Original Research Article

TO STUDY THE SLEEPING PATTERN AND ITS EFFECT ON STUDENTS PREPARING FOR MEDICAL ENTRANCE IN INDORE DISTRICT

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A B S T R A C T

Background: Sleep is a physiological process essential to life. Its quality is strongly related to psychological and physical health and other measures of well-being. Sleep also allows the brain to better process new experiences and knowledge which increases understanding and retention. **Aims and Objectives:** To find out the percentage of altered sleeping pattern among students preparing for medical entrance.

Materials and Methods: Data was collected using a Pre-Designed Semi Structured Questionnaire based on The PSQI (Pittsburgh's Sleep Quality Index) consists of 19 self-rated question and five question rated by the bed partner or roommate. Data was entered in Microsoft excel spread sheet and analysed using Epi-data software. Chi square test was applied.

Results: It was found that 55% of study population is having a sleep quality index score >5 i.e. their sleep quality is poor. There were 43% students who sleep for 6-8 hours, 27.5% who sleep for 4-6 hours, 9% sleep for 7-9 hours and 2.5% sleep >10 hours a day.

Conclusion: The prevalence and effect of insufficient sleep is high among the aspirants preparing for medical entrance exams due to increasing competition, due to which they keep on delaying their urge to sleep which in turn is affecting their normal sleep-wake cycle. Also, the students are facing many sleep movement disorders at a very young age.

Keywords: Sleeping pattern, Medical entrance, Students, Sleep-cycle.

INTRODUCTION

Sleep is a physiological process essential to life. Its quality is strongly related to psychological and physical health and other measures of well-being.[1] During sleep, the brain conducts memory consolidation and integration; adequate and quality sleep eliminates concentration difficulties without which the judgments, mood, and ability to learn and retain information are weakened. Sleep also allows the brain to better process new experiences and knowledge which increases understanding and retention.[2]

Problem Statement: Circadian rhythms are closely connected to day and night. While other cues, like exercise, social activity and temperature can affect the internal clock but light has the most powerful influence on circadian rhythm.[3] In last two decades, smartphones and computers have dramatically altered adolescent lifestyles, impacting healthy behaviours such as sleeping at least 6-8 hours everyday.[4] These devices are known to emit blue light which is known to alter circadian rhythm. Globally, sleep deficit represents a public health concern given that in many countries 30-70% of all adolescents experience poor sleep habits.[5] Poor sleep can take many forms, including short sleep duration or fragmented sleep. Without the adequate sleep, the brain struggles to function properly because neurons in the brain do not get time to recover, they become overworked and less capable of optimal performance in various types of thinking. According to the International Classification of Sleep Disorders (ICSD-3), Frequently occurring episodes

of insufficient sleep are associated with the experience of unfavourable mental and physical well-being.[6] In India, sleep hygiene is a relatively new concept with little availability of data about the same. Majority of the researches have been conducted in different parts of world and have shown that insufficient sleep can affect academic performance and mental health. Therefore, this study highlights the causes and effects of disturbed sleeping habits and creating more awareness of sleep disorders among youth population in India.

Aims and Objectives

- To determine the percentage of altered sleeping pattern among students preparing for medical entrance.
- To find out the causes of disturbed sleeping habits amongthe students preparing for medicalentrance.

MATERIAL AND METHODS

Study Design: Cross-sectional study.
Sample size: 400 (using Cochrane's formula)
Sampling Technique: Simple Random Sampling.
Study Population: Students preparing for medical entrance.
Study site: Private coaching institutes in Indore District.
Time Period: 4 months.
Study Tools: Data was collected using a Pre-designed Semi Structured Questionnaire based on The PSQI (Pittsburgh's Sleep Quality Index),[7] consists of 19 self-rated question and five question rated by the bed partner or roommate. The 19 items are grouped into seven component score, each weighted equally on a 0-3 scale. The seven component scores are then summed to yield a global PSQI score, which has a range of 0-21; higher scores indicate worse sleep quality.
Data Analysis: Data was entered in Microsoft excel spread sheet and analysed using opensource Epi-data analysis software.

Ethical considerations: The proposal for this study was presented before the Institutional Ethics Committee and approval was obtained before beginning the study.

RESULTS

It was found that 55% of study population is having a sleep quality index score >5 i.e. their sleep quality is poor. There were 43% students who sleep for 6-8 hours, 27.5% who sleep for 4-6 hours, 9% sleep for 7-9 hours and 2.5% sleep >10 hours a day. There were 1.5% students who were taking sleeping pills to fall asleep. It was found that 47% of students wake up by the means of alarm, followed by 39.5% who wake by self, and rest by other modes (Table-1).62% students said they felt the urge to sleep, but they refrained because they had to study, and 16% said they used to go to bed to sleep, but they were

unable to do so because they were overthinking things because of the increasing competition (Table-2).On observation, it was found that 36.5% of population don't complain of any of sleep movement disorder, followed by 26.5% of population complain of habitual leg movement and 16% people also complain about sleep talking(Table-4). It was found that awareness about sleeping 6-8 hours a day has very strong association with good quality sleeping with significant p value of <0.0001. It was found that having tea/coffee more than 3 times a day has very strong association with poor quality of sleep with p value <0.0001. There was no association found between using gadgets before sleeping and poor quality sleep with non-significant p value of <0.6818. (Table-5)
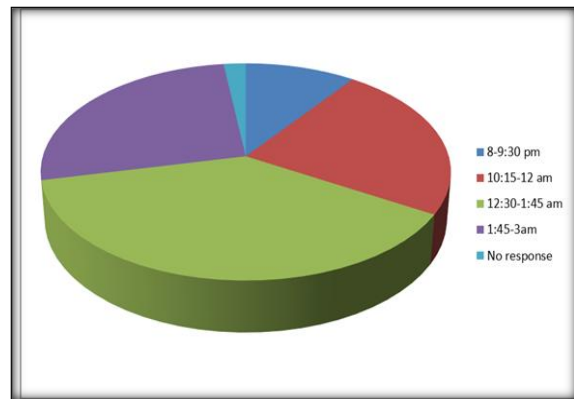

Figure 1: Pie Chart showing time in evening, when need of sleep is felt

Pie diagram (figure.1) shows that 38 % of people feel need to sleep in between 12:30-1:45 am, 26.5 % of people feel tired in between 1:45-3:00 am, 23.5% between 10:15-12:00 am, 10% between 8:00-9:30 pm followed by 2% who did not respond.
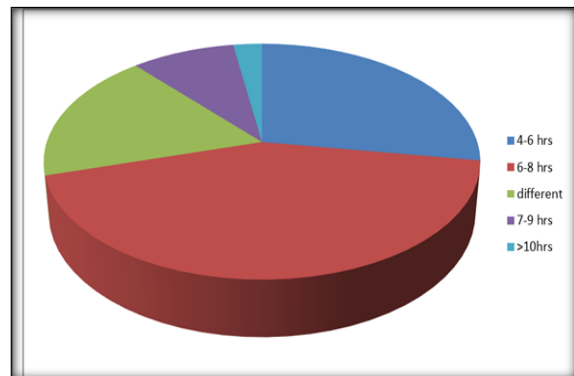

Figure 2: Pie diagram showing total sleeping hours of study population

Pie diagram (figure.2) shows 43% of people sleep for 6-8 hrs.,27.5 % sleep for 4-6 hours, 18% different according to different days, 9% sleep for 7-9 hours followed by 2.5% who sleep for 10 hours.

Table 1: Mode by which one is awakened in the morning

RESPONSE	NUMBER	PERCENT
By alarm	188	47%
By self	158	39.5%
By relative call	36	9%
By noise/other	18	4.5%

Table 2: Reason of delayed sleep

RESPONSE	NUMBER	PERCENT
Have to study	328	82%
Have office work	4	1%
Delayed sleep induction	24	6%
Others	44	11%
TOTAL	400	100%

Table 3: Time required for sleep induction

RESPONSE	NUMBER	PERCENT
<15mins	164	41%
16-30mins	158	39.5%
31-60mins	46	11.5%
>60mins	2	0.5%
No response	30	7.5%
TOTAL	400	100 %

Table 4: Presence of any sleep movement disorder

RESPONSE	NUMBER	PERCENT
Sleep walking	22	5.5%
Habitual leg movement	106	26.5%
Teeth grinding	22	5.5%
Sleep talking	64	16%
Snoring	40	10%
No response	146	36.5%
TOTAL:	400	100%

Table 5: Different parameters affecting sleep quality index on PSQI Scale

PARAMETER	GOOD QUALITY SLEEP PSQI SCORE <5	BAD QUALITY SLEEP PSQI SCORE >5	P VALUE
Awareness about sleeping 6-8 hours	196(49%)	100(25%)	0.0001
Awareness about sleeping 4-6 hours	44(11%)	60(15%)	
Use gadgets before sleeping	110(27.5%)	130(32.5%)	0.6818
Don't Use gadgets before sleeping	70(17.5%)	90(22.5%)	
>3 cups of tea/coffee	45(11.25%)	105(26.25%)	0.0001
<3 cups of tea/coffee	135(33.75%)	115(28.75%)	

DISCUSSION

- In this study, 43% of population is having the sleeping hours of 6-8 hours. According to study by Judith A Owens (American academy of Paediatrics),[8] it was found that in Indian adolescents average sleep duration dropped to below 8 hours.

- In this study, it was found that 38% of population went to bed by 12:30 to 1:45 a.m. In a study conducted by Bhatia et al,[9] Department of Psychiatry, University College of Medical Sciences and GTB hospital, Delhi, most of the adolescents(41.5%) went to bed by 11:00 pm.

- In this study,39.5% of population need 16-30 minutes to fall asleep. In a study by Bhatia et al,[9] in Delhi, the study population required 23.6 minutes to fall asleep. Thus sleep induction time is decreased.

- In this study, it was found that 23.5% of individuals feel drowsiness for whole day while 39.5% only in afternoon. According to study

conducted by Bindu John,[10] Department of Nursing, College of Health Sciences, University of Bahrain on Bahrain based Indian adolescent concluded that52.1% of population feel a need of day time nap.

- In this study, nocturnal awakenings are not seen in 50% of population while in a study by Bhatia et al,[9] in Delhi Concluded that 37% of Adolescent and youth population complained of night awakenings.

- In our study, it was found that about 55% of population is poor in sleep with Pittsburgh sleep quality index score <5. In a study, conducted by Hannah g. Lund et al,[11] Department of Psychology, Virginia, bit was found that 60% of 17-24 year aged individuals were poor sleepers with score <5.

- In our study, it was found that 47% of population uses alarm as a source to make them awake in the mornings, while in a study conducted by W H Moorcroft et al,[12] Luther College, Iowa, United States stated that about 50% of

population never used alarm to get awake in the morning, while 24% of individuals awake before their alarm rings.

- In this study,50% of the youth population take a daytime nap of 1-2 hour duration, similar to the study of Bindu John,[10] in which maximum young individuals take a nap of 1-2 hour duration.

CONCLUSION

The prevalence and effect of insufficient sleep is high among the aspirants preparing for medical entrance exams due to increasing competition, due to which they keep on delaying their urge to sleep which in turn is affecting their normal sleep-wake cycle. Factors such as excessive coffee/tea intake have a significant impact on quality of sleep. On the other hand, use of gadgets before going to sleep doesn't has any significant effect on sleep quality as per our study. Also, the students are facing many sleep movement disorders at a very young age.

Conflict of Interest- Nil

Financial Support and Sponsorship- Nil.

REFERENCES

1. Giri P, Baviskar M, Phalke D. Study of sleep habits and sleep problems among medical students of pravara institute of medical sciences loni, Western maharashtra, India. Ann Med Health Sci Res. 2013 Jan;3(1):51-4. doi: 10.4103/2141-9248.109488. PMID: 23634330; PMCID: PMC3634224.
2. Welstein L, Dement WC, Redington D, Guilleminault C, Mitler MM. Insomnia in the san francisco by area: A Telephone Survey. In: Guilleminault C, Lugaresi E, editors. Sleep/Wake Disorders: Natural History, Epidemiology, and Long-Term Evaluation. New York: Raven Press; 1983. pp. 73–85.
3. Maniraj P, Jegadeesan P, AnanthaKrishnan S. Review on Physiology of Sleep and Factors Affecting Good Sleep Hygiene in Children. Ann SBV 2021;10(1):15–19. https://www.sleepfoundation.org/circadian-rhythm
4. Patte KA, Qian W, Leatherdale ST. Sleep duration trends and trajectories among youth in the COMPASS study. Sleep Health 2017; 3(5): 309-16.
5. Chattu VK, Manzar MD, Kumary S, Burman D, Spence DW, Pandi-Perumal SR. The Global Problem of Insufficient Sleep and Its Serious Public Health Implications. Healthcare (Basel). 2018 Dec 20;7(1):1. doi: 10.3390/healthcare7010001. PMID: 30577441; PMCID: PMC6473877
6. https://www.sleepfoundation.org/sleep-deprivation/lack-of-sleep-and-cognitive-impairment
7. Buysse DJ, Reynolds III CF, Monk TH, Hoch CC, Yeager AL, Kupfer DJ. Quantification of subjective sleep quality in healthy elderly men and women using the Pittsburgh Sleep Quality Index (PSQI). Sleep. 1991 Jul 1;14(4):331-8.
8. Judith Owens: TECHNICAL REPORT- Insufficient Sleep in Adolescents and Young Adults: An Update on Causes and Consequences, PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275) doi:10.1542/peds.2014-1696, (http://pediatrics.aappublications.org/content/134/3/e921)
9. 5. BHATIA, et al. Sleep Patterns of Urban School Going Adolescents, INDIAN PEDIATRICS, VOLUME 45__MARCH 17, 2008, http://indianpediatrics.net/mar2008/183.pdf
10. Bindu John Sleep-patterns, sleep hygiene behaviors and parental monitoring among Bahrain-based Indian Adolescents J Family Med Prim Care. 2015 Apr-Jun; 4(2): 232–237 (www.ncbi.nlm.nih.gov/pmc/articles/pmc 4408707)
11. Hannah G. Lund, Sleep Pattern and Predictors of Disturbed Sleep in a Large Population of College Students, Journal of Adolescent Health, February 2010, Vol 46920;124-132 (www.sciencedirect.com/article/pii)
12. W.H. Moorcroft, etal, Subjective and objective confirmation of the ability to self-awaken at a self-predetermined time without using external means, Sleep 1997 Jan 20(1) (https://www.researchgate.net/publication/14088674).