International Journal of Community Medicine and Public Health
Nartiang D et al. Int J Community Med Public Health. 2019 Oct;6(10):4432-4436
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20194507

Original Research Article

Sleep deprivation, stress and anxiety among pre-university college students of Mangaluru city, India

Durka Nartiang, Jagannath P.*

Department of Public Health, K. S. Hegde Medical Academy Nitte (Deemed to be University), Mangaluru, Karnataka, India

Received: 27 July 2019
Revised: 11 September 2019
Accepted: 12 September 2019

***Correspondence:**
Dr. Jagannath P.,
E-mail: jagannathp@gmail.com

ABSTRACT

Background: Adequate sleep is extremely important for appropriate physical growth, emotional stability, behavior, and maintenance of cognitive function. Good quality of night sleep will reflect in better school performance and increased motivation to study. The aim of this study is to determine the level of sleep deprivation, daytime sleepiness, stress and anxiety and to associate stress, anxiety with sleep pattern.
Methods: A college based, cross-sectional study was conducted in Mangaluru City, Karnataka. The study has been conducted among 5 pre–university colleges (2 from Aided, 2 from private and 1 from government). A total of 634 participants were enrolled from grade 11th and 12th irrespective of their stream and responded to a questionnaire that included socio-demographic characteristics, sleep pattern, daytime sleepiness by using Epworth sleepiness scale, level of stress using Perceived stress scale-10, level of examination anxiety and general anxiety by using Westside Anxiety scale and Anxiety Self-Rating scale. Descriptive statistics, chi square or likelihood ratio test were used. The data was entered and analysed using SPSS 16v.
Results: Among 634 students the mean age was found to be 16 years. Prevalence of sleep deprivation was found to be 39%, daytime sleepiness was 66.6%, 77.8% had moderate stress and 9.1% had high stress. Moderately high-test anxiety was observed among 22.6% of the respondents and 1.4% with extreme anxiety.
Conclusions: The study showed that 1/3rd of the respondents had sleep deprivation and 2/3rd had daytime sleepiness and the prevalence of general anxiety was higher than examination anxiety and most of the respondents had moderate stress.

Keywords: Sleep deprivation, Stress, Anxiety

INTRODUCTION

Adequate sleep is extremely important for appropriate physical growth, emotional stability, behaviour, and maintenance of cognitive function. Adolescents' sleep quality and quantity are generally decreased less than 7 hours due to biological, environmental, societal and behavior factors.[1] According to the CDC analyze, 72.7% of the adolescents did not get enough sleep on a school night, as per the data from National and State Youth Risk Behavior Survey 2015.[2] Sleep deprivation has a more significant impact on human health both in the short and long term. In the short term, the lack of adequate sleep can alter the person's ability to judge, ability to learn and to retain information. Whereas in the long term; it may lead to various health problems such as obesity, diabetes, cardiovascular disease, and even early mortality.[3]

Stress is one of the significant factors that can severely impact sleep quality and sleep duration. A high level of stress may hurt cognitive functioning and learning of

students.[4] Stress causes insomnia by making it difficult to fall asleep. It has the effect of hyper arousal on our bodies and minds, which negatively impacts on the balance between sleep and wakefulness.[5] In anxiety disorders; however, the individual is submitted to false alarms that may be intense, frequent, or even continuous. These false alarms may lead to a state of dysfunctional arousal that often leads to persistent sleep-wake difficulties.[6] Pre-University students may have an increased level of stress and anxiety as they prepare to face their board exams and various entrance exams for different professional courses. This may also inadvertently affect their sleep pattern. This study has been attempted to determine the sleep deprivation, level of stress and anxiety among Pre-University College (PUC) students.

METHODS

A quantitative cross-sectional study conducted in Pre-University Colleges of Mangaluru City among students studying in grade 11th and 12th from Science, Commerce, and Arts over the period of four month between 1st January to 30 April 2019**.** In this study the students willing to participate whose parents have permitted are included to participate in the study and students absent at the time of data collection were excluded

Study instrument

The questionnaire consists of socio-demographic, sleep pattern, scales like Epworth Sleepiness Scale (ESS), Perceived Stress Scale -10 (PSS-10), Westside Test Anxiety Scale, Anxiety Self-Rating Scale for assessing daytime sleepiness, stress, and anxiety. Ethical clearance was obtained from the institutional ethics committee. Informed consent was taken from the parents and assent form from the participants. Data were analyzed using SPSS version 16. Chi-square and Likelihood Ratio test were used to find association between socio-demographic characteristics, sleep pattern with stress, anxiety and lifestyles factor.

RESULTS

In this study minimum age was 15 years, and the maximum age was 20 years. Majority (62.1%) of the respondents was in age group of 17-18 years, and 64.5% of the respondents were males, 51.7% of the respondents were from 12th grade and 52% of the respondents were from the commerce stream (Table 1). In this study found that 47.3% of the respondents slept for 6-7 hours daily, and 48.1% of the respondents woke up between 1-2 times during sleep at night times, majority 60.8% of the respondents usually sleep between 10pm-12am, around 50.7% of the respondents falls asleep within 10-30 minutes and majority 81.9% of the respondents wake up before 7 am (Table 2). In this study an association with statistical significance was found (p=0.04) between stress and age. Similarly, an association with statistical significance (p=0.003) was found between stress and grade. Similarly, an association with statistical significance (p=0.001) was found between stress and stream (Table 3). Significant association (p=0.002) was found between general anxiety and age. Similarly significant association (p=0.001) was found between general anxiety and grade. Similarly significant association (p=0.003) was found between general anxiety and stream of education (Table 4).

Table 1: Distribution of the respondents according to age, gender, grade and stream of education.

Socio-demographic variables (n=634)	Frequency	%
Age (in years)		
15-16	234	37.0
17-18	394	62.1
19-20	6	0.9
Gender		
Male	409	64.5
Female	225	35.5
Grade		
11th	306	48.3
12th	328	51.7
Stream		
Science	294	46.4
Arts	10	1.6
Commerce	330	52

Table 2: Distribution of respondents according to sleep pattern.

Variables	Frequency	%
Time usually go to bed at night		
Before 10 PM	160	25.2
Between 10-12 AM	385	60.8
After 12 midnight	89	14.0

Continued.

Variables	Frequency	%
Time taken to fall asleep		
Fewer than 10 minutes	174	27.5
10-30 minutes	347	54.7
30-60 minutes	82	12.9
More than 60 minutes	31	4.9
Hours of sleep		
Greater than 7 hours	163	25.7
6-7	300	47.3
5-6	140	22.1
Less than 5	31	4.9
Time to wake up in the morning		
Before 7 AM	519	81.9
After 7 AM	115	18.1
Waking up during sleep in one night		
Never	296	46.6
1-2	305	48.1
3-4	20	3.2

Table 3: Association of stress with demographic variables.

Variables	Low stress (0-13) (%)	Moderate stress (14-26) (%)	High stress (27-40) (%)	P-value
Age (years)				
15-16	24 (28.9)	196 (39.8)	14 (24.1)	0.004*
17-18	59 (71.1)	294 (59.6)	41 (70.7)	
19-20	0	3 (.6)	3 (5.2)	
Grade				
11th	39 (47.0)	251 (50.9)	16 (27.6)	0.003*
12th	44 (53.0)	242 (49.1)	42 (72.4)	
Stream				
Science	42 (50.6)	211 (42.8)	41 (70.7)	<0.001**
Arts	0	9 (1.8)	1 (1.7)	
Commerce	41 (49.4)	273 (55.4)	16 (27.6)	

*p<0.05; **p<0.001.

Table 4: Association of general anxiety with demographic variables

Variables	Minimal anxiety (0-8)	Mild anxiety (8-16)	Moderate anxiety (17-24)	High anxiety (25-32)	Extreme anxiety (33-40)	P-value
	N (%)	N (%)	N (%)	N (%)	N (%)	
Age (years)						
15-16	70 (50.4)	79 (36.1)	68 (32.9)	14 (23.3)	3 (33.3)	0.002*
17-18	69 (49.6)	138 (63)	138 (66.7)	43 (71.7)	6 (66.7)	
19-20	0	2 (0.9)	1 (0.5)	3 (5)	0	
Grade						
11th	92 (66.2)	102 (46.6)	87 (42)	21 (35)	4 (44.4)	<0.001**
12th	47 (33.8)	117 (53.4)	120 (58)	39 (65)	5 (55.6)	
Stream						
Science	59 (42.4)	103 (47)	94 (45.4)	31 (51.7)	7 (77.8)	0.003*
Arts	8 (5.8)	2 (0.9)	0	0	0	
Commerce	72 (51.8)	114 (52.1)	113 (54.6)	29 (48.3)	2 (22.2)	

*p<0.05; **p<0.001.

DISCUSSION

The present study results showed that the prevalence of sleep deprivation was 39% with the similar finding by Vilela et al in Brazil whereas the study conducted by Nasim et al in Saudi Arabi the prevalence of the sleep deprivation was 46%.[7,8] The variation may be due to cultural factors and environmental factors in different study areas.

The present study showed that the prevalence of excessive daytime sleepiness was 66.6%. Lui et al in China found that the prevalence of excessive daytime sleepiness was 29.2%.[9] This variation may be due to increased workload and academic demand.

In this study, the prevalence of moderate to severe stress was 86.9%. Parpio et al in Pakistan found that the prevalence of stress was 58%.[10] The current study had a higher prevalence of stress as they belonged to the pre-university level overburdened with academic responsibilities and also peer pressure.

The present study showed that 13.9% of science stream students had high stress which was statistically significantly associated with stress. A similar finding conducted by Afareen et al in Tamil Nadu, India.[11]

The present study found that the prevalence of exam anxiety was 73.3%. The similar finding conducted by Kose et al in Turkey showed that the prevalence of exam anxiety was 71%.[12]

The present study determined the prevalence of general anxiety to be 10.8%. The study conducted by Jin et al in China showed the prevalence of anxiety to be 14.1%.[13] The slight variation was mainly due to school performance, life pressure, and social situation.

The present study showed that 34.2% of the commerce students had moderate anxiety and statistically significant association was observed between anxiety and the stream of education. A similar finding by Baviskar et al in Maharashtra, India.[14] It's mainly because of uncertainty regarding future work situation.

CONCLUSION

In summary, this study found that certain lifestyles factor, socio-demographic factors, and sleep habits were associated with shorter sleep duration, stress, and anxiety among adolescents.

Promoting healthy lifestyle, good parenting style and sensitizing the parents through parents- teachers meeting can create awareness regarding the importance of mental health of adolescents. Teachers need to be trained for identifying and reporting these issues earlier to the parents. Health education sessions need to be organized regularly to the students regarding coping strategies and life skills to prevent themselves from these problems.

ACKNOWLEDGEMENTS

Authors would like to thanks to Dr. Krishna Bhat and Mrs. Rekha R. for their valuable time, inputs and guidance during whole process of the study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Johansson E, Petrisko A, Chasens R. Adolescent sleep and the impact of technology use before sleep on daytime function. J Pediatr Nurs. 2016;31(5):498–504.
2. CDC. Students and Sleep. Centers for Disease Control and Prevention. 2018. Available at: https://www.cdc.gov/features/students-sleep/index.html. Accesed on 25 July 2019.
3. Consequences of Insufficient Sleep | Healthy Sleep. Available at: http://healthysleep.med.harvard.edu/healthy/matters/consequence. Accessed on 25 July 2019.
4. Akande JA, Olowonirejuaro AO, Okwara-Kalu CE. A study of level and sources of stress among secondary school students. IOSR J Res Method Educ. 2014;4(5):32–6.
5. Effects of Stress on Sleep. Available at: http://www.dpf.org.uk/services/health-and-wellbeing/effects-of-stress-on-sleep. Accessed on 25 July 2019.
6. Staner L. Sleep and anxiety disorders. Dialogues Clin Neurosci. 2003:5(3):249–58.
7. de Souza Vilela T, Bittencourt LR, Tufik S, Moreira GA. Factors influencing excessive daytime sleepiness in adolescents. J Pediatr (Rio J). 2016;92(2):149–55.
8. Mahila N, Maissa S, Fadia A. Sleep deprivation: prevalence and associated factors among adolescents in Saudi Arabia. Sleep Med. 2019;53:165–71.
9. Liu Y, Zhang J, Li SX, Chen Y, Yu M, Lam S, et al. Excessive daytime sleepiness among children and adolescents: prevalence, correlates, and pubertal effects. Sleep Med. 2019;53:1–8.
10. Parpio Y, Farooq S, Gulzar S, Tharani A, Saeed Ali T. Factors associated with stress among adolescents in the city of Nawabshah, Pakistan. J Pak Med Assoc. 2010;62(11):1209-13
11. Aafreen M, Priya V, Gayathi R. Effect of stress on academic performance of students in different stream. Drug intervention. 2018;10(9):1776-80.
12. Selmin K, Sukran Y, Sonay G. The relationship between exam anxiety levels and sleep quality of

senior high school students. J Psychiatric Nurs. 2018;9(2):105-11.
13. Jin Y, He L, Kang Y, Chen Y, Lu W, Ren X, et al. Prevalence and risk factors of anxiety status among students aged 13-26 years. Int J Clin Exp Med. 2014;7(11):4420–4426.
14. Baviskar M, Phalke V, Phalke B. Depression, anxiety and stress: A comparative study in arts, science and commerce students from a rural area of India. Int Glb Rsch Anl. 2013;2(11):ISSN No.2277-8160.

Cite this article as: Nartiang D, Jagannath P. Sleep deprivation, stress and anxiety among pre-university college students of Mangaluru city, India. Int J Community Med Public Health 2019;6:4432-6.