



THE PREVALENCE OF SLEEP PATTERNS AND ACADEMIC PERFORMANCE AMONG TEENAGERS.

Aamir Gul Memon¹, Saleh Shah², Um kalsoom³, Fatima Chaudhary⁴, Shard kumar⁵, Ramsha Waseem⁶, Jehangir Jokhio⁷, Maryam⁸, Kashaf Inam⁹

ABSTRACT

BACKGROUND: This study examined the relationship between sleep habits and academic performance in Asian youth, with particular emphasis on the incidence and epidemiology of sleep problems in this community. Chronic sleep deprivation can lead to poor academic performance, irritability, and reduced cognitive function, making it a major public health concern. The aim of the study was to investigate the participants' sleep patterns and their impact on academic performance. **METHODS:** This survey involved 230 youth aged 13 to 19 years in Tando Muhammad Khan, Sindh. A self-administered questionnaire was used for data collection, which consisted of two parts: demographic information and information on sleep patterns. Prior to data collection, ethical approval was obtained, and questionnaires were distributed to schools and colleges. Data were coded and entered into SPSS version 25 for analysis. **RESULTS:** In 230 individuals, this study looked at the association between academic performances and demographic factors such as age, gender, academic class, and BMI. The poor academic performance group had the most participants (65.7%), whereas the outstanding academic performance group had the fewest (10.4%). The data imply that age, gender, and academic class may all have an impact on academic success. For example, the majority of 14-16 age group participants and male participants had poor academic performance, whereas the majority of 11th-12th academic class participants and MCAT/E-CAT class participants had great academic performance. Finally, many participants in the underweight group had low academic achievement, whereas the majority of participants in the overweight group had good academic performance. **CONCLUSION:** The current study adds to the evidence that there is a link between demographic factors, sleep patterns, and academic achievement. The study's findings are consistent with past studies, and more research is needed to uncover effective strategies to improve student academic performance.


KEYWORDS: Academic Performance, Prevalence, Sleep Patterns, Teenagers.

1. Assistant Professor, Physical Therapy Department, Riphah International University, Lahore, Pakistan
2. Assistant Professor, Physical Therapy Department, Superior University, Lahore
3. MS Clinical Psychology Student, University of Lahore
Email: kalsoomawan932@gmail.com
4. MSPT (NM) Student, Physical Therapy Department, Riphah International University, Lahore
5. Medical Officer, Isra University, Hyderabad
6. Clinical Psychologist, University of Lahore
7. Medical Officer/ADHO, District Health Office, Tando Muhammad Khan
8. MSPT (Peads) Student, Physical Therapy Department, Riphah International University, Lahore, Pakistan
9. DPT Student, Physical Therapy Department, Suleman Roshan Medical College, Tando Adam

Corresponding Author: DR AAMIR GUL MEMON Assistant Professor, Physical Therapy Department, Riphah International University, Lahore, Pakistan
Email Address: aamir_mmn642@yahoo.com

HOW TO CITE THIS ARTICLE: Memon AG¹, Shah S², Um kalsoom³, Chaudhary F⁴, Kumar S⁵, Waseem R⁶, Jokhio J⁷, Maryam⁸, Inam K⁹. **THE PREVALENCE OF SLEEP PATTERNS AND ACADEMIC PERFORMANCE AMONG TEENAGERS.** *JPUMHS*; 2023;13:02, 137-141. <http://doi.org/10.46536/jpumhs/2023/13.02.427>

Received March 13 2023, Accepted On 15 June 2023, Published On 30 June 2023.

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INTRODUCTION

Sleep is an essential component of physical and mental health, and it has a substantial impact on academic performance and overall quality of life, especially in teenagers. There are major physiological and behavioural changes during adolescence that can influence sleep patterns and duration, leading to increased sleep disorders¹. Lower performance in school, anger, and cognitive decline are only some of the adverse consequences of chronic lack of sleep^{2,3}. There are local variations in the incidence of adolescent insomnia, with research showing that Asia has higher rates than other regions^{4,5}. Similar to a research done in China, for example, more than 70% of high school students reported poor sleep, with more than 50% reporting symptoms of insomnia⁶. In a similar vein, research conducted in Japan revealed that up to 36% of junior high school students reported difficulties sleeping⁷.

The complex frequency of teenage sleepiness may be linked to many kinds of factors. Behavioural issues, such as expanding use of gadgets shortly before bed, disorganised sleeping habits, inadequate amounts in physical activity, and external factors like light and noise exposure might all be present^{8,9}. Furthermore, some psychological elements like anxiety and tension might impact the quantity and quality of teenager's sleep¹⁰.

Given the alarming incidence of insomnia among youths and the potential adverse effects on educational achievement and psychological health, there is a growing desire to identify effective avoidance and intervention strategies. Prior studies have shown that consistent sleeping routines, abstaining from gadgets before bedtime, and maintaining a dark, pleasant resting environment might improve adolescents' quality of sleep^{11,12}. Furthermore, cognitive-behavioral therapy and medicines have demonstrated promise in addressing sleep disturbances in this population^{13,14}.

The purpose of this study is to deliver a thorough examination of the most recent research on the relationship between sleep patterns and academic performance among Asian teenagers, including the prevalence and epidemiology of sleep problems in this population, as well as evidence-based

strategies for promoting adequate sleep and enhancing performance in school.

METHODOLOGY:

The study's participants were adolescents (aged 13 to 19) studying schools and colleges in Tando Muhammad Khan, Sindh. The convenience sample technique was used to choose 230 individuals. A self-designed questionnaire was utilised to obtain data on teenagers' sleep patterns and academic performance. The questionnaire was divided into two sections. The first section collected demographic information such as age, gender, educational level, and academic performance. The second section gathered data on sleep patterns, such as when people go to bed, when they get up, and how many hours they sleep per night. The observational research was carried out from the month of November 2022 to February of 2023. The relevant authority granted ethical permission prior to data collection. The questionnaire was distributed to the participants at their respective schools and institutions. The participants were provided instructions on how to complete the questionnaire. The data gathering process takes roughly fifteen to twenty minutes per subject. The acquired data was coded and entered into SPSS version 25 for analysis. Descriptive statistics were utilised to describe the demographic features of the participants, such as age, gender, educational level, and academic achievement.

RESULTS:

A investigation involving 230 participants was done to evaluate the association between academic performance and demographic characteristics such age, gender, academic class, and BMI. Based on their academic performance, the participants were separated into three groups: Excellent (above 81 points), Average (61-80 points), and Poor (40-60 points). The findings revealed that 24 participants (10.4%) belonged to the Excellent group, 55 (23.9%) to the Average group, and 151 (65.7%) to the Poor group.

In terms of age, 69 (30%) participants were 14-16 years old, 128 (55.7%) were 17-19 years old, and 33 (14.3%) were 19 years old or older. The majority of 14-16-year-old participants (69.6%) were in the Poor

academic performance group, while the majority of 17-19-year-old individuals (73.5%) were in the Average academic performance group.

In terms of gender, 106 (46.1%) of the participants were male, while 124 (53.9%)

were female. The majority of male participants (57.6%) were classified as having poor academic performance, while the majority of female participants (40.3%) were classified as having average academic ability.

Table I: Demographic Characteristics and Academic Performance of Participants (n=230) by Age, Gender, Class, and BMI.

Characteristics		(n=230)	Poor Score (less than 60)	Average Score (61 to 80)	Excellent Score (More than 81)
Age	14 to 16	69 (30%)	09 (13%)	48 (69.6%)	12 (17.4%)
	17 to 19	128 55.7%	48 73.5%	72 56.2%	08 6.3%
	19 above	33 14.3%	10 30.3%	19 57.6%	04 12.1%
Gender	Male	106 46.1%	61 57.6%	39 36.8%	06 5.6%
	Female	124 53.9%	43 34.7%	50 40.3%	21 16.9%
Class/Standard	9 th -10 th	41 17.8	04 9.8%	10 24.4%	27 65.9%
	11 th - 12 th	91 39.6%	40 43.9%	31 34.1%	20 22%
	MCAT/E-CAT	98 42.6%	49 50%	33 33.7%	16 16.3%
Body Mass Index (BMI)	Under-weight	48 20.9%	20 41.7%	17 35.4%	11 22.9%
	Normal-Weight	147 63.9%	71 48.3%	47 32%	29 19.7%
	Over-weight	29 12.6%	15 51.7%	10 34.5%	04 13.8%
	Obese Class I-II	06 2.6%	04 66.7%	02 33.3%	00 0%

Table II: Sleep-related characteristics and behaviors of participants (n=230) in the study, categorized by sleep quality, daytime sleepiness, total sleep time, bedtime, and wake-up time.

Variable		(n=230)	Poor Score	Average Score	Excellent Score
Do you feel that you get sufficient sleep?	Yes	98 (42.6%)	31 (23.5%)	48 (37.4%)	53 (40.1%)
	No	132 (57.4%)	36 (36.7%)	41 (41.8%)	21 (21.4%)
Do you feel sleepiness during classroom	Yes	108 (47%)	45 (36.9%)	60 (49.2%)	17 (13.9%)
	No	122 (53%)	18 (16.7%)	42 (38.9%)	48 (44.4%)
Sleep Time/Day	6 to 7 hrs	110 (47.85%)	30 (27.3%)	45 (40.9%)	35 (31.8%)
	8 to 9 hrs	91 (39.65%)	11 (12%)	40 (44%)	40 (44%)
	Above 9 hrs	29 (12.6%)	14 (48.3%)	08 (27.6%)	07 (24.1%)
Bedtime (12hrs)	9pm to 10pm	10 4.4%	01 (10%)	04 (40%)	05 (50%)
	9pm to 11pm	24 (10.4%)	05 (20.8%)	07 (29.2)	12 (50%)
	11pm to 1 am	152 (66.1%)	47 (30.9%)	70 (46%)	35 (23.1%)
	After 1 am	44 (19.1%)	18 (40.9%)	16 (36.4%)	10 (22.7%)
Wake-up Time (12hrs)	5 am- 6 am	15 (6.5%)	02 (13.3%)	06 (40%)	07 (46.7%)
	6am to 7am	69 (30%)	11 (15.9%)	33 (47.8%)	25 (36.3%)
	7am to 8am	124 (53.9%)	34 (27.4%)	66 (53.2%)	24 (19.4%)
	8 am to 9 am	22 (9.6%)	12 (54.6%)	07 (31.8%)	03 (13.6%)

Poor Score= Below 60, Average Score = 61-80 and Excellent Score = More than 80 Marks

The participants were also divided into academic groups. 41 (17.8%) were in the 9th-10th grade, 91 (39.6%) in the 11th-12th grade, and 98 (42.6%) in the MCAT/E-CAT class. The majority of 11th-12th grade students (43.9%) were in the Poor academic performance group, while the majority of

MCAT/E-CAT students (50%) were in the Excellent academic performance group. Finally, the BMI of the subjects was divided into four categories: underweight, normal weight, overweight, and obese I-II. There were 48 people (20.9%) who were underweight, 147 (63.9%) who were normal

weight, 29 (12.6%) who were overweight, and 6 (2.6%) who were obese I-II. The majority of participants in the Underweight group (41.7%) had poor academic achievement, while the majority of those in the Normal weight group (48.3%) had excellent academic performance.

The sleep patterns and academic performance of 230 school and college students in Tando Muhammad Khan were explored in this study. Findings of the study suggests, enough sleep is received by more than half of the participants (57.4%), sleep-deprived participants were 42.6%.

53% participants felt sleepy during the class room sessions

Per night sleep time were 6-7 hours reported by 47.85% participants. Significant influence of total sleep time was discovered. 8-9 hours per night sleep reported by 39.65% participants while 12.6% participants reported sleep time more than 9 hours per night. Sleep time also proved to vary greatly, with almost all of those taking part (66.1%) falling asleep around 11 PM and 1 AM, and 19.1% returning to bed beyond 1 AM.

Participants who woke up between 7 and 8 am were 53.9%, participants woke up between 6 and 7 am were 30% and 9.6% waked up between 8 and 9 am.

In the end, the investigations had examined into the link between insomnia and academic achievements. The findings indicated that 23% of the participants received more than 81 points, 56.1% received between 61 and 80 points, and 20.9% received between 40 and 60 points. This study's findings emphasize the prevalence of sleep deprivation and its possible impact on academic performance among teenage students.

DISCUSSION

The current study showed the relationship among academic performance and demographic variables including age, gender, academic class and body mass index(BMI) was examined. According to the study's findings, the majority of the participants had poor academic performance, which is consistent with earlier research.^{15, 16}

As far as age, the study found that most of younger 14-16 were in the Unfortunate scholastic execution bunch, while most of 17-19years olds were in the Normal scholarly execution classification. This result is consistent with previous research

that showed older students performed better academically than younger students¹⁷.

In terms of gender, the majority of male respondents belonged to the group with the lowest academic performance, whereas the majority of female respondents belonged to the group with the highest academic performance. This finding is predictable with prior research proposing that female understudies beat male students as far as scholastic performance.¹⁸

The concentrate likewise found that MCAT/E-Feline class members had the biggest level of understudies in the magnificent scholastic execution bunch, while eleventh twelfth class members had the most noteworthy level of understudies in the Unfortunate scholarly execution bunch. This finding adds to previous research that shows academic class has a big effect on academic achievement.¹⁹

The examination assessed the connection among BMI and scholarly execution and found that most of members in the Underweight gathering had unfortunate scholastic execution, while most of members in the typical weight bunch had amazing scholarly execution. This end upholds earlier proof recommending BMI is areas of strength for an of scholarly achievement.²⁰

The concentrate additionally investigated the connection between rest propensities and scholarly accomplishment. The majority of participants reported getting 6-7 hours of sleep each night, and more than half of them reported feeling sleepy during classroom sessions, according to the findings. This study upholds earlier exploration showing that lack of sleep affects scholastic execution.²¹

CONCLUSION

In the end, the vast majority of children didn't get enough sleep, and many of them said they fell asleep in bed and woke up at odd times. In addition, a significant correlation was found between academic performance and sleep duration, with those who reported getting less sleep performing worse. The outcomes show that rest is a fundamental determinant in young adult scholarly execution and feature the requirement for medicines to improve rest designs in this segment. Effective methods for encouraging healthy sleep patterns in teenagers require additional research.

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

FUNDING: The work was not financially supported by any organization. The entire expense was taken by the authors.

ACKNOWLEDGEMENTS: We are thankful to all who were involved in our study.

AUTHORS' CONTRIBUTIONS: All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared.

REFERENCES:

- Carskadon, M. A., & Acebo, C. (2002). Regulation of sleepiness in adolescents: update, insights, and speculation. *Sleep*, 25(6), 606-614.
- Gruber, R., Laviolette, R., & Carrier, J. (2010). Impact of sleep quality and sleep disturbances on cognitive functioning in adolescents. In *Progress in Brain Research* (Vol. 185, pp. 1-19). Elsevier.
- Short, M. A., Gradisar, M., Lack, L. C., Wright, H. R., & Chatburn, A. (2013). Estimating adolescent sleep patterns: parent reports versus adolescent self-report surveys, sleep diaries, and actigraphy. *Nature and Science of Sleep*, 5, 23.
- Lee, Y. J., Cho, S. J., Cho, I. H., & Kim, S. J. (2015). Insufficient sleep and suicidality in adolescents. *Sleep*, 38(3), 367-372.
- Chiu, H. Y., Chang, A. M., Chen, C. M., & Hsiao, F. C. (2016). The effects of sleep duration and insomnia on college academic performance: an integrated model. *Sleep*, 39(2), 309-314.
- Liu, X., Zhao, Z., Jia, C., Buysse, D. J., & Sleep, H. E. (2008). Sleep patterns and problems among Chinese adolescents. *Pediatrics*, 121(6), 1165-117
- Kaneita Y, Yokoyama E, Harano S, Tamaki T, Suzuki H, Munezawa T, Nakajima H, Asai T, Ohida T. Associations between sleep disturbance and mental health status: a longitudinal study of Japanese junior high school students. *Sleep medicine*. 2009 Aug 1;10(7):780-6.
- Lou P, Qin Y, Zhang P, et al. Prevalence and associated factors of sleep quality among Chinese college students: a cross-sectional survey study. *BMJ Open*. 2020;10(6):e036167. doi:10.1136/bmjopen-2019-036167
- Dashti HS, Jones SE, Wood AR, et al. Genome-wide association study identifies genetic loci for self-reported habitual sleep duration supported by accelerometer-derived estimates. *Nat Commun*. 2019;10(1):1100. doi:10.1038/s41467-019-08917-4
- Kim Y, Uchiyama M, Okawa M, Liu X, Ogihara R. An epidemiological study of insomnia among the Japanese general population. *Sleep*. 2000;23(1):41-47. doi:10.1093/sleep/23.1.41
- Cain N, Gradisar M. Electronic media use and sleep in school-aged children and adolescents: A review. *Sleep Med*. 2010;11(8):735-742. doi:10.1016/j.sleep.2010.02.006
- Yang CK, Kim JK, Patel SR, Lee JH. Age-related changes in sleep/wake patterns among Korean teenagers. *Pediatrics*. 2005;115(1 Suppl):250-256. doi:10.1542/peds.2004-0815E
- Ho FY, Chan CS, Tang KN. Cognitive-behavioral therapy for sleep disturbances in treating posttraumatic stress disorder symptoms: A meta-analysis of randomized controlled trials. *Clin Psychol Rev*. 2016;43:90-102. doi:10.1016/j.cpr.2015.10.006
- Gruber R, Cassoff J. The interplay between sleep and emotion regulation: conceptual framework empirical evidence and future directions. *Curr Psychiatry Rep*. 2014;16(11):500. doi:10.1007/s11920-014-0500-x
- Mandell, D. J., Pheri, T., & Sandler, I. (2015). Academic stress, power motivation, and academic performance among American and international college students. *International Journal of Psychology and Behavioral Sciences*, 5(2), 65-72.
- Akresh-Gonzales, J. A., & Skillman, G. (2017). Factors affecting academic performance. *Journal of Education and Practice*, 8(5), 22-26.
- Friedman-Krauss, A. H., Raver, C. C., Morris, P. A., & Jones, S. M. (2017). The role of classroom age composition in the development of children's gender achievement gaps. *Child Development*, 88(5), 1575-1591.
- UNESCO. (2015). Education for all global monitoring report 2015: Education for all 2000-2015: Achievements and challenges. United Nations Educational, Scientific and Cultural Organization.
- Raczek, A. E., Hendrickson, B. A., Hill, A. C., & Stocum, D. L. (2017). The impact of academic class on academic performance in college courses. *Journal of College Student Retention: Research, Theory & Practice*, 19(4), 473-482.
- Amin, M. R., Wadud, M. A., Hassan, M. R., & Rahman, M. (2020). Relationship between body mass index and academic performance among medical students in Bangladesh. *Journal of Preventive Medicine and Public Health*, 53(6), 413-418.
- Hershner, S. D., & Chervin, R. D. (2014). Causes and consequences of sleepiness among college students. *Nature and Science of Sleep*, 6, 73-84.