Study of Sleep Patterns and BMI among Tribal College Students of Tripura

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Abstract: *This study investigates the relationship between sleep patterns as well as the quality of sleep and Body Mass Index (BMI) among tribal college students of Tripura, India. The present research reveals that despite normal BMI values students suffer from poor sleep quality. The study also highlights the higher obesity patterns among the female tribal student community, primarily attributed to their dietary habits. This article emphasizes the need for further research in this area, considering the significant impact of quality of sleep on tribal students' overall well - being and academic performance.*

Keywords: Tribal college students, BMI, sleep pattern, sleep quality, obesity, health status

1. Introduction

One of the most crucial physiological needs is thought to be sleep. It is regarded as being the biological function of the human body that is most crucial. Many vital bodily processes, including muscle recovery from lactic acid buildup, tissue repair, cognitive functioning, body cell and tissue growth and development, enhancement of cardiac function, body metabolism, etc., take place when we sleep. Sleep is thought to be quite advantageous for psychological factors as well. Sleep improves learning, memory, and other cognitive processes as well as mood. Additionally, sleep aids in regaining a healthy weight. It lessens stress, decreases the likelihood of significant health problems, and promotes social interaction.

Poor sleep is associated with illnesses like obesity, mental illness, and cardiovascular disease. While having a cardiovascular illness is associated with poor sleep, some evidence suggests that bad sleep may also play a role (Hale et al., 2020). Less than seven hours of sleep per night is associated with coronary heart disease and a higher risk of dying from the condition. According to Jackson et al. (2015), sleep duration beyond nine hours is also associated with coronary heart disease, stroke, and cardiovascular events.

Short sleep duration is linked to an increased risk of obesity in both children and adults, with several studies finding a risk increase of 45–55%. Obesity has also been linked to other sleep - related issues, such as daytime naps, irregular sleep schedules, and poor sleep efficiency. The impact of sleep duration on obesity has, nevertheless, received the most research (Wang et al., 2017). Sleep issues are typically seen as symptoms rather than causes of mental illness (St - Onge et al., 2016). But mounting data indicates that they are both a root cause and a symptom of mental disorders. A meta - analysis of 170, 000 individuals revealed that insomnia at the start of a study period suggested a more than twofold increased risk for major depressive disorder. Insomnia is a substantial predictor of major depressive

disorder. An association between insomnia and anxiety, PTSD, and suicide has also been suggested by several studies. Sleep problems can make psychotic episodes more severe and raise the risk of psychosis (Hale et al., 2020).

Pittsburg Sleep Quality Index (PSQI) is a tool for evaluating sleep quality. The PSQI was developed in 1988 by Buysse and his colleagues to provide a clear index that both clinicians and patients can use. It is a standardized measure that was created to gather consistent information about the subjective nature of people's sleep habits. It rose in prominence as a tool for studying the potential links between sleep and bipolar disorder, depression, and sleep disorders. Researchers that work with persons from adolescence through old age increasingly employ the PSQI. Independent evaluations have endorsed the PSQI since it has amassed a significant body of scientific evidence. The measure has a great deal of potential for use in clinical practice in addition to showing promise in terms of reliability and validity (Currie, 2008). It has been translated into 56 other languages so far. The PSQI is often referred to as BPSQI, where 'B' refers to Bengali (Tomfohr et al., 2013).

With rising rates in both adults and children, obesity is a leading cause of death globally (WHO, 2015). In 195 countries in 2015, there were 600 million obese adults (12%) and 100 million obese children (Haslem et al., 2005). Women are more likely than men to be obese (WHO, 2015). Obesity was designated as a disease in 2013 by a number of medical groups, including the American Medical Association and the American Heart Association (Yazdi et al., 2015; Afshin et al., 2017). Obesity is a medical condition, occasionally referred to as a disease, in which excessive body fat has built up to the point where it may be harmful to one's health (Pollack, 2013). When a person's body mass index (BMI), which is calculated by dividing their weight by height squared, exceeds 30 kg/m2, they are considered obese; between 25 and 30 kg/m2 is considered overweight (WHO, 2015). According to Luppino et al. (2010), obesity is a significant contributor to disability and is linked to a number of illnesses and ailments, including

osteoarthritis, type 2 diabetes, obstructive sleep apnoea, and some types of cancer. The main variables for controlling obesity are thought to be physical exercise, a healthy lifestyle, and nutrition, although risk factors such as inadequate sleep quantity and quality have gotten less attention.

The goal of the current study is to determine whether obesity and poor sleep quality are likely to be related to Tripura tribal college students. There are a lot of tribal people living in Tripura, a small state in northern India. The sleeping habits and quality of the indigenous college students in that state have received very little attention. Therefore, the current study will usher in a new era of understanding college students' health standards in this regard.

2. Methods

This cross - sectional survey was carried out between January 2023 and March 2023 in several colleges throughout West Tripura. Male college students who were subjects were selected from both tribe groupings. All of the subjects, who were college students between the ages of 19 and 21, gave their informed consent. The exclusion criteria included having at least one obese parent, taking medicine for a condition for longer than three months, smoking and drinking regularly, having a history of diabetes mellitus in the family, and/or having genetic health problems.

With the aid of anthropometric measurement and a weighing machine, height (in centimeters) and weight (in kilograms) are measured. They had a computed Body Mass Index (BMI). Subjects were classified as underweight, normal weight, overweight, etc. based on their BMI values. The information data questionnaire and PSQI form were completed by each subject.

The PSQI is a reliable tool for accurately evaluating a person's sleep patterns, latency, quality, and quantity, among other factors. "Good quality sleep" is indicated by a worldwide score of 5. On the other hand, a global score of >5 denotes "poor quality sleep". The student's sleep quality declines as the PSQI score rises.

3. Results

A total of 80tribal college- going students were approached for the present study, but 21male students and 32 female students responded. The baseline characteristics of the students are given in **Table 1.**

Table 1: Baseline health parameters of the subjects under study

Parameters	Tribal male	Tribal female
Age (years)	19.4 ± 1.28	20.2 ± 1.46
Height (cm.)	164.7 ± 7.34	154.2 ± 9.90
Weight (Kg.)	63.7 ± 10.69	53.5 ± 11.18
BMI (Kg. /m^2)	23.5 ± 3.82	22.9 ± 5.39
PSQI value	5.9 ± 2.29	5.8 ± 2.58

The mean age is almost similar in the case of male and female participants. Both height and weight values are higher in the case of males than females. BMI and PSQI values are also close among male and female participants.
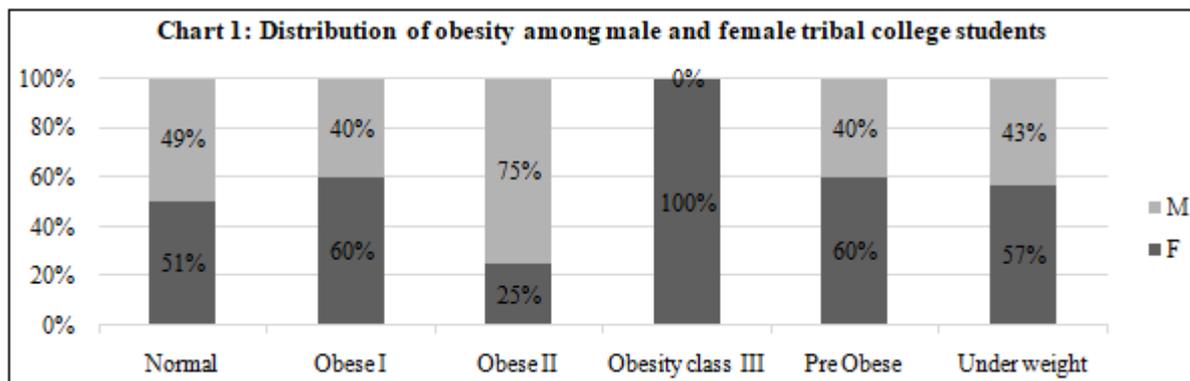

Chart 1 shows the health category of the male and female tribal participants. An almost equal percentage of male and female college students are found under the normal category i. e., 10 male and 16 female students are of the normal category which means they do not have either obesity or underweight health status. In other categories, female participants are found to be almost in higher percentages as compared to their male counterparts. In the case of the 'Obese I' category, 60% female and 40% male are found, which implies 4 male students and 10 female students are in the obese I category. But in the case of the 'Obese II' category, the male is 75% whereas the female is only 25%, which means 5 male and 2 female students belong to the category obese II. Regarding category 'Obese III' 1 female student has been identified. No male students are found in this category. In the 'Underweight' category, 1 male and 2 female students are found respectively. In the 'Pre - obese' category, 1 male and female student each are found.

Chart 2: Comparison of PSQI values among male and female tribal college students
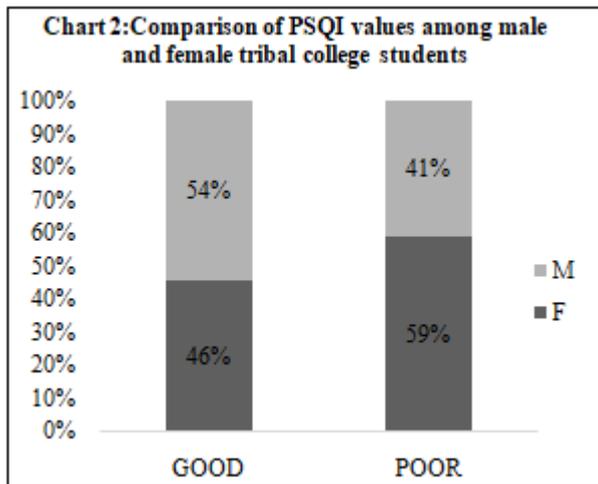
Chart 2 explains the comparison between sleep quality among tribal male and female college students. It is clear from the chart that, tribal male students have much good sleep quality than their female counterparts. On the other hand, tribal female students have much more poor sleep quality than male tribal students. Out of 21 tribal male students, 11 students had good sleep quality and the rest are of poor sleep quality. On the contrary, in the case of female students, 15 students had good quality of sleep whereas, 17 students had poor sleep quality.

4. Discussion

The prime aim of the present study was to identify the value of Body Mass Index and sleep quality in tribal college - going male and female students of Tripura. Very few research works are found to be conducted in this part of India. Because Tripura has both tribal and non - tribal populations, more attention is given to the health status of the non - tribal population. As the literature review shows, no work has been done on detailed discussion on the pattern of health distribution and sleep pattern of tribalcollege - going male and female students.

The result shows that in both cases, the BMI value (Kg/m^2) is within the normal range, but the PSQI values are consistently poor. So, even in a person with a normal BMI value, the person can suffer from poor sleep. A study was conducted to investigate the effects of BMI on health behaviors among 334 Chinese college students. The result of that study showed a significant difference between genders and high BMI values were found to be associated with disturbance in sleep (Wong. C. A., et. al.; 2017). Another cross - sectional study was done by Wang et. al in 2019 with college students to find any probable effect of BMI on sleep quality (Wang et. al.; 2019). The outcome of the study shows that BMI and sleep quality vary with gender. Astudy was conducted by Meena M et. al (2019) on 230 college students 18 - 24 years. The result concluded that there is an association between BMI values and sleep duration. Higher obesity status in the case of tribal female college students may be attributed to a combination of genetic, environmental, behavioral, and socio - economic factors. These factors include diet patterns, physical activity level, cultural norms, educational level, access to healthy food options, socio - economic status, etc. As reported by the

students during face - to - face interviews, less intake of protein and a higher intake of fast food in their day - to - day diet is the prime cause of getting overweight. Most of them do not have any physical activity at all. They are very much habituated to a sedentary lifestyle. During their leisure time, they prefer to watch television, gossip with friends and family members, and play games like ludo, Chinese checker, chess, etc. Another reason for obesity is the retention of rice gruel and its intake of that. Reddy et. al. (1995); Vyas and Chowdhry (2005) and several studies have reported that deficiencies of micronutrients such as iron and zinc often occur together. So prevalent anemia is reported to be higher among tribal female college students. The students were reported to consume rice thrice a day with more vegetables and almost no protein, which gradually make them obese.

In all the cases (both male and female) PSQI values are found to be of poor quality. According to a report from June 2013, almost 190 million internet users are present in India, and most of them are in college and university going population. It was also in the report that the social platforms mostly accessed by the youth are Facebook, WhatsApp, Instagram, and Twitter (Sharma, et. al., 2014). The participants were reported to use the internet mostly during night time i. e., after 11: 00 P. M. and it continues up to late night. Most of them were engaged in social networking. As reported by them, surfing the internet is a part of their leisure activity which is possible only at night before going to bed. Next to social networking, comes engagement in games, which are played either single or in a group. The educational search comes third in the row of interest. Few students have their own YouTube channel to run. So, content - making for the channel is another reason for poor PSQI value. A study was conducted to analyze the internet use pattern among professional students of Tripura (Ghosh and Bhattacherjee, 2020). The study concluded that most of the participants come under the category of average internet users. On the contrary, 7.4% of participants were found to have excessive addiction to using the Internet irrespective of the course. The report also added that the level of mental problems like depression, anxiety, etc. differs according to the involvement with the internet. The relation is like more involvement and more mental problem. If a person does not have adequate sleep according to age and work pattern, the tendency of suffering from mental problems will increase. Sufficient sleep, especially REM sleep helps the brain to work better regarding processing of signals. Whereas, lack of sleep hinders the process of various brain activities like signal analysing, proper thinking ability, positive thinking, tiredness, emotional outburst, and ultimately mental and physical health disorders. Good sleep influences good mood, acceptable social behavior, and good interaction with other members of the concerned group. Adequate sleep helps a person to concentrate on what he/she is doing. This fact is very important from the educational standpoint of a student. It has been reported in a study that almost 300 million of the population are suffering from depressive moods, worldwide (Friedrich, 2017). The study also added that almost 75% of the depressed population is suffering from the symptoms of insomnia. Daytime sleepiness and lack of concentration are two very common symptoms of an insomniac person. Anxiety disorders are also strongly associated with lack of sleep.

5. Conclusion

The study found that BMI values do not affect the sleep pattern of the college - going tribal male and female students of Tripura. A person with a normal average BMI value can suffer from sleep - related issues. Sleep quality was found to be consistently poor in all the health categories taken into consideration. Poor sleep quality is found to be a very bad health issue for college students of Tripura, irrespective of sex. Higher obesity patterns of female college students are found to be mainly related to their food habits.

6. Limitations

The samples under study are suffering from restrictions from the standpoint of age, educational status, as well as community status. The results might be the reflection of the homogeneity of the samples. Future studies should include samples with different age groups, a good comparison with the tribal counterparts. The study was restricted to the area of the West part of Tripura only. Other regions might also be included.

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