

**TO DETERMINE THE EFFECT OF SLEEP ON ANXIETY, DEPRESSION AND ITS CORRELATION WITH ACADEMIC PERFORMANCE IN FIRST M.B.B.S STUDENTS**

**ABSTRACT:** -*Introduction:* -Sleep deprivation causes serious health hazards. Anxiety and depression are common correlates found. There had been direct correlation with sleep quality and academic performances. *Objectives:* - To determine the effect of sleep on the mental health i.e. anxiety and depression among the first year medical students and also to see the effect of sleep, anxiety and depression on academic performance. *Methods:-* A cross sectional study was conducted at Medical college, Questionnaire was asked regarding the time to fall asleep and duration of sleep. Hamilton's anxiety scale and Hamilton's depression scale was applied to the study group. **Results and conclusion** :- Mild anxiety( 83 % ) is common than the depression (20 %) in study group which may be the result of academic stress. The study also demonstrate severity of anxiety and depression goes hand in hand. The results also shows depression and anxiety have indirect relationships with the duration of sleep that is as sleep hours decreases the anxiety, and depression score increases. The anxiety and the depression score was higher in the students whose timing to sleep was after midnight, but the difference was not statistically significant as compared to the students whose timing to sleep was before midnight. The study finding related to sleep and the academic score was not significant. *Conclusion* :- Bed time may not affect the mental health but the duration of sleep is important to reduce the level of anxiety and depression. Duration of sleep may not affect the academic performance, but sound and adequate sleep is important for the mental health which may ultimately affect the academic performance.

**KEYWORDS:-** Sleep, Anxiety, Depression , Academic performance

**INTRODUCTION: -**

One of the important physiological processes in humans is sleep. Sleep is central to health and well-being.<sup>1</sup> The study of sleep quality includes measurement of both quantitative and qualitative components. Quantitative components of sleep measures the duration of sleep whereas qualitative component assesses the subjective measure of the depth and feeling of restfulness upon awakening.<sup>2</sup> For older adults (46–60 years), the recommended sleep duration is 7 h or more per night on a regular basis; for younger adults (18–45 years), an even longer duration (> 9) is considered appropriate.<sup>3</sup> Sleep greatly influences mental function, and thus, affects performance. Insufficient sleep decreases general alertness, impairs attention, and slows cognitive processing.<sup>4,5</sup>

Studies have shown that sleep deprivation causes serious health hazards.<sup>6</sup> Studies done on university students have reported that stress, anxiety and depressive symptoms are common psychological correlates found among them<sup>7,8</sup> and there is a direct relationship between sleep quality and academic performances.

Medical students are a group who have high risk for sleep deprivation because of demanding clinical duties and academic expectations. Along with this they have to accept the change in

their living style like poor housing, staying away from their family. The above mentioned factors add on to stress which may be greater risk of reduced sleeping and affect their physical and mental activities.

The objective of this study was to determine the prevalence of anxiety and depression. Also to see the effect sleep on the mental health i.e. anxiety and depression in young adult first year medical students. We also aimed to find the correlation of sleep, anxiety and depression with the academic performance.

## **METHODS**

A cross sectional study was conducted at Government medical college,. Study participants were first year MBBS students in the academic year 2017-2018. The study was approved by the institute's ethical committee.

We planned for purposive sampling, all the students (100) of first year M.B.B.S was included in the study . 3 students were absent (47 boys and 50 girls). They were informed about the purpose of the study and asked to participate in the study. Informed written consent was obtained from all the participants.

## **DATA COLLECTION**

A questionnaire was used to collect information for this study. To assess the sleep duration for the past 1 year. Questionnaire was asked regarding the time to fall asleep and duration of sleep.

Hamilton's anxiety scale was applied to the study group. Anxiety scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe.<sup>9</sup>

Hamilton's and depression scale was applied to the study group. This version contains 17 items (HDRS17) pertaining to symptoms of depression experienced . Method for scoring varies by version. For the HDRS17, a score of 0–7 is generally accepted to be within the normal range (or in clinical remission), while a score of 20 or higher (indicating at least moderate severity) .<sup>10</sup>

Academic performance was analysed by marks scored in first terminal and preliminary theory and practical examination in one year academic session.

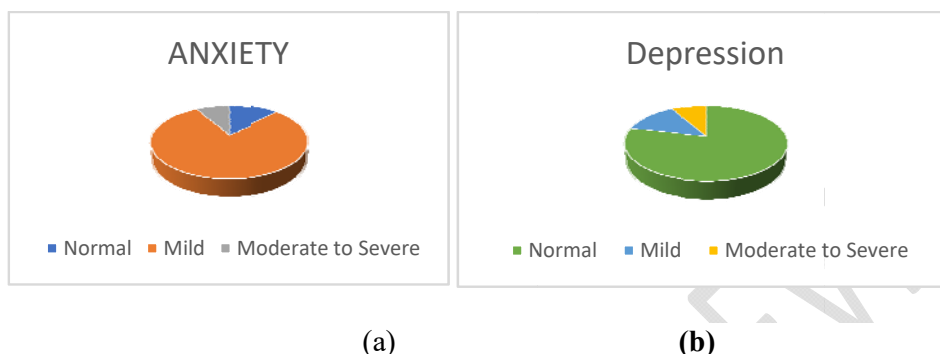
## **DATA ANALYSIS**

Results of this study were analysed with statistical software as SPSS 21 version . Statistical data analysis and Kruskal-Wallis test was applied as a test of significance.

## RESULTS:-

**Table no.1 Prevalence of Anxiety and depression among the study group**

	Normal	Mild	Moderate to Severe
<b>Anxiety</b>	12	77	8
<b>Depression</b>	76	13	8



**Fig 1(a,b): Graphs showing prevalence of anxiety and depression**

Table no. 1 shows amongst the 97 first M.B.B.S students. 12 students were found to be absolutely normal, 77 students were suffering from mild anxiety whereas 8 were having moderate to severe anxiety.

76 students were found to be absolutely normal, 13 students were suffering from mild depression whereas 8 were having moderate to severe depression. From above data we found that mild anxiety is more common in medical students.

**Table no. 2 Correlation of time to go to sleep with Anxiety ,Depression score**

Time of going to bed	No.	Anxiety score	Depression score
Before 12 AM	52	5.319+ 5.28	4.09+ 4.67
After 12 AM	45	5.61+ 5.71	4.22+ 5.38
p value		0.285 NS	0.778 NS

Table No. 2 shows the anxiety score and depression score of the students going to bed before 12 AM and after 12 AM. The p value of anxiety score is 0.285 which was statistically insignificant. The p value of depression score is 0.778 which is statistically insignificant.

Sleep hours	No.	Anxiety score
8-9 hrs	9	4.7+ 4.73

6-7 hrs	69	4.76+ 4.6
<4 to 5 hrs	19	7.87+ 8.38
p value 0.167		

**Table no. 3 Correlation between sleep hours and Anxiety score**

Table no. 3 shows the distribution of students and their anxiety score which shows that as the sleep hours decreases the anxiety score increases. p value was found to be 0.167 which is not significant. 9 students were in group of 8-9 hrs sleep and their mean anxiety score was 4.7 +\_4.73 ,69 students were in group of 6-7 hrs sleep their mean anxiety score 4.76+\_4.6 whereas 19 students were in group of <4-5 hrs their mean anxiety score 7.87+\_8.38.

**Table no. 4 Correlation between Anxiety level and sleep hours**

Anxiety level	No.	Average Sleep hours
Normal	12	6.23+ 1.14
Mild	77	6.45+ 10.96
Moderate to severe	8	3.18+ 1.41
P value = 0.031		

Table No. 4 shows the average sleep hours decreases as the anxiety level increases. The p value was also found to be 0.031 which is statistically significant.

**Table no. 5 Correlation between sleep hours and Depression score**

Sleep hours	No.	Depression score	p value
8-9 hrs	9	4.11+ 4.07	
6-7 hrs	69	3.50+ 4.37	
< 4 to 5 hrs	19	6.5+ 7.87	
			0.431

Table no. 5 shows the distribution of students and their depression score which shows that as the sleep hours decreases the depression score increases. p value was found to be 0.431 which is not significant. 9 students were in group of 8-9 hrs sleep and their mean depression score was 4.11 + 4.07 ,69 students were in group of 6-7 hrs sleep their mean depression score 3.50+ 4.37 whereas 19 students were in group of <4-5 hrs their mean anxiety score 6.5+ 7.87.

Depression level	No.	Average sleep hours
Normal	76	6.44+ 0.88
Mild	13	6.308+ 1.49

Moderate to severe	8	5.18+ 1.41
P value = 0.030		

**Table no. 6 Correlation between and Depression level and sleep hours**

Table No. 6 shows the average sleep hours decreases as the depression level increases. The p value was also found to be 0.030 which is statistically significant.

Sleep hours	No.	Academic score
8-9 hrs	9	22.10+ 2.46
6-7 hrs	69	22.88+ 3.25
<4 to 5 hrs	19	22.31+ 3.44
p value 0.658		

**Table no. 7 Correlation between sleep hours and Academic score**

Table no.7 shows the academic score with respect to sleep hours. There is not a remarkable increase or decrease in the academic score with respect to sleep duration .p value was 0.658 with not significant.

## DISCUSSION:-

Medicine is one of the most stressful fields of education because of its highly demanding professional and academic requirements. Extensive medical curricula, frequent examinations and fear of failure are sources of constant stress anxiety for medical students, which may short the leisure activities and hours of sleep in order to achieve their desired goals. We also aimed whether the mental health and sleep affects the students' academic performance or not. Prevalence of anxiety was ( 83 % ) more common than the depression (20 %) in study group. Mild anxiety is common in study group which may be the result of academic stress. This study also shows that there is equal percentage of group suffering from moderate to severe anxiety and depression, that means severity of anxiety and depression goes hand in hand.<sup>23,24</sup> This study was conducted with objective of effect of sleep on mental health i.e. anxiety depression of the first M.B.B.S students. In our study we had more percentage of students with moderate sleep. Our results also shows depression and anxiety have indirect relationships with the duration of sleep that is as sleep hours decreases the anxiety, and depression score increases which is similar to the other studies.<sup>11</sup> Numerous studies have reported an association between insomnia and depression and anxiety.<sup>12-16</sup> Sleep and anxiety share a pathogenetic mechanism: hyperarousal caused by dysregulation of neurotransmitter systems including cholinergic and GABA (gamma-aminobutyric acid) energetic mechanisms.

The anxiety and the depression score was higher in the students whose timing to sleep was after midnight. But the difference in anxiety and depression score was not statistically significant as compared to the students whose timing to sleep was before midnight. A neurobiological study suggested a correlation between circadian rhythm, a 24 h day-to-night cycle, and depression.<sup>18</sup> Chronotype, which refers to the timing of sleep and regular activities, has been suggested to affect circadian rhythm. In other clinical studies, the evening-type chronotype (late bedtime) was associated with a greater risk of depressive symptoms<sup>19</sup> and of suicide.<sup>20</sup> There was significant difference found in duration of sleep in mild, moderate and severe anxiety. There was similar finding related to sleep duration and the level of depression. A recent meta-analysis on sleep duration and depression has also indicated that short and long sleep duration are significantly associated with increased risk of depression in adults.<sup>21</sup>

Adequate sleep optimally impacts mental functioning and therefore impacts students' performance on examinations and ultimately grades received.<sup>26-29</sup> Studies that have found sleep complaints were common in medical students and poor sleep habits were correlated with changes in academic performance.<sup>30,31</sup> Our finding related to sleep and the academic score was not significant. The impact of sleep on the academic score was minimal. Though sleep has an integral role in learning and memory consolidation. Sleep is necessary to form synapses between dendritic branches that allow for memory formation of learned information, thus enabling students to recall information more rapidly and for more prolonged time periods.<sup>32,33</sup>

#### **LIMITATIONS :-**

Small sample size may be responsible for nonsignificant p value.

Sleep should be assessed in all indices by measuring the quality of sleep not merely the quantity of sleep.

#### **CONCLUSION:-**

1. Prevalence of anxiety was ( 83 %) more common than the depression (20 %) in first year medical students, the reason for this may be due to high percentage of students having mild anxiety which may be effect of academic stress related to high expectations and studies.
2. Sleep is very important for the mental health of the first year medical students as it may reduce the anxiety and depression. Timing to fall asleep may not affect the mental health but the duration of sleep is important to reduce the level of anxiety and depression.
3. Duration of sleep may not affect the academic performance, but sound and adequate sleep is important for the mental health which may ultimately affect the academic performance.

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