DOI: https://doi.org/10.54393/pjhs.v6i6.3042

PAKISTAN JOURNAL OF HEALTH SCIENCES
(LAHORE)
https://thejas.com.pk/index.php/pjhs
ISSN (E): 2790-9352, (P): 2790-9344
Volume 6, Issue 06 (June 2025)

Original Article

OPEN ACCESS

Correlation of Depression and Nightmares in Young Medical Students

Kanza Yousaf[1*] and Hafiza Hina Pasha[2]

[1]Department of Surgery, Shalamar Hospital, Lahore, Pakistan
[2]Department of Physiology, Shalamar Medical and Dental College, Lahore, Pakistan

ARTICLE INFO

Keywords:
Nightmare, Depression, Sleep Disorders, Symptoms, Cross-Sectional Studies

How to Cite:
Yousaf, K., & Pasha, H. H. (2025). Correlation of Depression and Nightmares in Young Medical Students: Correlation of Depression and Nightmares. Pakistan Journal of Health Sciences, 6(6), 207-211. https://doi.org/10.54393/pjhs.v6i6.3042

***Corresponding Author:**
Kanza Yousaf
Department of Surgery, Shalamar Hospital, Lahore, Pakistan
hina.pasha@sihs.org.pk

Received Date: 8th April, 2025
Revised Date: 14th June, 2025
Acceptance Date: 21st June, 2025
Published Date: 30th June, 2025

ABSTRACT

Consistent dream sequences that appear genuine and become more upsetting as they progress are known as nightmares. A prevalent condition that significantly impairs psychosocial performance and lowers quality of life is major depression. Insomnia and nightmares independently but additionally have an impact on the exacerbation of depression. **Objectives:** To find the correlation between depression and nightmares in young medical students. **Methods:** A cross-sectional study was carried out from September 2021 to June 2022, involving 350 medical students aged 18 to 30, distributed across all academic years. The symptoms of depression were measured and assessed using the CES-D scale, while nightmares were evaluated by using a validated sleep 50 questionnaire. Data were analyzed in SPSS version 27.0. **Results:** A total of 350 medical students (49.1% male and 50.9% female), with most aged 19 to 23 years, 91.4%, and single, 97.7%. The mean CES-D score was 23.0 ± 12.42, higher in females 24.8% than in males 21.0. Severe depression was more common in females 44.9%) and first-year students 58.6%. Frequency of nightmares was reported by 23.9%, and the depressed feelings and the frequency of nightmares are significantly correlated (P=0.019). Pearson correlation analysis shows a substantial correlation between the frequency of nightmares and depressive moods. (P≤0.01). **Conclusion:** The study concluded a significant association between depression symptoms and nightmares, particularly in females and younger medical students. Academic and social factors significantly influence depression symptoms.

INTRODUCTION

Depression is a prevalent mental illness marked by persistent melancholy and an indifference to previously enjoyable events. It is often accompanied by difficulty performing daily activities for at least two weeks [1]. Depression symptoms begin at an early age and may either persist or increase over time, depending on an individual's environmental exposure and coping capacity throughout their life [2]. In 2015, over 300 million individuals were estimated to be living with depression, with a global prevalence rate of 4.4%. In Vietnam, depression affects approximately 4.0% of the population, and it occurs in every age group all over the world [3, 4]. It has been noted that medical students experience depression significantly higher compared to their non-medical peers. According to Rorenstein et al.'s systematic review, the pervasiveness of depressive symptoms in medical students ranges from 27% to 55%, influenced by factors such as academic pressure, lack of sleep, and exposure to traumatic clinical experiences. Depression not only affects their academic performance but also has long-term consequences on their professional competencies and patient care [5]. Sleep and issues related to insomnia have received more attention in recent years. Nightmares are disturbing dreams that often involve scenarios of danger, harm, or threats to personal safety, frequently waking the individual from sleep [6]. They may have no known cause, be brought on by post-traumatic stress disorder, or be a side effect of some drugs. Repeated nightmares have been linked to

DOI: https://doi.org/10.54393/pjhs.v6i6.3042

general psychological challenges and certain psychological disorders, such as serious depression and post-traumatic stress disorder, schizophrenia, and borderline personality disorder [7, 8]. One study reported that frequent nightmares are predictive of depression severity, suggesting that disturbed dreaming may serve as a biomarker for mental health disorders [9]. Recent studies have highlighted a significant correlation between depression and nightmares among healthcare students. According to a 2023 meta-analysis, over 23.5% of medical students in Germany had clinically significant depression symptoms, a rate 2.4 times higher than the general population. This elevated prevalence is attributed to academic pressures, sleep disturbances, and exposure to traumatic clinical experiences. Notably, the study found a close relationship between depression and nightmares, with 16.2% of students experiencing nightmares alongside depressive symptoms [10]. Nightmares disorders have been related to conditions such as insomnia, excessive daytime sleepiness, and persistent fatigue. Thus, this study's main goal is to look into the frequency of nightmares among medical students and explore their potential correlation with gender differences.

METHODS

An analytical cross-sectional study was carried out from September 2021 to June 2022. The sample size was calculated using the WHO calculator n=z2.qp/d2 (n: The required sample size. z: the z-score corresponding to the desired confidence level. p: the estimated proportion of the attribute of interest in the population. q: the complement of p, i.e., q=1-p. d: The desired margin of error or precision. The calculated sample size was 350 medical students, with a 1% margin of error and a 95% confidence level, taking an expected percentage of nightmares in young adults of 16.3% [11]. Upon acceptance by Shalamar Medical and Dental College Institutional Review Board (Ref: SMDC-IRB/AL/158/2021, IRB No: 0325). Data were collected using a non-probability sampling technique. Both male and female MBBS students of all years were included in the study. Students diagnosed with neurological or psychiatric disorders and taking any medication that significantly affects sleep patterns were excluded from the study. After obtaining consent, the questionnaire was shared via Google Forms. It consisted of three sections: demographic information (age, gender, and year of study), questions for assessing depression, and questions for assessing nightmares. The 20-item self-reported CES-D is a validated tool for evaluating depression symptoms. Likert scales with four points, from 0.0 (rarely or never) to 3.0 (most or always), are associated with each item. Scores>16 suggest the presence of significant depression symptoms [12]. The validated SLEEP-50 questionnaire was used to evaluate nightmares. A scale of 1 to 4 was used to rate each item. The questionnaire was scored by summing the responses to items. The scores of items 32 (>3) and items 33- 35 (>9) were the cut-off value to identify nightmares [13]. The questionnaire was shared with the students during their mid-semester. Data were analyzed in SPSS version 27.0. Age and CES-D score were presented as mean and SD. Gender, year of study, social status, and nightmare score were presented as frequencies and percentages. The data distribution was evaluated using the Shapiro-Wilk Test. Chi-square was used to analyze the relationship of severity of symptoms with gender, age, social status, and academic year, while a one-way ANOVA was employed for comparison of the mean scores of depression to nightmares. Pearson's correlation analysis was applied to check the significance of depression scores and nightmares. A P-value of less than 0.05 was considered significant.

RESULTS

In the study, 350.0 medical students participated, comprising 172 (49.1%) males and 178 (50.9%) females. Among these students, most were 19 to 23 years old (91.4%), and were single 342, 97.7%). According to the academic year, 116 (33.1%) from the first year, 63 (18.0%) from the second year, 127 (36.3%) from the third year, and 44 (12.6%) from the fourth year students (Table 1).

Table 1: Descriptive Statistics of Medical Students (n=350)

Variables	Category	N (%)
Gender	Male	172 (49.1)
	Female	178 (50.9)
Age Group (years)	19-23	320 (91.4)
	Others	30 (8.6)
Marital Status	Single	342 (97.7)
	Married/Other	8 (2.3)
Academic Year	First Year	116 (33.1)
	Second Year	63 (18.0)
	Third Year	127 (36.3)
	Fourth Year	44 (12.6)

The mean score for the CES-D was 23.0 ± 12.4 (average=21.0 for males and 24.8 for females). There was a significant difference in the average score between gender and age group. The prevalence of mild depressive symptoms was 32.3%, moderate level was 28.0%, and severe depression was 39.7% (Figure 1).

DOI: https://doi.org/10.54393/pjhs.v6i6.3042

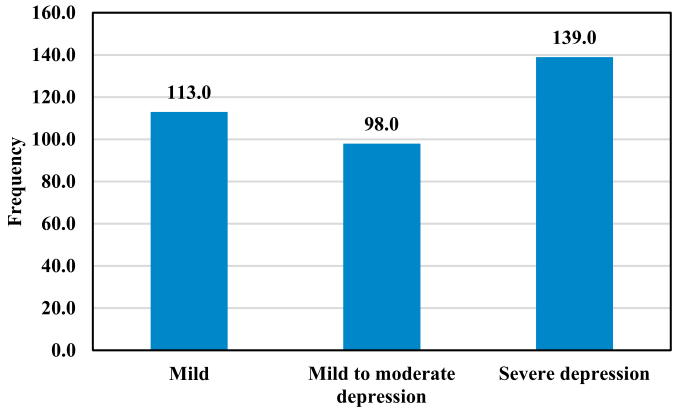

Figure 1: The Percentage of Depressive Symptoms among Students

Most individuals, 93 (26.6%), reported never experiencing nightmares, and 173 (49.4%) experienced them less than once a week. However, 60 (17.1%) experienced nightmares one to three times a week, and only 24 (6.9%) experienced them three or more times weekly, highlighting a smaller group with significant sleep disturbances potentially linked to underlying psychological factors (Figure 2).

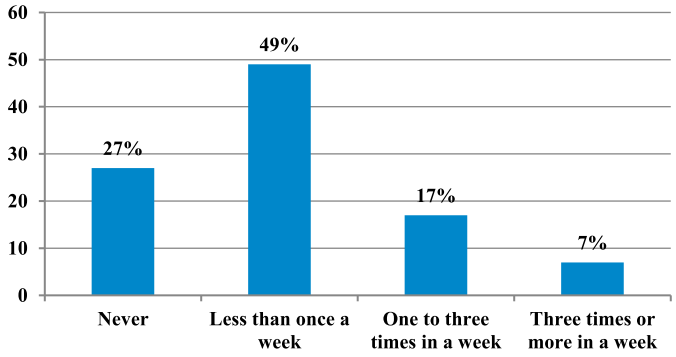

Figure 2: The Percentage of Nightmares among Students

Female participants reported higher rates of severe depression (44.9%) compared to males (34.3%), with males having a higher proportion of mild depression. Participants aged 17 to 21 reported the highest prevalence of severe depression (48.7%), compared to those aged above 21 (23.8%). The upper middle-class group had the highest prevalence of severe depression (44.3%), followed by the lower middle class (30.7%). Participants from the "elite" category exhibited the lowest rates of severe depression (17.6%). However, mild depression symptoms were more prevalent among those from the lower middle class (33.3%). These differences in depression symptoms based on social status were statistically significant (P=0.025). Severe depression was most common among first-year students (58.6%) and second-year students (46.0%), while third-year students showed the lowest prevalence of severe depression (23.6%). In contrast, mild depression symptoms were more common among third-year students (45.7%) and fourth-year students (43.2%). This distribution shows a significant association between academic year and depression symptoms (P=0.001) (Table 2).

Table 2: The Relationship of Severity of Symptoms with Gender, Age, Social Status, and Academic Year (Chi-Square Test)

Depression Symptoms n (%)					
Variables	**Category**	**Mild**	**Moderate**	**Severe**	**p-Value**
Gender	Male	66 (38.4)	47 (27.3)	59 (34.3)	0.015*
	Female	47 (26.4)	51 (28.7)	80 (44.9)	
Age (year)	17 to 21	62 (27.7)	53 (23.7)	109 (48.7)	0.040*
	>21	51 (40.5)	45 (35.7)	30 (23.8)	
Social Status	Poor	2 (66.7)	1 (33.3)	0	0.025*
	Lower middle class	25 (33.3)	27 (36.0)	23 (30.7)	
	Upper middle class	81 (31.8)	61 (23.9)	113 (44.3)	
	Elite	5 (29.4)	9 (52.9)	3 (17.6)	
Academic year	First year	22 (19.0)	26 (22.4)	68 (58.6)	0.001*
	Second year	14 (22.2)	20 (31.7)	29 (46.0)	
	Third year	58 (45.7)	39 (30.7)	30 (23.6)	
	Fourth year	19 (43.2)	13 (29.5)	12 (27.3)	

*P≤0.05 significant

Depression scores are almost similar across groups, ranging from 21.4 to 24.0, with the highest mean score observed in individuals experiencing nightmares one to three times a week. Group differences are statistically significant, as indicated by the P value of 0.019 (Table 3).

Table 3: Relationship between Nightmare Experience with Depression Score (One-Way ANOVA)

Nightmare Experience	**Depression Score**			
	N	**Mean ± SD**	**CI**	**p-Value**
Never	96	21.7 ± 12.0	(19.3 to 24.2)	0.019*
Less than once a week	182	22.2 ± 11.6	(20.5 to 23.9)	
One to three times a week	51	24.2 ± 12.5	(20.6 to 27.7)	
Three times or more in a week	21	22.4 ± 13.2	(16.3 to 28.4)	

Values are presented as mean ±SD, *P≤0.05 significant

A Pearson correlation analysis was conducted to examine the relationship between nightmare frequency and depressive symptoms. The results indicated a weak but statistically significant positive correlation (r=0.157, p=0.003), suggesting that students who experienced nightmares more frequently tended to have higher depression scores. While the strength of the association was modest, given the significant p-value, it is improbable that the association happened by chance (Table 4).

Table 4: Correlation between Nightmare Distress and Depression Symptoms Among Medical Students (Pearson Correlation)

Variables		**Nightmare Experience**	**Depression Scores**
Nightmare Experience	Pearson Correlation	1	-
	Sig. (2-tailed)	0.003	-
Depression Scores	Pearson Correlation	0.157**	1
	Sig. (2-tailed)	0.003	350.0

** Correlation is significant at the 0.01 level (2-tailed)

DOI: https://doi.org/10.54393/pjhs.v6i6.3042

DISCUSSION

Many tools were used to assess depression levels in the research population, often with differing cut-off points across studies [14, 15]. In current study, CES-D scale was used, a widely recognized self-report metric with proven reliability in different cultures. Study findings showed a mean CES-D score of 23.1, indicating depressive symptoms (CES-D scores of 16 or higher) among the students of medicine. This score was greater than the mean of 14.58 reported in a study of a diverse sample, including Asian society. These results highlight the need for education managers to address mental health issues among university students through screening and early intervention programs [16]. In this study, severe depression was more common in females 44.9% than males 34.3%, and in younger participants (48.7% for ages 17–21) compared to older ones (23.8%). In comparison, the weekly frequency of nightmares showed that male and female students differed significantly. Among females, 31.9% reported experiencing nightmares once a week compared to 4.1% of males. There were 9.8% versus 5.7% reported twice a week, 5.7% versus 0.8% three times weekly, and 3.2% versus 1.6% more than three times weekly. Overall, female students experienced nightmares more frequently than their male counterparts [17]. In the present study, female students reported higher rates of severe depression (47.8%) compared to males (34.3%), with males having a high frequency of normal depression. Previous study reported that 50.9% of males, mean age was 14.9±1.45, adolescents with frequent nightmares reported significantly higher nightmare distress and depressive symptoms ($P<0.001$) compared to those without nightmares [18]. Another study found that the mean age was 15.31+1.88 years, with 37.3% being boys. Frequent nightmares were reported by 49.3% of patients with psychosis. Females experience more depressive symptoms with nightmares and distress compared to males, and a significant association between them. Pearson correlation analysis revealed a slight positive correlation between nightmare experience and depression, with a significant relationship observed ($P<0.01$). In comparison, in a 2023 study conducted in emergency department nurses, there was a positive correlation between nightmare distress levels and depressive symptom scores ($r=0.732$). To lessen the incidence of depressed symptoms, early management is advised for professionals with this kind of sleep disturbance [19]. According to a study in European Psychiatry, 16.2% of depressed medical students reported having dreams, indicating a strong correlation between the frequency of nightmares and depressive symptoms [12]. Similarly, a meta-analysis in JAMA reported that approximately 27.2% of medical students exhibited depressive symptoms, a prevalence higher than that of the population [20]. These findings suggest that the demanding nature of medical education may contribute to increased psychological distress, manifesting as both depression and sleep disturbances like nightmares.

CONCLUSIONS

This study found an association between depression and nightmares among young medical students. Students experiencing frequent nightmares reported higher depression scores, with the strongest symptoms observed among females and first-year students. These findings highlight the potential of nightmares as clinical indicators of underlying depressive symptoms. Longitudinal and experimental studies are needed to clarify the directionality between nightmares and depression.

Authors Contribution

Conceptualization: KY
Methodology: KY, HHP
Formal analysis: KY
Writing review and editing: KY, HHP

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

Source of Funding

The author received no financial support for the research, authorship and/or publication of this article.

REFERENCES

[1] Zurawek D and Turecki G. The miRNome of depression. International Journal of Molecular Sciences. 2021 Oct; 22(21): 11312. doi: 10.3390/ijms222111312.

[2] Li D, Su M, Guo X, Liu B, Zhang T. The association between chronic disease and depression in middle-aged and elderly people: the moderating effect of health insurance and health service quality. Frontiers in Public Health. 2023 Jan; 11: 935969. doi: 10.3389/fpubh.2023.935969.

[3] Koo SK. Depression status in Korea. Osong public health and research perspectives. 2018 Aug; 9(4): 141. doi: 10.24171/j.phrp.2018.9.4.01.

[4] Lyus R, Buamah C, Pollock AM, Cosgrove L, Brhlikova P. Global burden of disease 2017 estimates for major depressive disorder: a critical appraisal of the epidemiological evidence. JRSM Open. 2023 Sep; 14(9): 20542704231197594. doi: 10.1177/20542704231197594.

[5] Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C *et al.* Prevalence of depression, depressive symptoms, and suicidal ideation among

DOI: https://doi.org/10.54393/pjhs.v6i6.3042

medical students: a systematic review and meta-analysis. Journal of the American Medical Association. 2016 Dec; 316(21): 2214–36. doi: 10.1001/jama.2016.17324.

[6] Edition F. Diagnostic and statistical manual of mental disorders. American Psychiatric Association. 2013; 21(21): 591–643.

[7] Spoormaker VI, Schredl M, Van Den Bout J. Nightmares: from anxiety symptom to sleep disorder. Sleep Medicine Reviews. 2006 Feb; 10(1): 19–31. doi: 10.1016/j.smrv.2005.06.001.

[8] Sheaves B, Rek S, Freeman D. Nightmares and psychiatric symptoms: a systematic review of longitudinal, experimental, and clinical trial studies. Clinical Psychology Review. 2023 Mar; 100: 102241. doi: 10.1016/j.cpr.2022.102241.

[9] Akkaoui MA, Lejoyeux M, d'Ortho MP, Geoffroy PA. Nightmares in patients with major depressive disorder, bipolar disorder, and psychotic disorders: a systematic review. Journal of Clinical Medicine. 2020 Dec; 9(12): 3990. doi: 10.3390/jcm9123990.

[10] Rueckert KK. Quality of life and depression in German medical students at foreign universities. In: RSU international conference on health and social science. 2016; 168.

[11] Wong SM, Hui CL, Cheung VK, Suen YN, Chan SK, Lee EH *et al.* Prevalence of frequent nightmares and their prospective associations with 1-year psychiatric symptoms and disorders and functioning in young adults: a large-scale epidemiological study in Hong Kong. Sleep. 2023 Apr; 46(4): zsac296. doi: 10.1093/sleep/zsac296.

[12] Radloff LS. The CES-D scale: a self-report depression scale for research in the general population. Applied Psychological Measurement. 1977 Jun; 1(3): 385–401. doi: 10.1177/014662167700100306.

[13] Spoormaker VI, Verbeek I, Van den Bout J, Klip EC. Initial validation of the sleep-50 questionnaire. Behavioral Sleep Medicine. 2005 Nov; 3(4): 227–46. doi: 10.1207/s15402010bsm0304_4.

[14] Cha JE, Waldie KE, Neumann D, Smith A, Walker CG. Psychometric properties and factor structure of the Center for Epidemiologic Studies Depression scale 10-item short form (CES-D-10) in Aotearoa New Zealand children. Journal of Affective Disorders Reports. 2022 Jan; 7: 100298. doi: 10.1016/j.jadr.2021.100298

[15] Bresolin JZ, Dalmolin GD, Vasconcellos SJ, Barlem EL, Andolhe R, Magnago TS. Síntomas depresivos en estudiantes universitarios del área de la salud. Revista Latino-Americana de Enfermagem. 2020 Feb; 28: e3239. doi: 10.1590/1518-8345.3210.3239.

[16] Cosco TD, Lachance CC, Blodgett JM, Stubbs B, Co M, Veronese N *et al.* Latent structure of the centre for epidemiologic studies depression scale (CES-D) in older adult populations: a systematic review. Aging and Mental Health. 2020 May; 24(5): 700–4. doi: 10.1080/13607863.2019.1566434.

[17] Mansour TM, Yousef M, Mansour TM, Yousef M. Nightmares among young medical students. Biomedical Research. 2016 Jan; 27(2): 437–41.

[18] Yang XF, Liu ZZ, Liu SJ, Jia CX, Liu X. Nightmare distress as a mediator between frequent nightmares and depressive symptoms in Chinese adolescents. Journal of Affective Disorders. 2022 Jan; 296: 363–9. doi: 10.1016/j.jad.2021.09.072.

[19] Gan QW, Yu R, Lian ZR, Yuan YL, Li YP, Zheng LL. Relationship between nightmare distress and depressive symptoms in Chinese emergency department nurses: A cross-sectional study. World Journal of Psychiatry. 2023 Dec; 13(12): 1087. doi: 10.5498/wjp.v13.i12.1087.

[20] Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C *et al.* Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. Journal of the American Medical Association. 2016 Dec; 316(21): 2214–36. doi: 10.1001/jama.2016.17324.