

# IMPACT OF SLEEP QUALITY ON MENTAL HEALTH AMONG YOUNGSTERS

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**Abstract:** An adequate amount of sleep is very important, much like doing regular exercise or having a healthy diet. As the world is becoming more and more advanced, people are working harder than ever. And in pursuit of achieving the goals, the work and efforts that are being put often result in affecting the quality and quantity of the sleep. This directly impacts the quality of life all around. The purpose of this research is to find the relation between sleep quality and mental health among youngsters. A sample of 240 youngsters (120 males and 120 females) was collected using the Pittsburgh Sleep Quality Index (PSQI) and General Health Questionnaire (GHQ-28). The sex differences were also studied for quality of sleep and mental health. Given that there are many factors affecting mental health, future studies should continue to explore more variables affecting it. (Abstract)

**Index Terms—** Mental Health, Sleep Quality, Youngsters. (keywords)

## I. INTRODUCTION

There is a common belief that 7-8 hours of sleep is necessary each night as it helps in reviving bodily functions. By not being able to achieve this reviving time might have severe impacts on our health and it can also have a negative impact on the total life span. Stressor substances like norepinephrine and corticosteroids are formed in increased amounts and the human growth hormone (hGH) is missed too if we don't sleep at night. But sometimes, if we aren't able to sleep for one, two nights in succession or the amount of sleep is reduced by a couple of hours every day for a longer period of time, it can affect in a short term or have a limited sleep deprivation. There can be a lot of factors that can affect sleep quality like completing work before the tight deadlines, working night shifts, or coping with family or job difficulties [26].

Physical activity is a part of movement that helps in energy spending by performing tasks from daily lives in all the aspects of life [9].

Studies state that one-fourth adolescents are having a sleep of 6 hours or less (7b) and one-fifth of adults are having inadequate levels of sleep [18,37]

There are many factors that can affect the mental health state, from stress and anxiety to depression and trauma, to many others. This study uses experimental Approach to have a better understanding of the impact of sleep quality in particular on the mental health of individuals.

The study done by Webb and Agnew on 15 subjects showed when the sleep was decreased by 5.5 hours for a total of 60 days, the subjects' performance was affected in a negative way due to the decreased amount of motivation along with increased level of boredom. The mood levels were initially low but went back to their respective baselines [45].

As per Cacioppo et al. (2002), the level of loneliness was indirectly proportional to sleep efficiency as the participants with elevated level of loneliness also had decreased level of sleep efficiency [7].

Friedman et al. published a study which it was stated that the quality of social relationships along with social participation was increased as the sleep quality with sleep efficiency improved and sleep latency decreased [15].

There is a general agreement about the changes that occur during the change from childhood to adolescence as growing level of sleep deprivation can be seen in adolescence. As the changes, like early school time along with the late puberty period affect the sleep standard, sleep timing and the behaviour of adolescence. This and other factors like after-hour ventures and work can really decrease the number of hours of sleep availability [1,16,47,48]

One study showed that insomnia and sleep deprivation can affect a big spectrum of psychological, interpersonal, and somatic wellbeing of individuals. Adolescents have reported substance abuse problems, depression, anxiety, anger, attention deficits and even suicidal thoughts along with reduced energy levels and fatigue along with head, stomach, and backaches, all due to disrupted sleep patterns. Experimental studies have shown that cognitive functions, daytime lethargic behaviours are directly affected by sleep quality and deprivation [8,10,25].

Sleep-related problems affect 50–70 million persons in the United States [27]. Two adults in five sleep less than 7 hours each weeknight and for three adults in eight, their sleepiness during the day interferes with daily activities at least a few times a month [28]. Insufficient sleep not only affects the ability to function optimally but is also associated with an increased risk of psychiatric disorders [13,43]. Sleep disturbance can also exacerbate chronic conditions, disrupt medical treatment, and add to the social disability associated with a chronic illness [19,20,23]. Yet nearly two-thirds of US adults have never been asked by a physician how well they sleep [28].

50-70 million US citizens are facing sleep related issues [27]. 3 out of 8 adults sleep during day and it affects their day-to-day activities for some part of a month and 2 out 5 adults have a daily sleep of 7 hours or less every workday [28]. Lack of sleep can lead to psychiatric disorders other bodily functions [13,43]. Sleep deprivation can heighten the chances of chronic illnesses and affect the ongoing medical treatments. It can also infer negatively in the social perception linked with chronic conditions, still, doctors don't enquire about 2/3rd of their patients' sleep patterns. [19,20,23].

Sleep is one of the fundamental factors affecting a person's growth, development, and mental health. The purpose of this study is to determine the relationship between sleep quality and mental health in youngsters. Based on the review of literature, following hypotheses were made:

H1: There would be a significant positive relationship between the sleep quality and mental health.

H2: There would be significant sex differences in sleep quality and mental health.

H3: There would be significant differences in sleep quality and mental health among hostelers and non-hostelers.

## II. METHOD

### Sample

Sample consists of 240 youngsters (120 males and 120 females) of age range 18 to 25 years with a mean age 21.70 and SD= 2.23. For data collection two questionnaires were used, one for checking up the Mental health and another one for the Sleep quality. Demographics including age, sex, hosteler/non-hosteler, relationship status etc. were also measured using self-report demographic sheet.

### Instruments

For Mental Health, general health questionnaire (GHQ-28) was used and for sleep quality, Pittsburgh sleep quality index (PSQI) was used. Both of the questionnaires were checked for the reliability and validity for the Indian setting.

#### 1. General Health Questionnaire- 28 (GHQ-28)

The GHQ-28 developed by Goldberg in 1978 was used for assessing the mental health [16]. The GHQ-28 is a 28-item measure of emotional distress in medical settings which is further divided into four subscales: somatic symptoms, anxiety, social dysfunction, and severe depression. Test-retest reliability is 0.78 to 0.90 (Robinson & Price 1982) and inter-rater and intra-rater reliability is 0.9–0.95 [12]. High internal consistency has also been reported. The GHQ-28 correlates well with other measures of depression too [32,36].

#### 2. Pittsburgh Sleep Quality Index (PSQI) (Daniel J. Buysse,1989)

PSQI is a self-administered questionnaire consisting of 19 items measured on 4-point Likert type scale [6]. It provides a discrimination between good and bad sleep with the help of seven sections based on last month's sleep patterns: subjective sleep quality, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleep medication, and daytime dysfunction. The final score ranges from 0-21, higher score meaning poor sleep quality and lower score reflects good sleep. Test-retest reliability is .82 and validity was confirmed using the content validity method [24].

### Procedure

For data collection, firstly, informed consent was obtained from the subjects. they were then asked to fill out the demographic information. All the instructions were made clear to them, and they were ensured about the anonymity and were encouraged to provide honest responses. The two questionnaires (General health questionnaire-28 and Pittsburgh sleep quality index) were administered upon the subjects individually. After the administration, subjects were sincerely thanked for their cooperation. After scoring as per the manuals, data was analysed using SPSS.

## III. RESULTS AND DISCUSSION

Pearson's product moment correlation was used to determine the relationship between sleep quality and mental health. To find out the differences among hostelers and non-hostelers and between different sexes t-test was used.

Table 1 Mean, S.D. and t-ratio of Sleep quality and Mental health among different genders (N=240)

Variables	Gender				t-ratio
	Males		Females		
	Mean	S.D.	Mean	S.D.	
Sleep quality	6.38	2.62	5.03	2.53	4.056**
Mental health	32.58	14.61	28.30	12.08	2.473*

\*t-ratio is significant at the 0.05 level

\*\*t-ratio is significant at the 0.01 level

Note: S.D- Standard Deviation

Table 2 Mean, S.D. and t-ratio of Sleep quality and Mental health between Hostelers and Non-hostelers (N=240)

Variables	Hostelers				t-ratio
	Hosteler		Non-hosteler		
	Mean	S.D.	Mean	S.D.	
Sleep quality	6.32	2.64	5.34	2.34	3.043**
Mental health	29.12	16.84	23.55	12.37	2.92**

\*t-ratio is significant at the 0.05 level

\*\*t-ratio is significant at the 0.01 level

**Note:** S.D- Standard Deviation

Findings of t-ratio analysis between two genders 'Male' and 'Female' are shown in Table 1. Findings reveals that both sleep quality and mental health are significantly better ( $t= 4.056$ ,  $df=238$ ,  $p<0.01$  and  $t= 2.473$ ,  $df=238$ ,  $p<0.05$  respectively) in males (Mean= 6.38 and 32.58) as compared to females (Mean= 5.03 and 28.30).

Findings of t-ratio analysis between Hosteler and Non-hosteler are shown in Table 2. Hostelers (Mean=6.32 and 29.12) have significantly better ( $t=3.043$ ,  $df=238$ ,  $p<0.01$  and  $t=2.92$ ,  $df=238$ ,  $p<0.01$ ) sleep quality and mental health as compared to non-hostelers (Mean=5.34 and 23.55).

Table 3 Intercorrelation matrix of Sleep quality and subscales of Mental health (N=240)

Variables	Sleep quality	Somatic symptoms	Anxiety	Social dysfunction	Severe depression
Sleep quality	1	<b>.466**</b>	<b>.508**</b>	<b>.353**</b>	<b>.465**</b>
Somatic symptoms	-	1	<b>.645**</b>	<b>.521**</b>	<b>.577**</b>
Anxiety	-	-	1	<b>.559**</b>	<b>.653**</b>
Social dysfunction	-	-	-	1	<b>.539**</b>
Severe depression	-	-	-	-	1

\*\*correlation is significant at the 0.01 level

The findings as reported in Table 3 revealed significant positive correlation among sleep quality and somatic symptoms ( $r= .466$ ,  $p<.01$ ), anxiety ( $r=.508$ ,  $p<.01$ ), social dysfunction ( $r=.353$ ,  $p<.01$ ) and severe depression ( $r= .465$ ,  $p<.01$ ). As expected, we found that sleep quality has positive and significant relationship with subscales of mental health, i.e., somatic symptoms, anxiety, social dysfunction, and severe depression in youngsters' population.

Therefore, the present study found a significant difference in sleep quality and mental health among different sexes and hosteler/non-hosteler participants. Males are found to have better sleep quality and mental health. Findings are in line with the previous research [33,38,40,41,49]. Another finding revealed that hostelites have better sleep quality and mental health, which is in coherence with the results of prior research.

Individuals with poor sleep quality might find it difficult to utilize coping strategies, which may further lead to more psychological distress [4,5]. Several studies have shown that teens that are not taking a proper amount of sleep can lead to poor emotional functioning as it is associated with hopelessness, anxiety, and other depressive symptoms [3,11,14]. The loss of sleep can be linked with increased emotional activity along with negative mood and changed memory processing [17,30,31]. Sleep loss can work as a modulator for depressive and anxiety symptoms [44].

Our findings are in line with previous studies where females were found to have increased instances of worsened sleep quality and this gender difference can be associated with depression and other psycho-social factors. High levels of depressive symptoms, along with biological gender factors, in females adds to the gender differences that are found for sleep quality. Unhealthy lifestyle can also play a decisive role in bad sleep quality [34,42]

Previous studies have found a direct association among sleep quality/sleep hygiene, and depressive outcomes. Individual who are depressed find it hard to the coping strategies effectively, which likely leads to poorer sleep quality [22,39]. As depression increases, the sleep quality deteriorates further [2,21].

#### IV. CONCLUSION

It indicates that the Subjective sleep quality affects the somatic symptoms of the individual's body. With lack of sleep, the individual can start feeling headaches, constipation if this vicious cycle keeps going on, it can lead to depression, anxiety, and other types of somatic symptom's disorder. Though, our research period wasn't long enough to see such effects, future researchers can keep it in mind.

#### V. Limitations

Sleep quality of an individual can be checked in a clinical setting, so that the researchers can observe the sleep patterns of the samples themselves. The future research can be done on a larger sample. Future researchers can add more variables to their studies, so that we can have a better understanding of the factors that affect an individual's mental health.

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#### VII. Conflict of Interests

There are no Conflict of Interests.

#### REFERENCES

1. Altevogt, B. M., & Colten, H. R. (Eds.). (2006). Sleep disorders and sleep deprivation: an unmet public health problem. Washington, DC: The National Academies Press, Institute of Medicine.
2. Augner, C. (2011). Associations of subjective sleep quality with depression score, anxiety, physical symptoms, and sleep onset latency in young students. Central European journal of public health, 19(2), 115-117.
3. Baglioni, C., Spiegelhalter, K., Lombardo, C., & Riemann, D. (2010). Sleep and emotions: a focus on insomnia. Sleep medicine reviews, 14(4), 227-238.
4. Berglund, B., Lindvall, T., Schwela, D. H., & World Health Organization. (1999). Guidelines for community noise.

5. Breslau, N., Roth, T., Rosenthal, L., & Andreski, P. (1996). Sleep disturbance and psychiatric disorders: a longitudinal epidemiological study of young adults. *Biological psychiatry*, 39(6), 411-418.
6. Buysse, D. J., Reynolds III, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry research*, 28(2), 193-213.
7. Cacioppo, J. T., Hawkley, L. C., Berntson, G. G., Ernst, J. M., Gibbs, A. C., Stickgold, R., & Hobson, J. A. (2002). Do lonely days invade the nights? Potential social modulation of sleep efficiency. *Psychological Science*, 13(4), 384-387.
8. Carskadon, M. A. (2002). *Factors influencing sleep patterns of adolescents*. New York: Cambridge University Press.
9. Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public health reports*, 100(2), 126.
10. Dahl, R. E., & Lewin, D. S. (2002). Pathways to adolescent health sleep regulation and behavior. *Journal of adolescent health*, 31(6), 175-184.
11. Dewald, J. F., Short, M. A., Gradisar, M., Oort, F. J., & Meijer, A. M. (2012). The Chronic Sleep Reduction Questionnaire (CSRQ): a cross-cultural comparison and validation in Dutch and Australian adolescents. *Journal of sleep research*, 21(5), 584-594.
12. Failde, I., Ramos, I., & Fernandez-Palacin, F. (2000). Comparison between the GHQ-28 and SF-36 (MH 1-5) for the assessment of the mental health in patients with ischaemic heart disease. *European journal of epidemiology*, 16(4), 311-316.
13. Ford, D. E., & Kamerow, D. B. (1989). Epidemiologic study of sleep disturbances and psychiatric disorders: an opportunity for prevention. *Jama*, 262(11), 1479-1484.
14. Fredriksen, K., Rhodes, J., Reddy, R., & Way, N. (2004). Sleepless in Chicago: tracking the effects of adolescent sleep loss during the middle school years. *Child development*, 75(1), 84-95.
15. Friedman, E. M., Hayney, M. S., Love, G. D., Urry, H. L., Rosenkranz, M. A., Davidson, R. J., ... & Ryff, C. D. (2005). Social relationships, sleep quality, and interleukin-6 in aging women. *Proceedings of the National Academy of Sciences*, 102(51), 18757-18762.
16. Goldberg, D. (1978). *Manual of the general health questionnaire*. Nfer Nelson.
17. Goldstein, A. N., & Walker, M. P. (2014). The role of sleep in emotional brain function. *Annual review of clinical psychology*, 10, 679.
18. Kapur, V., Strohl, K. P., Redline, S., Iber, C., O'Connor, G., & Nieto, J. (2002). Underdiagnosis of sleep apnea syndrome in US communities. *Sleep and breathing*, 6(02), 049-054.
19. Katz, D. A., & McHorney, C. A. (2002). The relationship between insomnia and health-related quality of life in patients with chronic illness. *Journal of Family Practice*, 51(3), 229-234.
20. Léger, D., Scheuermaier, K., Philip, P., Paillard, M., & Guilleminault, C. (2001). SF-36: evaluation of quality of life in severe and mild insomniacs compared with good sleepers. *Psychosomatic medicine*, 63(1), 49-55.
21. Lemma, S., Gelaye, B., Berhane, Y., Worku, A., & Williams, M. A. (2012). Sleep quality and its psychological correlates among university students in Ethiopia: a cross-sectional study. *BMC psychiatry*, 12(1), 1-7.
22. Lovell, G. P., Nash, K., Sharman, R., & Lane, B. R. (2015). A cross-sectional investigation of depressive, anxiety, and stress symptoms and health-behavior participation in Australian university students. *Nursing & health sciences*, 17(1), 134-142.
23. Manocchia, M., Keller, S., & Ware, J. E. (2001). Sleep problems, health-related quality of life, work functioning and health care utilization among the chronically ill. *Quality of life research*, 10(4), 331-345.
24. Masoudnia, E. (2015). Impact of weak social ties and networks on poor sleep quality: A case study of Iranian employees. *Asian Journal of Psychiatry*, 18, 42-48.
25. Millman, R. P., & Working Group on Sleepiness in Adolescents/Young Adults; and AAP Committee on Adolescence. (2005). Excessive sleepiness in adolescents and young adults: causes, consequences, and treatment strategies. *Pediatrics*, 115(6), 1774-1786.
26. Naitoh, P., Kelly, T. L., & Englund, C. (1990). Health effects of sleep deprivation.
27. National Centre on Sleep Disorders Research (National Heart, Lung, Blood Institute), & Trans-NIH Sleep Research Coordinating Committee. (2003). 2003 National Sleep Disorders Research Plan (No. 3). US Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, National Centre on Sleep Disorders Research, Trans-NIH Sleep Research Coordinating Committee
28. National Sleep Foundation. (2002) 'Sleep in America' Poll. Available at: <http://www.sleepfoundation.org/2002poll.cfm> accessed June 14, 2004.
29. National Sleep Foundation. 2000 'Sleep in America' Poll. Available at: <http://www.sleepfoundation.org/publications/2000poll.cfm> accessed June 14, 2004.
30. Payne, J. D., & Kensinger, E. A. (2011). Sleep leads to changes in the emotional memory trace: evidence from fMRI. *Journal of cognitive neuroscience*, 23(6), 1285-1297.
31. Payne, J. D., Stickgold, R., Swanberg, K., & Kensinger, E. A. (2008). Sleep and memory consolidation for complex emotional scenes. *Psychological Science*, 19, 781-788.
32. Robinson, R. G., & Price, T. R. (1982). Post-stroke depressive disorders: a follow-up study of 103 patients. *Stroke*, 13(5), 635-641.
33. Schraedley, P. K., Gotlib, I. H., & Hayward, C. (1999). Gender differences in correlates of depressive symptoms in adolescents. *Journal of adolescent health*, 25(2), 98-108.
34. Sehgal, A., & Mignot, E. (2011). Genetics of sleep and sleep disorders. *Cell*, 146(2), 194-207.
35. Sloan, E. P. (2011). Sleep deprivation and postpartum mental health. *Archives of women's mental health*, 14(6), 509-511.
36. Sterling, M. (2011). General health questionnaire-28 (GHQ-28). *Journal of physiotherapy*, 57(4), 259.

37. Strine, T. W., & Chapman, D. P. (2005). Associations of frequent sleep insufficiency with health-related quality of life and health behaviors. *Sleep medicine*, 6(1), 23-27.
38. Tang, J., Liao, Y., Kelly, B. C., Xie, L., Xiang, Y. T., Qi, C., ... & Chen, X. (2017). Gender and regional differences in sleep quality and insomnia: a general population-based study in Hunan Province of China. *Scientific reports*, 7(1), 1-9.
39. Tavernier, R., & Willoughby, T. (2014). Are all evening-types doomed? Latent class analyses of perceived morningness-eveningness, sleep and psychosocial functioning among emerging adults. *Chronobiology international*, 31(2), 232-242.
40. Toscano-Hermoso, M. D., Arbinaga, F., Fernández-Ozcorta, E. J., Gómez-Salgado, J., & Ruiz-Frutos, C. (2020). Influence of sleeping patterns in health and academic performance among university students. *International Journal of Environmental Research and Public Health*, 17(8), 2760.
41. Van Droogenbroeck, F., Spruyt, B., & Keppens, G. (2018). Gender differences in mental health problems among adolescents and the role of social support: results from the Belgian health interview surveys 2008 and 2013. *BMC psychiatry*, 18(1), 1-9.
42. Van Reen, E., Sharkey, K. M., Roane, B. M., Barker, D., Seifer, R., Raffray, T., ... & Carskadon, M. A. (2013). Sex of college students moderates associations among bedtime, time in bed, and circadian phase angle. *Journal of biological rhythms*, 28(6), 425-431.
43. Vandeputte, M., & de Weerd, A. (2003). Sleep disorders and depressive feelings: a global survey with the Beck depression scale. *Sleep medicine*, 4(4), 343-345.
44. Walker, M. P., & Harvey, A. G. (2010). Obligate symbiosis: sleep and affect. *Sleep medicine reviews*, 14(4), 215-217.
45. Webb, W. B., & Agnew Jr, A. H. (1974). The effects of a chronic limitation of sleep length. *Psychophysiology*, 11(3), 265-274.
46. Wolfson, A. R. (1996). Sleeping patterns of children and adolescents: Developmental trends, disruptions, and adaptations. *Child and Adolescent Psychiatric Clinics*, 5(3), 549-568.
47. Wolfson, A. R. (2002). Bridging the gap between research and practice: What will adolescents' sleep/wake patterns look like in the 21st century. *Adolescent sleep patterns: Biological, social, and psychological influences*, 198-219.
48. Wolfson, A. R., & Carskadon, M. A. (1998). Sleep schedules and daytime functioning in adolescents. *Child development*, 69(4), 875-887.
49. Zeng, L. N., Zong, Q. Q., Yang, Y., Zhang, L., Xiang, Y. F., Ng, C. H., ... & Xiang, Y. T. (2020). Gender difference in the prevalence of insomnia: a meta-analysis of observational studies. *Frontiers in Psychiatry*, 11, 577429