment of the sleep one is getting. Sleep quality is more complex to measure than sleep quantity, but it's not entirely subjective. Four aspects are generally evaluated to measure sleep quality:

- Sleep latency: This measures the time it takes to fall asleep after getting into bed. Falling asleep within 30 minutes or less indicates good sleep quality.
- Sleep waking: This measures how often one wakes up during the night. Frequent nighttime awakenings can disrupt the sleep cycle and reduce sleep quality. Waking up once or not at all suggests good sleep quality.
- Wakefulness: This refers to the amount of time spent awake during the night after getting into bed. People with good sleep quality have 20 minutes or less of wakefulness during the night.
- Sleep efficiency: This is the amount of time actually spent sleeping while in bed. Ideally, this measurement should be 85 percent or more for optimal health benefits.

Direct consequences of poor sleep among college students include increased tension, irritability, depression, confusion, reduced life satisfaction, or poor academic performances. So, addressing these issues entails better time management skills dedicated to studying, work, leisure and sleep.

A research study by Yuan Zhang, Anya Peters, and Guanling Chen (2018) investigated the connection between sleep quality and mental health issues in college students. The study found that poor sleep quality is linked to a higher likelihood of experiencing symptoms of anxiety and depression. The research also discovered that perceived stress plays a significant role in these associations. Specifically, perceived stress mediates 85.3% of the relationship between sleep quality and anxiety symptoms, and 60.0% of the relationship between sleep quality and depression symptoms. The findings of this study suggest that in addition to promoting better sleep, it is essential to identify unique stressors in students and help them develop effective coping strategies to improve their mental health and overall well-being.

Joao Dinis and Miguel Braganca (2018) conducted a comprehensive analysis of various articles to examine the connection between sleep and depression. They found that sleep and depression have a two-way relationship, meaning that poor sleep can lead to depression, and depression can also cause sleep problems. Their review highlighted the significance of sleep quality as a crucial factor in this relationship. As sleep quality becomes increasingly relevant, it is essential to consider its impact on mental health and well-being.

Parash Mani Bhandari and colleagues conducted a study in 2017 to explore the relationship between sleep quality, internet addiction, and depressive symptoms among undergraduate students in Nepal. They included 984 students from 27 undergraduate campuses in Chitwan and Kathmandu, Nepal. The study revealed that a considerable number of students (35.4%) experienced poor sleep quality, while the same percentage (35.4%) showed signs of internet addiction, and 21.2% exhibited symptoms of depression based on validated cutoff scores. Interestingly, the research found that internet addiction played a role in mediating 16.5% of the indirect impact of sleep quality on depressive symptoms. Conversely, sleep quality mediated 30.9% of the indirect effect of internet addiction on depressive symptoms. Both internet addiction and sleep quality were significant factors in influencing depressive symptoms indirectly.

Yousef Alqurashi and team carried out a research study in 2022 examining the relationship between sleep duration and quality with depression among students and faculty at Imam Abdulrahman Bin Faisal University (IAU). The findings indicated that a substantial number of IAU students and faculty members experienced sleep deficiency, suboptimal sleep quality, and mild depression.

Wang Li, Jianjun Yin, Xianfeng Cai, Xin Cheng, and Yongxiang Wang (2020) conducted a study to examine the link between sleep duration and quality with depressive symptoms in Chinese university students. The study used a self-reported questionnaire to evaluate sleep duration and quality, while the Self-rating Depression Scale score was used to measure depressive symptoms. The findings revealed that good sleep quality was linked to a lower prevalence of depressive symptoms, and short sleep duration was associated with a higher prevalence of depressive symptoms.

Katrin Dudo and colleagues (2022) conducted a study to explore the potential association between specific sleep characteristics and the outcome of the Beck Depression Inventory-II score among medical students. The study used descriptive statistics and binary logistic regression for data analysis. Of the students surveyed, 19% reported depressive symptoms with a Beck Depression Inventory-II score above 13, and 42% of these cases were moderate or severe. The study found that relevant depressive symptoms were linked to lower sleep quality, longer sleep latency, and the use of sleeping pills. Furthermore, the study revealed that female students and students from abroad had a higher risk of experiencing depressive symptoms.

Deshira D. Wallace, Marcella H. Boynton, and Leslie A. Lytle (2016) conducted a study to examine the relationship between stress, depression, and a multi-dimensional sleep problems construct in a group of 2-year college students. The results indicated that sleep quality, rather than sleep quantity, could be a more significant health concern for young adults. Therefore, the study suggested that intervention programs focusing on depression, stress management, and healthy sleep patterns are necessary.

Leah D. Doane, Jenna L. Gress-Smith, and Reagan S. Breitenstein (2015) conducted a study to examine changes in sleep quantity, quality, and variability during the transition to college and to investigate potential cross-lagged relationships between adolescents' sleep and symptoms of anxiety and depression. The study was conducted at three time points over approximately one year: the spring of their senior year of high school, the fall of their first year of college, and the spring of their first year of college. The study found that sleep minutes, sleep efficiency, and wake time variability increased during the transition to college, while subjective reports

of sleep problems decreased. Cross-lagged panel models showed significant relationships between subjective sleep quality and anxiety symptoms.

Maren Nyer and colleagues (2013) conducted a study to examine the relationship between sleep disturbances and depression, anxiety, and functioning in college students. The study found that students with depressive symptoms and sleep disturbances reported significantly more intense and frequent anxiety, as well as poorer cognitive and physical functioning, compared to those without sleep disturbances. However, students with depressive symptoms, with or without sleep disturbances, did not significantly differ in depressive severity, hopelessness, or quality of life.

Christopher Augner (2011) conducted a study to investigate the relationship between subjective sleep quality and depression score, anxiety, physical symptoms, and sleep onset latency in young and healthy students using a survey. The study found that subjective sleep quality had a stronger association with sleep onset latency than with sleep duration. Additionally, high depression scores and long sleep onset latency were identified as the most significant predictors of poor subjective sleep quality.

Considering that the life style and sleep habits of college students are different from those of other populations, it is important to evaluate whether sleep duration and quality are associated with depressive symptoms among college students. There are very few research studies have been conducted about the association of sleep quality and depression among college students in India. That is why the researcher decided to conduct this study to investigate the association between sleep quality and depression among college students, which will be useful for the betterment of college students.

Objectives:

- To test the difference between the sleep quality of male and female college students.
- To test the difference between the level of depression of male and female college students.
- To assess the correlation between the sleep quality and depression of college students.

Hypotheses

- There is no significant difference between the sleep quality of male and female college students.
 - There is no significant difference between the depression level of male and female college students.
 - There is significant correlation between the sleep quality and depression of college students.

II.METHODOLOGY

The primary purpose of the study to find out the association between sleep quality and depression among college students.

Participants:

College students within the age range of 18-24 years of age were randomly selected from different areas of Cuttack, as subjects. Total 130 students are selected for this study, including 59 female students and 71 male students. No incentives were offered for participation.

Sampling:

As per the inclusion criteria, the age limit was fixed to be 18-24 years of age. All the participants were fully informed about the aims of the study and were ensured about the confidentiality of their data. Snow ball sampling technique was used. Every precaution was taken to protect the privacy of research subjects and the confidentiality of their personal information.

Material and Testing Instrument:

The questionnaire is used for the assessment of sleep quality of students was the “Pittsburgh Sleep Quality Index” developed by Smyth in 2012. The scale consists of 9 items in the form of questions to which the subject is required to respond on a 4-point scale. However, the response categories are different for each of the items which are described below the items. The maximum score for the test is 27 and the higher the score, the poorer is the sleep quality.

In this study to assess the depression level of the college students, the “self-rating depression scale (SDS)” was used, which was developed by Zung in 1965. This scale consists of 20 items, each of which is scored on a 1-4 scale, as “no or little time”, “sometimes”, “a lot of the time”, and “most of the time”. The scores of each item are combined to obtain an approximate score of 20-80, and the approximate score is multiplied by 1.25 to obtain a standard score of 25-100. As per the scoring, a standard score of <50 was considered as having no depressive symptoms; a standard score of ≥ 50 was considered as having depressive symptoms; 50-59 was considered as having mild depression; 60-69 was considered as having moderate depression; and ≥ 70 was considered as having severe depression.

III.RESULTS

The data collected was statistically analysed using SPSS. Independent sample t-test and Karl Pearson’s method of coefficient of correlation were conducted.

Table 1:

The Independent t-test performed on the sleep quality of female and male college students

Gender	<i>M</i>	<i>SD</i>	<i>n</i>	<i>t</i>	<i>p</i>
Female	28.3	5.9	59	7.25	.00
Male	34.3	3.4	71		

An independent t-test was conducted to compare the sleep quality of female and male college students. The result showed significant differences among the sleep quality of female and male college students. The table reveals that there was a significant difference in the scores for female ($M=28.3$, $SD=5.9$ and male ($M=34.3$, $SD=3.4$) college students; $t= 7.25$, $p= .00$. Since the mean score of male students is higher than female students, it can be concluded that female students have better sleep quality in comparison to male college students.

Table 2:*The Independent t-Test Performed on the Level of Depression of Female and Male College Students*

Gender	<i>M</i>	<i>SD</i>	<i>n</i>	<i>t</i>	<i>p</i>
Female	54.32	6.7	59	4.87	.00
Male	59.45	5.3	71		

An independent t-test was conducted to compare the depression level of female and male college students. The result showed significant differences among the level of depression of female and male college students. The table reveals that there was a insignificant difference in the scores for female ($M=54.32$, $SD=6.7$) and male ($M=59.45$, $SD= 5.3$) college students; $t=4.87$, $p=.00$. Since the mean scores of male students is higher than the female students, it can be concluded that male students are more comparatively more depressed than female college students.

Table 3:*The Karl Pearson's Coefficient of Correlation Performed between Sleep Quality and Depression of College Students*

	Sleep Quality	Depression
Sleep quality Pearson correlation	1	0.64
Sig. (2-tailed)		.00
N	130	130
Depression Pearson correlation	0.64	1
Sig. (2-tailed)	.00	
N	130	130

To find out the correlation between sleep quality and depression the researcher performed the Karl Pearson's coefficient of correlation and the result revealed that there is significant correlation between sleep quality and depression of college students with 0.01 level. The result showed that there is highly significant correlation of sleep quality and depression with the value of 0.635 at 0.01 level.

From all the results it can be observed that that the female students have better sleep quality than male students and lesser depressive symptoms than male students and in case of male students, they have poor sleep quality and higher levels of depression than female students. Through significant differences of depression in male and female students, it can be inferred that sleep quality have some effects on depression level.

IV.DISCUSSION

The present study provides compelling evidence that inadequate sleep quality is strongly associated with increased levels of depression in college students. The findings suggest that sleep quality and depression have a significant impact on each other, which can be particularly problematic for this population. This finding is supported by other studies too including a study conducted by Quentin Regestein and colleagues (2010) to evaluate relationships between sleep habits and depressive symptoms in female college students. The findings showed that about 20% of students reported weekday sleep debts of greater than 2 h and about 28% reported significantly greater sleep debt and had significantly higher depression scores ($P < 0.0001$) than other students. Among female college students, those who report a sleep debt of at least 2 h or significant daytime sleepiness have a higher risk of reporting melancholic symptoms than others.

In this digital age, it is crucial for college students to prioritize their sleep duration and quality, as doing so can enhance their focus and improve both their physical and mental health. Students who experience depressive symptoms should be especially mindful of their daily activities, including their sleep habits, as poor sleep quality can exacerbate depression. To maintain good physical and mental health, college students should adopt a healthy lifestyle, which includes engaging in positive health behaviours such as yoga, meditation, and exercise. These practices can help promote better mental awareness, enabling students to manage critical mental health issues such as stress, anxiety, and depression more effectively. Furthermore, improved sleep quality is a likely outcome of these positive health behaviours.

Limitations of the Study

All care has been taken to use more adequate design and more refined statistical procedure in the present study. But the study has its own limitations that would restrict the researcher to draw inference and generalization. Such limitations are:

1. The sample size was small thus, findings of the study cannot be generalized to a large population.
2. More demographic variables like types of families, financial background etc. can be considered for further research.

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