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Original Article

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Assessment of Sleep Quality and Mental Health Status Among 1st Year MBBS Students of a Tertiary Care Hospital in West Bengal: A Cross-sectional Observational Study

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Abstract

Objectives: To assess the sleep pattern and mental health status among 1st medical students. - To find out any relationship between them. ***Design:*** Cross-sectional observational study. ***Subjects:*** Apparently healthy newly admitted 1st year MBBS student of Bankura Sammilani Medical College aged between 18-25 years of age. ***Methodology:*** After obtaining institutional ethical clearance and written informed consent from study participants, this study was conducted over a period of 3 months. The students with pre-existing mental health disorders, sleep apnoea and not willing to give consent were excluded from the study. Sleep quality and mental health status were measured by administering Pittsberg Sleep Quality Index and DASS-21 scale respectively. ***Results:*** A total of 133 students responded to the questionnaires with mean age of 20.09 ± 1.33 years and 60-40% male-female distribution. The mean PSQI score was found to be 5.09±2.76 (Score ≥ 5 indicates poor quality sleep pattern). The mean score for depression, anxiety and stress from Dass 21 score indicate mild anxiety, moderate depression and mild stress among them. Furthermore, Spearman rank correlation showed a moderate correlation between sleep quality and mental health among the students. ***Conclusion:*** Our study may be helpful to assess and screen the medical students having altered sleep pattern and mental health issues at the earliest.

Keywords: ***sleep pattern, mental health, 1st year medical students.***

Introduction

Adequate sleep has immense importance to maintain mental and physical integrity of a human being. Neuro-behavioral functions are grossly impaired in subjects who are chronically deprived from sleep. The prevalence of sleep disorders has been found to be 22%-65% in the general population [2-4]. Insomnia is a broad concept that has been described as a symptom, a complaint, a disturbance and/or a consequence of other clinical problems. Insomnia may have a deep social impact both in terms of direct and indirect costs. Previous epidemiological research indicates that the prevalence of all psychiatric disorders is higher in individuals affected by insomnia [5]. There is rising evidence of presence of risk factors and features of sleep deprivation among the students of various colleges in India [6]. Some studies have showed that there is high prevalence of sleep deprivation symptoms such as insufficient sleep, problem in initiation and maintenance of sleep, early morning awakenings, day time sleepiness and poor quality of sleep among college students [7-11].

Sleep insufficiency and Poor quality of sleep have profound impact on overall quality of life, leading to various mental health disorders including depression, anxiety and stress [12-16]. Medical fields are considered to be a stressful area of education due to the high academic requirements and demanding professionals, the fact that shows a negative influence on both the mental and physical health of the students [17-18]. Medical students are more prone to develop clinical features of sleep insufficiency likely attributed to extensive academic loads [19]. Sleep related disorders not only affect the general health of the students but also reduces academic performance and overall quality of life. Thus early detection of these disorders may pave the way to prevent the spread of the problem.

Socio-demographic factors like age gender, socioeconomic factors may influence the quality of sleep [25-27]. Abnormal lifestyles were also related to high-stress levels; students who experienced higher stress consumed more unhealthy food, less likely to get exercise, and more likely to get inadequate sleep. Consequently, physical, mental, behavioral, and academic difficulties were the cost of stress for students [28].

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Medical students are very much liable to develop stress, anxiety, depression persistently throughout the year because of the extensive curriculum; test and assessments, lack of leisure time and sleep hours to achieve their goals. Several studies have found that medical students have a high rate of stress related symptoms [29,30]. Anxiety is reported internationally among children and adolescents in many countries, including India [31,32]. It is high time to conduct more researches on assessment of sleep patterns and duration among medical students to prevent physical and psychological disorders as well as to improve their performance at earliest. Our study aimed to assess the sleep pattern, duration and mental health status among medical students and to find out if any correlation exists between them.

Methodology

After obtaining approval from Institutional Ethics Committee, BSMC and written informed consent from the participants, this Cross-sectional observational study was conducted at the department of Physiology over 3 months on apparently healthy 1st year MBBS student aged between 18-25 years of age (free of pre-existing mental health disorders & sleep apnea) during the intermission phase (No upcoming examination). After initial screening, the eligible participants were mailed a google form link with a Pre-designed, pre-validated, self-administered questionnaire depicting 2 section; Pittsburg Sleep Quality Index for sleep quality assessment & Dass-21 for mental health screening [Annexure-1]. Each item of the questionnaires were explained beforehand to ensure maximal responses from the participants.

For assessment of sleep quality, 7 components of sleep i.e. subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication & daytime dysfunctions scores were calculated and each component was graded as 0=very good;1=fairly good;2=fairly bad;3=very bad. Scores from each component were summed up to find a global PSQI score from the questionnaires and added to get a global score. A score >5 explained a poorer quality of sleep. Depression, Anxiety, Stress scale-21(DASS-21) for mental health assessment (DASS-21) scale assessed 3 scales i.e. Depression, Anxiety & Stress and their scores were calculated. These scores were graded from normal, mild, moderate, severe and very severe.

Among the eligible students, 133 responses were obtained. The data was entered in MS Excel spread sheet and analysed by SPSS software (version 22). Mean and Standard deviation were calculated for age and global PSQI score. Proportion of participants having deranged sleep quality under different components i.e subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication & daytime dysfunction were calculated and expressed as in percentage. Proportion of population having anxiety, depression and stress was calculated as well. Correlation between PSQI score and DASS-21 score for anxiety depression and stress was calculated using Spearman Rank Correlation Co-efficient.

Results

133 students participated in the study out of which 78 were male and 55 were female. Fig 1 described pie chart showing the gender distribution. The Mean age of the population was 20.09±1.33 and the mean PSQI score is found to be 5.10± 2.76. Also, 55.64% of the population is found to have a global PSQI score of more than 5.

0.75% had very bad sleep quality, 9.77% had fairly bad sleep quality, 55.63% had fairly good sleep quality and 33.83 had very good sleep quality (**Fig 2**). 9% had sleep latency of more than 60 minutes, 18.04% had sleep latency of 31-60 minutes, 39.84% had sleep latency of 15-3o minutes and 33.08% had sleep latency of less than 15 minutes (**Fig 3**). 29.32% had sleep duration of more than 7 hours, 39.84% had sleep duration of 6-7 hours, 24.06% had sleep duration of 5-6 hours and 6.76% had sleep duration of less than 5 hours (Fig-4). 90.97 % had habitual sleep efficiency of more than 85%, 82% had habitual sleep efficiency of 75-84%, 0.75% had habitual sleep efficiency of 65-74% and 0% had habitual sleep efficiency of less than 65% (**Fig 5**). 12.03% shows no disturbance, 72.93% had little disturbance, 13.53% had moderate disturbance and 1.5% had severe sleep disturbance (**Fig 6**). 97.74% didn't use sleep medication in the past 1 month, 1.5% used sleep medication for less than once a week, 0% used once or twice a week and 0.75% used three or more times a week (**Fig 7**). 46.61% shows no daytime dysfunction, 42.10% shows little dysfunction, 9.02% shows moderate dysfunction and 2.25% shows severe dysfunction (**Fig 8**).

Fig 9 showed population distribution of DASS-21 Scoring system where 45.11% showed no anxiety, 8.27% showed mild anxiety, 33.08% showed moderate anxiety, 6.02% showed severe anxiety and 7.52% showed extremely severe anxiety.63.91% population showed no depression, 13.53% showed mild depression, 13.53% showed moderate depression, 3.76% showed severe depression and 5.26% showed extremely severe depression according to DASS-21 scoring system .47.37% had no stress, 31.58% showed mild level of stress, 15.79% showed moderate level of stress, 3.76% showed severe level of stress and 1.5 % showed extremely severe level of stress.

Table 1 showed Correlation of sleep quality with mental health status where Spearman rank coefficient (ρ) was 0.557 for anxiety, 0.503 for depression and 0.544 for stress.

Table 1: Showing correlation of sleep quality with mental health status

Dass-21Score	**PSQI Score (ρ -value)**
Anxiety	0.557
Depression	0.503
Stress	0.544

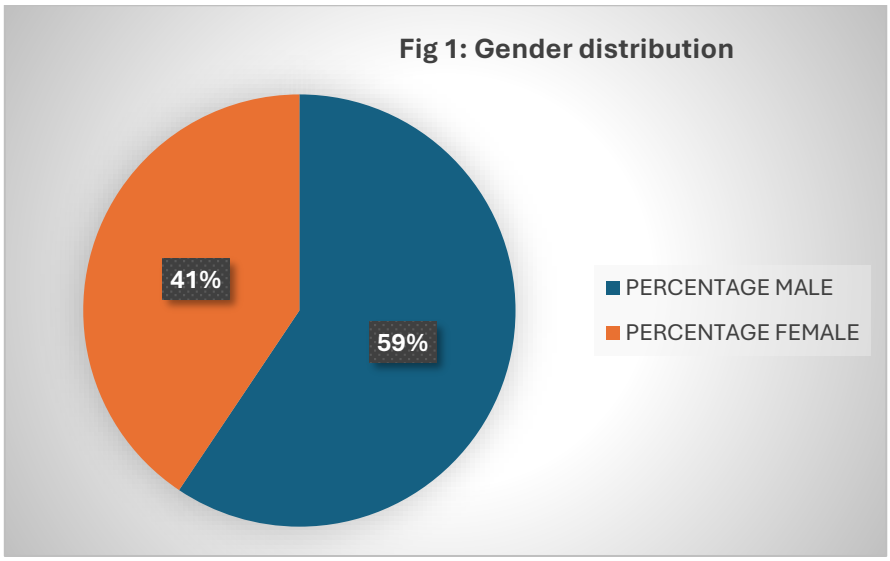

Fig 1: Showing Gender distribution

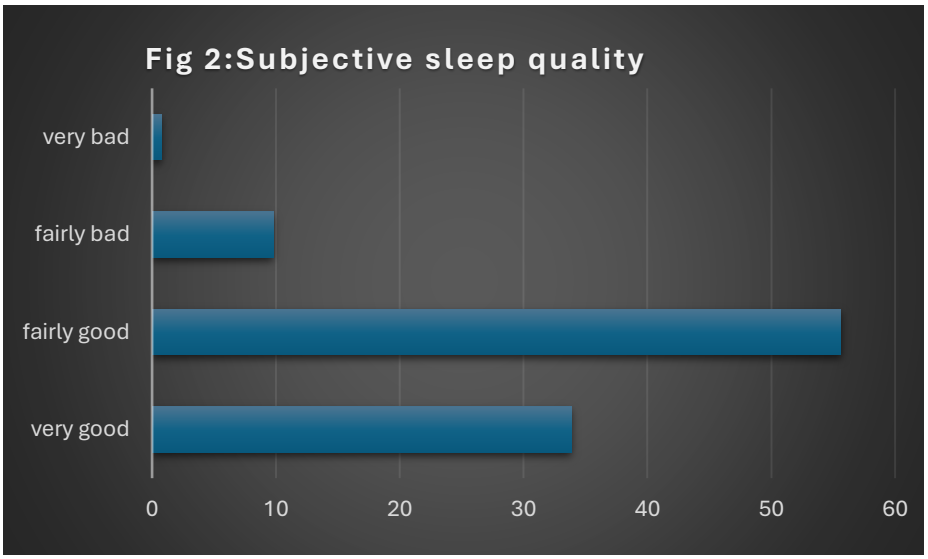

Fig 2: showing Subjective sleep quality

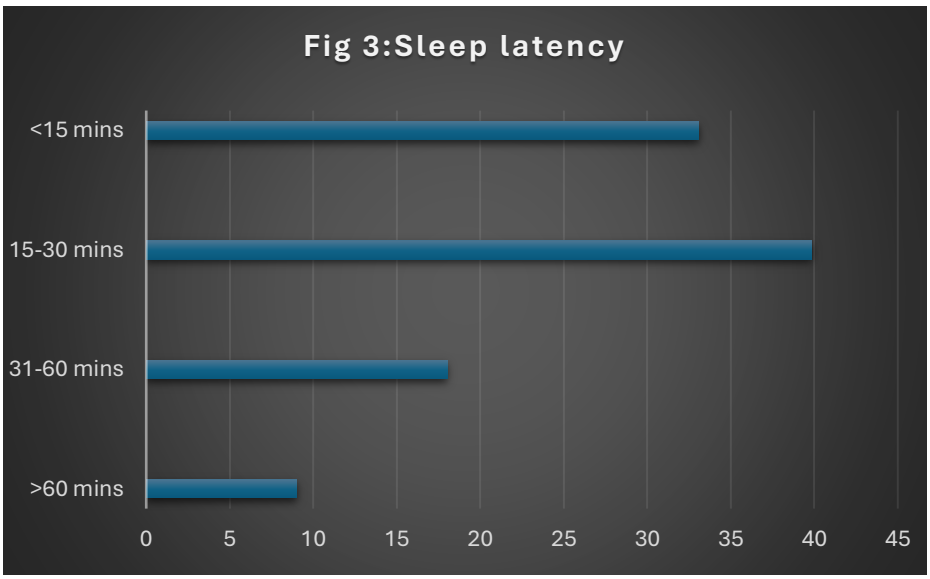

Fig 3: showing Sleep latency

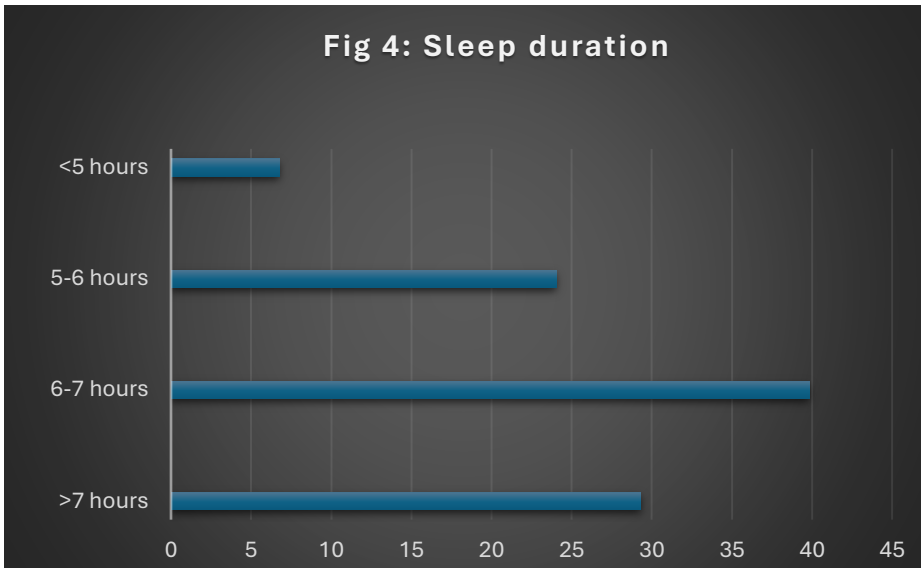

Fig 4: showing Sleep duration

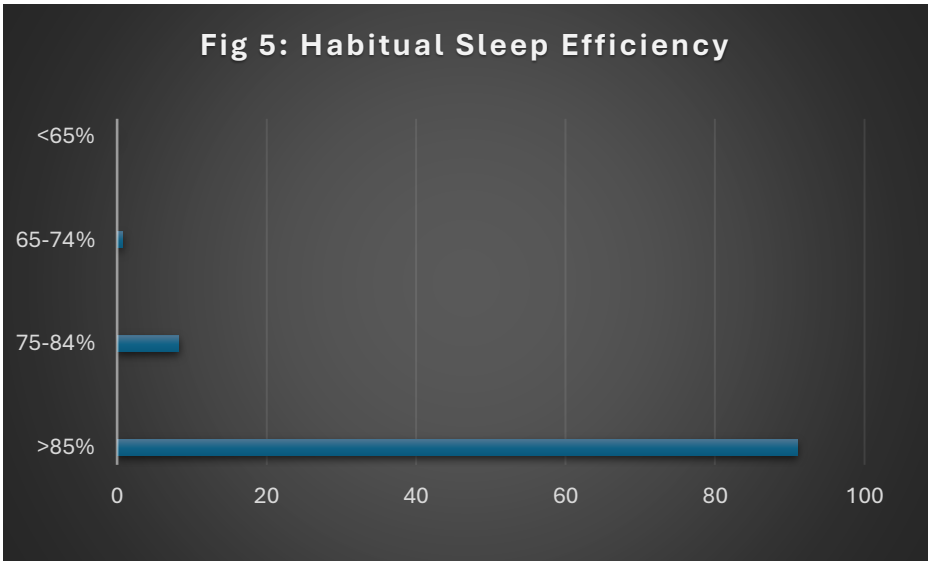

Fig 5: showing Habitual Sleep Efficiency

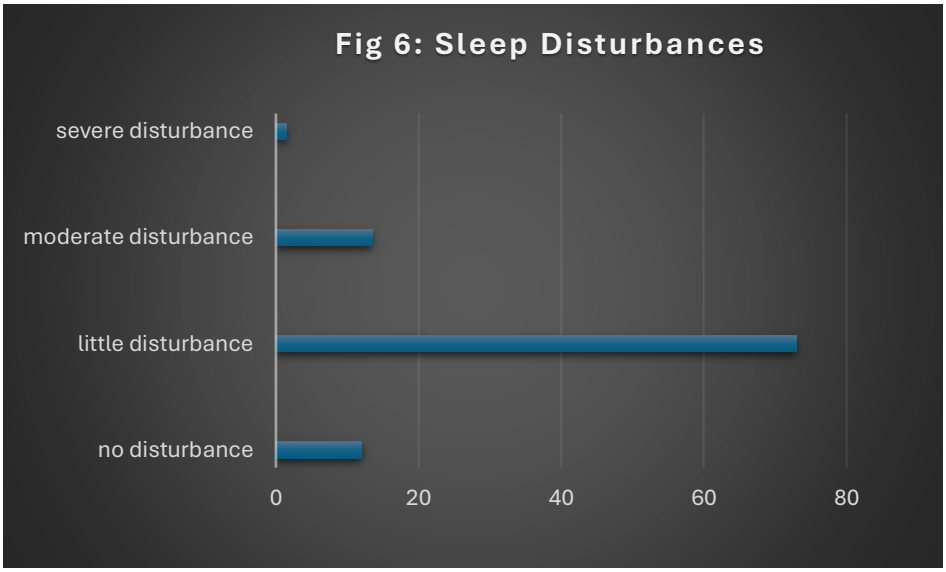

Fig 6: showing Sleep Disturbances

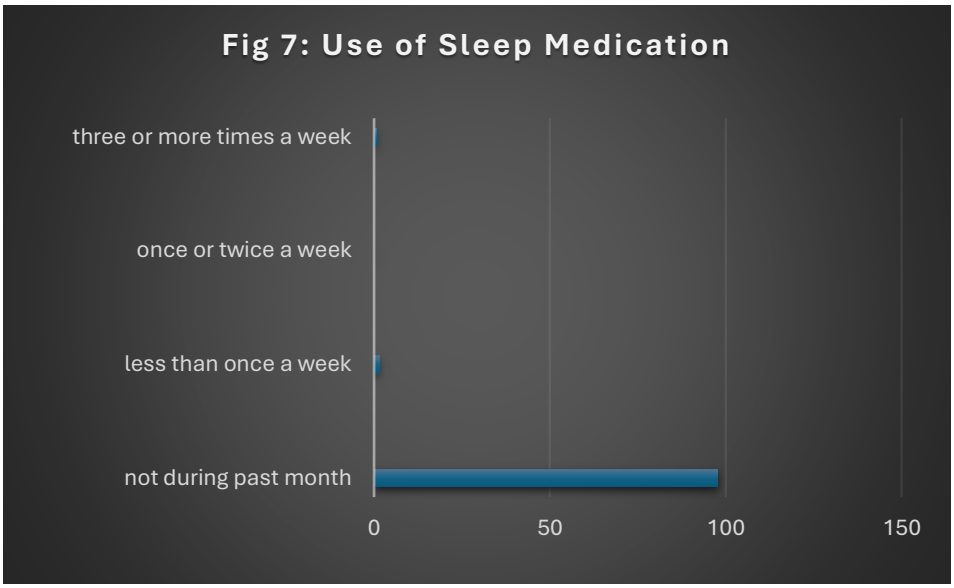

Fig 7: showing Use of Sleep Medication

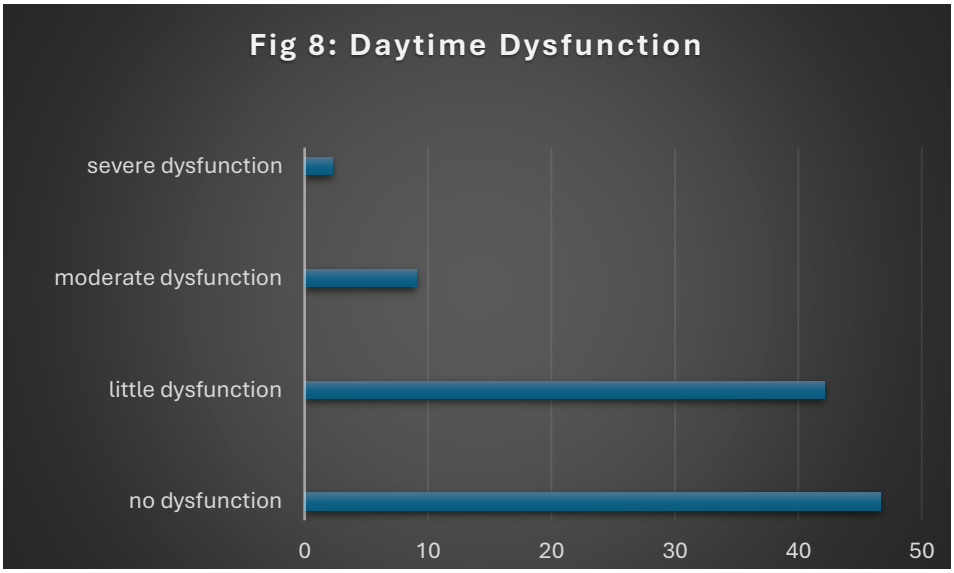

Fig 8: showing Daytime Dysfunction

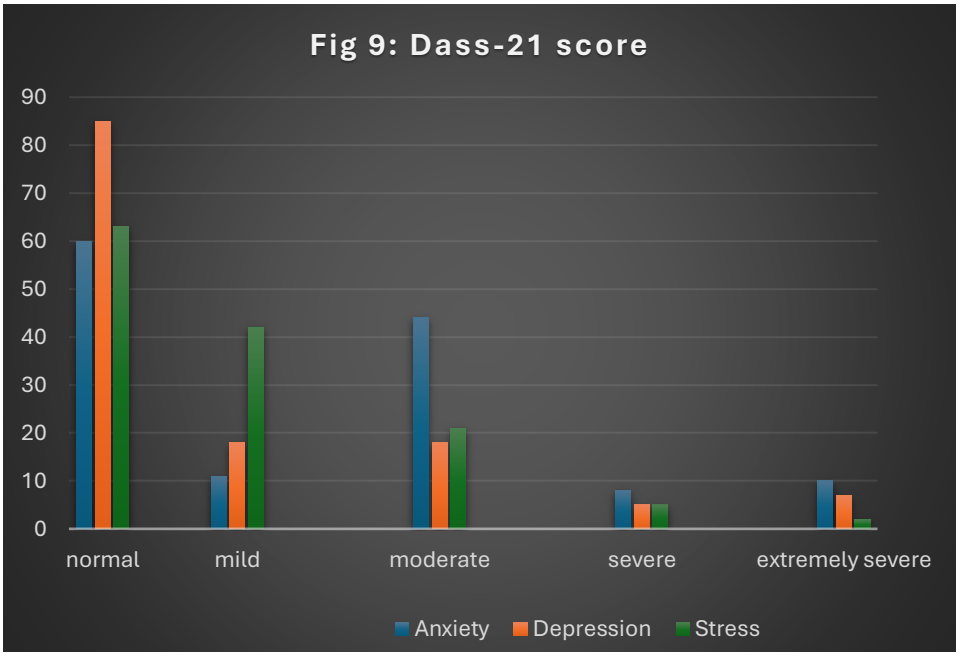

Fig 9: showing Dass-21 score for anxiety, depression, stress

Discussion

Our study have found a poor quality of sleep among 56% of the students of 1st professional MBBS of this where poor sleep quality is considered as global PSQI score more than 5. This is consistent with prior studies where prevalence of poor sleep is observed to be between 45-71% among medical students [33-36]. So far, mental health is concerned, DASS-21 Scoring system showed mild anxiety among 8.27%, moderate anxiety among 33.08%, severe anxiety among 6.02% and extremely severe anxiety among 7.52% students. Moreover, mild depression among 13.53%, moderate depression 13.53%, severe depression 3.76% and extremely severe stress among 5.26% students. Several studies have reported that sleep deprivation activation of the amygdala which may be responsible for a reduction in cognitive function or altered emotional behaviour [35].

Regarding assessment of stress 31.58% showed mild level of stress, 15.79% showed moderate level of stress, 3.76% showed severe level of stress and 1.5 % showed extremely severe level of stress. Psychological distress is responsible for triggering factor for sleep disturbance. Persistent stress leads to activation of the sympathetic-adrenal axis and the hypothalamic-pituitary-adrenal/HPA axis which could increase in production of stress hormones like epinephrine and cortisol, [36,37,38] Moreover, sleep disturbance results in derangement of circadian rhythm of cortisol hormone. In this way it ensues a vicious cycle that creates a negative impact on the physical & mental wellbeing of the students.

Poor sleep hygiene is often associated with altered mental health status. Our study showed that PSQI score is correlated moderately with anxiety (ρ value of 0.56), depression (ρ= 0.50) and stress (ρ=0.54). Though mild stress may be helpful for healthy academic performance but persistent stress may lead to poor sleep status as well mental wellbeing among medical students.

However, online self-administered questionnaires might induce some bias on its own. PSQI scoring could assess sleep quality but couldn't diagnose sleep disorders. Personal and screen addictions like mobile, television, tablets etc were not considered in our study. Moreover academic performances should have been considered. Stressors at individual levels were not accounted for.

Conclusion

In conclusion, poor sleep quality is quite prevalent among the medical students of this tertiary care hospital of West Bengal. A moderately strong correlation also existed between poor sleep pattern & mental health alterations like depression, anxiety, stress. This study paved a way for early recognition of altered mental health status among medical students and prevents the progression in future. Multicentric trial with large sample size might be considered for further confirmation.

Declarations

Ethical Considerations

Approved

Article Category

Retrospective and Prospective study

Source of Funding

Institutional.

Conflict of interests

Nil

Acknowledgement

None

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