SLEEP QUALITY DISPARITIES: A COMPARATIVE ANALYSIS OF MALE AND FEMALE COLLEGE STUDENTS.

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Abstract

Background: Sleep is necessary for a person to function normally in all areas of their life, including their physical and physiological health, attention and responsiveness in different contexts, and overall well-being. This study investigates the sleep quality among male and female college students, to discover any disparities in sleep quality exists between them.

Materials and Methods: For this study 110 participants of age group 18-25 years were taken, out of which 55 were male and 55 were female. Sleep quality is assessed by Pittsburgh Sleep Quality Index Questionnaire (PSQI). The Global PSQI score was calculated by totalling the seven component scores, providing the overall score ranging from 0 to 21, where a lower score denotes healthier sleep quality. The participant score of more than 5 indicates poor sleep quality. For the analysis, the Pittsburgh Sleep Quality Index (PSQI) mean value is calculated.

Results: The mean index of male was 4.85 with the std. deviation of ±2.27, whereas for female the mean index was 5.23 with the std. deviation of ±3.58. The overall mean index was 5.04 with the std. deviation of ±2.99. Independent t-Test Results of Mean Sleep Quality Index of Male and Female was p value =0.066 > 0.050.

Conclusion: The findings of the study revealed that, though the mean values of females are slightly higher than male, but this difference is statistically insignificant. It implies that there

are certain factors contributes to poor sleep quality in female students, and these factors should be investigated further.

Keywords: Sleep quality, Pittsburgh Sleep Quality Index, male and female

Introduction

Sleep is the mental and physical resting condition that is necessary for a person to function normally in all areas of their life, including their physical and physiological health, attention and responsiveness in different contexts, and overall well-being [1,2]. A healthy sleep is characterized by adequacy of sleep duration, good sleep quality, appropriate timing and freedom from sleep disorders [3]. During COVID-19 pandemic everybody spend their time in home, they adapted late night sleep and waking up late in the morning, after pandemic also some of them continued to follow this sleep pattern, this may lead to daytime sleepiness. Due to high work demands, sleep restriction is becoming common in modern societies. Extended time awake and/or sleep restriction increase sleep pressure and generate cumulative sleepiness and impair neurobehavior functioning. Disruption of alertness and risk of professional errors is a major issue, when working under sleep restriction [4].

Now a days we can see so many adverse effects of sleep disruptions in healthy adults, the short-term effects of sleep disruption may lead to disorders of mood, increased somatic pain, impaired coping ability, deficits in cognition, memory, performance and reduced quality of life. Long-term consequences for healthy adults include cardiovascular disease, metabolic syndrome, type 2 diabetes, and colorectal cancer [5]. Sympathetic activity is an integral part of cardiovascular homoeostasis, and sympathetic tone generally increases in daytime and decreases while sleeping. However, in the context of insufficient sleep, sympathetic activity might not return to normal levels at night-time. Moreover, multiple biomarkers of systemic

inflammation like C-reactive protein, TNFα (Tumour Necrosis Factor-Alpha), and interleukin-6 which are known to be part of the pathogenetic mechanisms leading to cancer, are increased in patients with short sleep duration or sleep disruption [6]. The relationship between sleep and health is a complex and is influenced by individual, social life, workplace, media and policy levels [7].

Materials and Methods

Study Design and setting:

The present cross-sectional study was carried out in the Department of Physiology, Mahatma Gandhi Memorial Medical College, Indore (M.P.). The study begins after obtaining clearance from the Ethics and Scientific Review Committee M.G.M. Medical College and M.Y. Hospital, Indore (M.P.)

Participant Selection:

The study had 110 young college-going students from MAHSI Indore, Government Nursing College Indore, and Government College of Dentistry Indore. Informed written consent was taken from all these participants after explaining the study procedure.

Inclusion Criteria:

- Healthy, Young, College Students.
- Age group of persons 18-25 years.
- Individuals giving consent to participate in the study.

Exclusion Criteria:

- Persons who are not willing to participate.
- History of any medications that might be affecting sleep.

- Those who are suffering from any neurological or psychiatric ailments (by history and examination).
- History of Cardio-Respiratory and other chronic medical disorders.
- History of Major Surgery in the recent past.
- Persons who are under any kind of addiction or have a history of substance abuse.

Data Collection Procedure

Sleep Quality assessment using Pittsburgh Sleep Quality Questionnaire.

- Self-reported Questionnaire was given for the assessment of the Pittsburgh Sleep Quality Index (PSQI) is used to measure the quality and patterns of sleep.
- PSQI consisting of 19 items, differentiates "poor" from "good" sleep by measuring seven domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction over the last month.
- The Global PSQI score was calculated by totalling the seven component scores, providing the overall score ranging from 0 to 21, where a lower score denotes healthier sleep quality.
- The participant score of more than 5 indicates poor sleep quality.
- The participant's score in each item would range from 0 to 3 indicating no problem at all, moderate problems, serious problems, and very serious problems respectively.

Statistical analysis

- The collected data was tabulated by using a Microsoft Excel sheet

- Continuous variables were measured as mean and SD [standard deviation], whereas non-continuous variables are expressed as numbers and percentages.
- To find out the correlation between study parameters Pearson Correlation Coefficient [r] was used.
- The P-value indicates the likelihood that any observed difference was caused by chance.
- The level of Significance of all the tests was fixed at P = < 0.05. All the statistical analysis was done by using SPSS (version 20.0, SPSS Inc, Chicago IL)

Results

Table No.01. Mean Sleep Quality Index of Male and Female Participants

Gender	No	Average Sleep Quality Index	Std. Deviation
Male	55	4.85	±2.27
Female	55	5.23	±3.58
Total	110	5.04	±2.99

Graph No. 01. Mean Sleep Quality Index of Male and Female Participants.

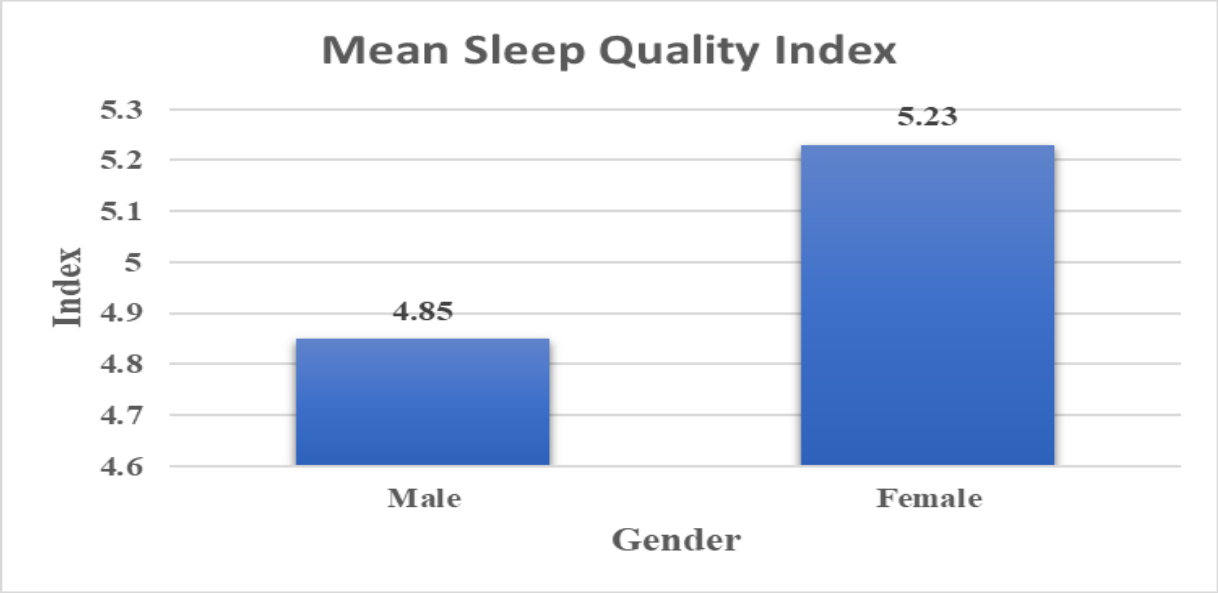

Table No.02. Independent t-Test Results of Mean Sleep Quality Index of Male and Female

Sample	Average Sleep Quality Index	Std. Deviation	P Value@ 95% Confidence Interval
110	5.04	±2.99	.066

Discussion

Sleep is essential for maintaining good health. Over the last ten years, research has shown that sleep disturbance significantly affects the incidence of depression, the emergence and progression of various serious medical conditions, such as cancer and cardiovascular disease, as well as the risk of infectious diseases.

A variety of controllable (such as lifestyle) and non-modifiable (such as gender) factors are held responsible for poor sleep quality, which is frequently reported in conjunction with some related presenting issues [13]. Since several studies show that women experience sleep issues at a higher incidence than men, gender is thought to be a significant factor among non-modifiable factors [14].

The study aimed to explore the disparity between the male and female college going students. Sleep quality was assessed with the PSQI largely used by other studies worldwide [10,11]. The statistical results revels that the mean sleep quality index of male students was 4.85 with the std. Deviation of ± 2.27, whereas for female students it was 5.23 with std. Deviation of ±3.58. Results demonstrate that sleep quality of female is poor than male. While p value ($p=0.66>0.05$) confirms that even though female PSQI mean values were higher compared to male values (Table 01), this is statistically insignificant (Table 02).

Most of the previous studies showed significant difference in sleep quality between males and females; A large population study of young adults indicates the prevalence of poor sleep quality in females than male (65.1% vs 49.8%) [8]. The female students had a lower sleep quality ($p<0.001$) than the male students in all the university.[9] The results were supported that PSQI score average 6.2 ± 3.6 for men and 8.6 ± 3.7 for women, who has a shorter sleep duration [12].

We found poor sleep quality across the whole sample. This may be because of alterations in sleep-wake history in that study period (previous month), phase of the circadian timing system, ambient temperature, stressful situations, and sedentary lifestyle. Our study found that female participants had higher PSQI scores than male participants. The higher PSQI scores in females may be due to various physiological factors such as effects of hormones (variation in estrogen and progesterone levels), effects of the menstrual cycle (premenstrual syndrome and dysmenorrhea), differences in circadian rhythms, stronger cortisol responses to stress and

higher sensitivity to pain. Along with these factors, females face more stressful situations, and they may follow a more sedentary lifestyle. Male respondents had lesser PSQI scores than female respondents may be due to the influence of additional factors like a more physically active lifestyle, more stable circadian rhythms, and effects of male hormones (testosterone).

Limitations

While the study provides valuable insights, there are some limitations.

- The present study was cross sectional study; longitudinal or experimental studies could explore more acceptable findings.
- This study was based on a self-reported questionnaire of sleep quality, which might be subject to recall bias. More precise assessments would be made in subsequent studies using objective sleep measures, such as polysomnography or actigraphy.
- The research findings from healthy young adults may not apply to older populations or people with impairment in health.

The study population was young adult college students, may be because of busy academic schedule and reduced time spent in sleep they were having poor sleep quality. Therefore, this finding can not be generalized to general population.

Conclusion

- In current study we have found out that the sleep quality of young adults is moderate and towards the poor sleep quality level, females in this study reported slightly poorer sleep quality compared to males, the difference was not statistically significant. The findings suggest that gender does not play a significant role in influencing sleep quality among young healthy adults in this study. This is consistent with some prior research that has found minimal or no gender differences in sleep quality in healthy populations.

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