



Insomnia in Depressed: An Epidemiological Study among Under Graduate Medical Students of a Medical College in West Bengal

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ABSTRACT

Background: Insomnia is a growing problem in our society. It affects the quality of life and decreases our productivity. Mood disorders, alcohol abuse etc. are related to insomnia. The study was aimed to find out the prevalence of insomnia among undergraduate medical students and its association with various socio-demographic factors.

Methods: It was a descriptive, cross sectional study conducted during August- October 2019 among undergraduate medical students of a Medical College in West Bengal. 100 study subjects (sample size calculated considering $P = 39.4$, absolute error 10% and 95% CI) were selected by stratified random sampling from all the five professional years of MBBS. Data were collected by pre-designed and pre-tested questionnaire and insomnia was assessed by Athens Insomnia Scale and depression by Beck Depression Inventory, 2nd edition, (BDI II). Collected data were entered into MS-Excel sheet, double checked and principles of descriptive statistics were used. Chi-square test was done. For analysis, SPSS version 20 was used.

Results: 51% of students suffered from insomnia and it was higher among the males than females. Middle class students suffered the most. A statistically significant association was found between insomnia and depression. Substance abuse was also significantly associated.

Conclusions: Prevalence of insomnia among the medical students was very high. Insomnia is significantly associated with depression. Substance abusers like smoking, alcoholism etc. are also associated with insomnia. Further studies need to be done regarding this and necessary policies may be formulated accordingly.

Key words: Insomnia, Undergraduate, Medical students, Depression, BDI-II, Substance abuse

HOW TO CITE THIS ARTICLE: Shreya Kothari, Balaji Ganesh, Knowledge and Awareness of Autogenous Teeth Bone Grafting Material (AutoBt) Among Dental Students-A Survey, J Res Med Dent Sci, 2022, 10 (3):150-155.

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Received: 21-Feb-2022, Manuscript No. JRMDs-22-55133;

Editor assigned: 23-Feb-2022, Pre QC No. JRMDs-22-55133 (PQ);

Reviewed: 09-Mar-2022, QC No. JRMDs-22-55133;

Published: 16-Mar-2022

INTRODUCTION

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), defines Insomnia as dissatisfaction with sleep quantity or quality, associated with the symptoms of difficulty in initiating sleep, maintaining sleep and early morning awakening with inability to return to sleep. It has been seen in many epidemiological studies that prevalence of insomnia is more in female and increases with age [1]. In between the ages of 18 and 25, i.e. during college life, people are prone to insomnia [1,2]. In the last few years, there has been a growing attention to insomnia and sleep disorders due to increasing prevalence

among different age groups [3]. A systemic review on prevalence of insomnia showed a higher prevalence (18.5%) among university students compared to general population (7.4%) [4]. Insomnia affects the quality of life and decreases the productivity. Insomnia affects the nervous, endocrine and immune systems and makes one vulnerable to diabetes, psychosocial stress, cognitive dysfunction, learning disability, decreased work efficacy, hypertension, and obesity and increases the risk of cardiovascular diseases. It is seen that mood disorders, alcohol and medication abuse and misuse, and inactivity are related to insomnia. It can also be an early symptom of depression and anxiety [1,2]. Insomnia is a growing problem in our society. A research done in Athens in Greece by Athens Insomnia Scale found a positive predictive value of Insomnia among general population as 41% and 86% among psychiatric population [5]. It is seen that college students are more prone to insomnia [1,2]. A higher prevalence

of insomnia was found among university students (18.5%) than general population 7.4% [4]. A study conducted in Germany among university students using sleep problem questionnaire based on DSM-5 classification revealed that a significant amount of students suffered from insomnia. Various criteria's were used for diagnosing insomnia in that study such as trouble in initiating sleep, woke up during night etc. [6]. Among university students, medical students have a higher prevalence rate of insomnia. A study was conducted in India to find the prevalence of insomnia among law and medical students. It was found that among medical students the prevalence of insomnia was much higher than the law students [7]. A major factor attributing to the prevalence of insomnia among medical students is lack of sleep awareness among medical students. Inadequate knowledge and many misconceptions about sleep were found out among final year medical students in Tamil Nadu [8]. Even though it is important to assess the prevalence of insomnia among under graduate medical students; few studies have been conducted on this group in our country. There is a gap of knowledge regarding the different factors of insomnia among under graduate medical students. Similar study was not conducted in West Bengal also. Medical students are one of the most important groups and efforts must be made to maintain their focus. Factors that help them to improve their skills directly impact the society. With this background, the present study was conducted to investigate the prevalence of insomnia among under graduate medical students of a Medical college in West Bengal.

OBJECTIVE

- ✓ To find out the prevalence of insomnia among Under Graduate Medical Students of a Medical college in West Bengal.
- ✓ To determine association of insomnia with depression, if any.

MATERIALS AND METHODS

Study type and design

This was a descriptive study with cross sectional design.

Study area

This institutional study was done in a Medical College of Paschim Medinipur, West Bengal.

Study population

The study was done among the under graduate students.

Inclusion criteria

The undergraduate medical students who will give consent to participate in the study will be included as study subjects.

Exclusion criteria

Seriously ill and unwilling participants were excluded from the study.

Study period

The study was done during August-October 2019.

Sample size

Prevalence- 39.4 % (p), absolute error- 10(l) percent, $z=1.96$ (95 % confidence interval), applying the formula $4pq/l^2$, estimated sample size was 96.5. So approximate sample size was 100.

Sampling technique

Study subjects were selected from all the under graduate medical students using stratified random sampling. Sample was selected from all the professional years. So, 20 students were selected from each year by stratified random sampling.

Tools and technique

Pre-designed pretested semi-structured questionnaire was used in this study. Data was collected from the study subjects by self-administered questionnaire and insomnia was assessed by Athens Insomnia Scale. Athens Insomnia Scale 6 is a self-assessment psychometric instrument designed for quantifying sleep difficulty in which diagnosis of insomnia is based on the patient's subjective perception of unsatisfactory sleep quantity and/or quality. Latest classification systems such as International Classification of Diseases, 10th revision, (ICD-10), Diagnostic and Statistical Manual of Mental Disorders, 4th edition, (DSM-IV-TR) and International Classification of Sleep Disorders (ICSD) are used in it for quantifying sleep difficulty. Individuals with a score of 6 or higher were considered as insomniacs. Depression score from Beck Depression Inventory, 2nd edition, (BDI II) scale 7- It consists of 21 questions each being answered on a scale of 0 to 3. It is also based on patient's subjective perception. The more the total score it indicates more severe depressive symptoms.

Study variables

Socio-demographic variables

Age, gender, socio-economic status (Modified B.G. Prasad scale) [9].

Exposure variables

- ✓ Proportion of medical undergraduate students according to professional year of MBBS.
- ✓ Proportion of medical undergraduate students according to their habit of caffeine intake.
- ✓ Proportion of medical undergraduate students according to smoking and alcohol abuse.

Outcome variables

- ✓ Proportion of medical undergraduate students according to presence of insomnia.

- ✓ Proportion of medical undergraduate students according to presence of depression.

Ethical considerations

The permission to conduct the study and relevant ethical issues were sought from Institutional Ethics Committee of the concerned Medical College and Hospital. Purpose of study, advantages and disadvantages, its confidentiality and voluntary participation was explained to study subjects. All data was collected and analyzed maintaining confidentiality only after obtaining informed consent.

Data collection and analysis

Data collection was started after obtaining permission from concerned authority of Medical College and Hospital. After collection data were entered into MS excel sheet and it was checked twice to detect any erroneous entry. After organising and presenting the data in the forms of tables and diagrams they were analysed applying the principles of descriptive statistics. SPSS version 20 was used to analyse the data. Chi square test was used as and when applicable.

RESULTS

The mean age of the students selected was 22.31+2.8 years. 51 out of the 100 students were suffering from Insomnia. Figure 1 revealed that the prevalence of insomnia among the medical undergraduate students was 51%.

Table 1 showed that majority of the students were in the age group of 21-24 years. Majority of the students selected were male and belonged to upper middle class. A few belonged to middle class and rest to upper lower and upper class. The prevalence of insomnia was found to be highest in the age group of ≥ 25 years, males (54.24%) than in females (46.34%). The socio-economic conditions statuses were analyzed on Modified B.G. Prasad scale. The prevalence of insomnia was found to be highest among the middle class students (53.85%) followed by upper middle class students (51.28%). The prevalence of insomnia was found to be highest among 4th year students (60%) followed by 1st year and 5th year (55%). However, a significant association was not found between insomnia and any of the above-mentioned socio-demographic variables i.e. age, gender, socio economic class and professional year of MBBS.

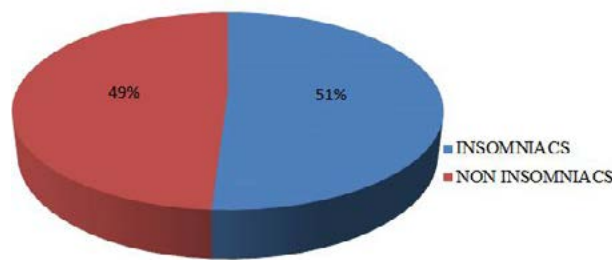


Figure 1: Prevalence of insomnia among undergraduate medical students.

Table 1: Distribution of students according to background characteristics (n=100).

Background characteristics	Insomniac Number of students (Row %)	Non - Insomniac Number of students (Row %)	Total Number of students (Column %)
Age			
≤20	12 (42.86)	16 (57.14)	28 (14.2)
21-24	27 (52.94)	24 (47.06)	51 (84.2)
≥25	12 (57.14)	9(42.86)	21 (1.6)
Gender			
Male	32 (54.24)	27 (45.76)	59 (59)
Female	19 (46.34)	22 (53.66)	41 (41)
Socio-economic class (Modified B.G. Prasad scale)			
Upper lower	1(33.33)	2(66.67)	3(3)
Middle	7(53.85)	6(46.15)	13(13)
Upper middle	40(51.28)	38(48.72)	78(78)
Upper	3(50)	3(50)	6(6)
Professional year of MBBS			
1st Professional	11(55)	9(45)	20(20)
2nd Professional- 3rd semester	7(35)	13(65)	20(20)
2nd Professional-5th semester	10(50)	10(50)	20(20)
3rd Professional part I	12(60)	8(40)	20(20)
3rdProfessional part II	11(55)	9(45)	20(20)
Total	51 (51)	49 (49)	100 (100)

The depression among students was analyzed by BDI II scale. A student with depression score above 13 was considered as depressed. The depression was also classified as mild (14-19), moderate (20-28) and severe (29-63) according to depression score. Table 2 revealed that a majority of depressed students (29%) belonged to moderate category.

Table 3 showed that prevalence of insomnia was 74.51% among depressed students, much higher than that among non-depressed students i.e. 25.49%.

Figure 2 graphically represented that prevalence of insomnia was significantly higher in depressed students than non-depressed students. Table no 4 revealed that 27% participants had habit of smoking and 20% consume alcohol. It was also seen that 43% had regular caffeine intake. Prevalence of insomnia was significantly higher in smokers than non-smokers ($p < 0.001$), in alcohol addicts than non addicts ($p = 0.004$) and in those who take caffeine than those who don't. ($p = 0.004$).

Table 2: Distribution of study subjects according to depression: (n=100).

Depression category	Number of students (%)
Severe depression	13(13)
Moderate depression	29(29)
Mild depression	23(23)
Below threshold depression	35(35)
Total	100 (100)

Table 3: Distribution of study subjects according to insomnia and depression: (n=100).

Insomniac	Depressed (%)	Non-depressed (%)	Number of students (%)
Yes	38(74.51)	13(25.49)	51(100)
No	27(55.10)	22(44.90)	49(100)
Total	65(65)	35(35)	100(100)

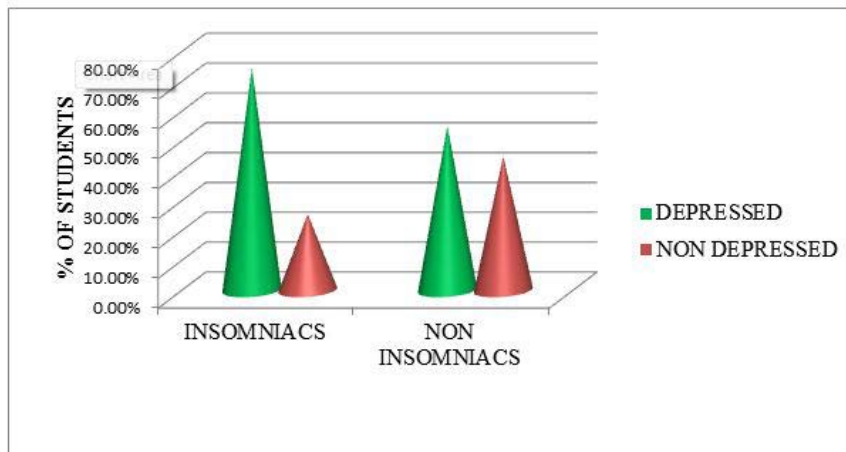


Figure 2: Association between depression and insomnia.

Table 4: Distribution of study subjects according to their substance abuse: (n=100).

Background characteristics	Insomniac Number of students (Row %)	Non - Insomniac Number of students (Row %)	Total Number of students (Column %)
Smoking			
Smokers	22(81.48)	5(18.52)	27(27)
Non smokers	29(39.73)	44(60.27)	73(73)
χ^2 value, df, p value: 13.75, 1, < 0.001			
Alcoholism			
Present	16(80)	4(20)	20(20)
Absent	35(43.75)	45(56.25)	80(80)
χ^2 value, df, p value: 8.41, 1, 0.004			
Caffeine intake			
Present	29(67.44)	14(32.56)	43(43)
Absent	22(38.6)	35(61.4)	57(57)
χ^2 value, df, p value: 8.16, 1, 0.004			
Total	51 (51)	49 (49)	100 (100)

DISCUSSION

In this study 51% of students had insomnia. In a study conducted on medical students in Bangalore it was found to be 39.4%. It was also highest among the 4th year students and a similar finding was seen in our study [10]. In another study conducted among medical students in Delhi the prevalence of insomnia was found to be 30.3%, and as in our study it was also more among males than females [11]. In a study conducted among 5th and 7th semester medical students in Andhra Pradesh it was found that 55.75% of students of 5th semester and 79.17% students of 7th semester reported sleep problems [12]. In another study conducted in Bangalore it was seen that 67.4% students fall asleep with great effort and 18.9% students are not refreshed after sleep [13]. In a study among medical students in Dehradun it was found that 5% of students suffer from clinical insomnia [14]. A study conducted in Iran demonstrated that 45.3% of students suffer from insomnia [2]. Our study also demonstrated a significant association between insomnia and smoking, alcohol and caffeine intake. A study conducted in Iran demonstrated that 45.3% of students suffer from insomnia [2]. Our study also demonstrated a significant association between insomnia and smoking, alcohol and caffeine intake.

In our study the prevalence of depression was found to be 65%. In the study conducted at Bangalore 78.2% students suffer from depression [10]. Among Nepali medical students the prevalence of depression was found to be 29.8% [15] and that among Korean medical students was found to be 2.9% [16]. A significant association between insomnia and depression was found in our study with p value of 0.04. It was seen that 74.51% of insomniacs suffer from depression. A similar association was found in the study conducted at Bangalore [9]. A relation between insomnia and depression was demonstrated among young man in a study [17]. Depression is also found to hamper the circadian rhythm of an individual [18].

CONCLUSION

Prevalence of insomnia among the undergraduate medical students was very high. It was found to be highest in the age group of ≥ 25 years, among the males and among the students belonging to middle socio-economic class. Prevalence of insomnia was found to be highest among the 4th year medical students followed by 1st year and 5th year. Significant association was found between insomnia and depression. Substance abuse such as smoking, alcohol and caffeine intake was also associated with Insomnia. A significantly high amount of insomniacs were found to be suffering from depression.

Medical students have a vast academic syllabus and sometimes poor academic performance leads to depressive symptoms. This psychiatric illness tends to hamper the sleep cycle of an individual and leads to insomnia. Discussion of problems with fellow batch mates and teachers may help in early diagnosis of the problem and treatment. There is also a variation regarding syllabus and academic activities in different professional years of MBBS. Recent modification of the curriculum after the introduction of Competency Based Medical Education and introduction of foundation course at the very beginning of MBBS may be of significance in this scenario. Further studies need to be done regarding this and necessary policies in medical education may be formulated accordingly.

FUNDING

None.

CONFLICTS OF INTEREST

None.

ETHICAL CONSIDERATION

Ethical clearance was sought from Institutional Ethics Committee of the concerned Medical College.

AUTHOR CONTRIBUTIONS

AM and AG - Concept and design of the study, prepared first draft of manuscript; MT-Interpreted the results; reviewed the literature, and manuscript preparation; SC-Concept, coordination, statistical analysis and interpretation, preparation of manuscript, and revision of the manuscript.

ACKNOWLEDGEMENTS

In a nutshell, the whole team of department of Community Medicine and all the undergraduate students helped a lot in this work.

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