"THE PREVALENCE OF SLEEP DISTURBANCES AND MENTAL DISTRESS AMONG PHYSIOTHERAPY STUDENTS"

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ABSTRACT

Background: Sleep is crucial for physical recovery, cognitive function, and psychological well-being. Sleep disturbances are increasingly common among university students, especially in health-related disciplines. Academic workload, irregular schedules, clinical demands, and digital device use may predispose physiotherapy students to poor sleep and psychological distress. However, limited research has been conducted on this issue in India.

Objective: To assess the prevalence of sleep disturbances, anxiety, and depression among physiotherapy students.

Methodology: A cross-sectional survey was conducted among 120 physiotherapy students at Dr. B. R. Ambedkar College of Physiotherapy, Bangalore. Data were collected through an online questionnaire that included demographic details and validated tools: the Pittsburgh Sleep Quality Index (PSQI), Anxiety Symptoms Questionnaire (ASQ), and Beck Depression Inventory-I (BDI-I). Statistical analysis was performed using SPSS version 23.0. Descriptive statistics summarized prevalence, and Chi-square tests assessed associations ($p < 0.05$).

Results: The mean age of participants was 20.7 ± 1.5 years; 80.8% were female. Poor sleep quality (PSQI > 5) was reported by 66.7% of students. Anxiety symptoms were present in 41.7% (23.3% mild, 12.5% moderate, and 5.8% severe). Depressive symptoms were prevalent, with 93.3% reporting minimal to severe levels, including 24.2% severe cases. Poor sleepers showed higher rates of anxiety and depression; however, the associations were not statistically significant ($p = 0.072$ for anxiety; $p = 0.659$ for depression), suggesting these differences may have occurred by chance.

Conclusion: Sleep disturbances, anxiety, and depression were highly prevalent among physiotherapy students. Although the associations did not reach statistical significance, the observed trends suggest a potential clinical

link. Early screening, sleep hygiene education, and institutional support may help safeguard students' mental health and academic performance.

Keywords: *Sleep quality; Sleep disturbances; Anxiety; Depression; Physiotherapy students; Mental health.*

INTRODUCTION

Sleep is an essential biological process that supports physical restoration, cognitive functioning, and emotional regulation. Adequate sleep improves learning capacity, mood stability, and overall well-being, whereas insufficient or disturbed sleep contributes to fatigue, reduced concentration, and impaired academic performance[1]. In recent years, increasing attention has been directed toward sleep health as an integral component of both physical and mental health[2]. College students, in particular, are a vulnerable group, as academic pressures, irregular study habits, late-night electronic device use, and social demands frequently disrupt normal sleep patterns[3].

Mental distress, encompassing depression, anxiety, and stress, is another major public health issue among young adults. According to the Global Burden of Disease (GBD) study, depression and anxiety together account for a substantial proportion of disability-adjusted life years worldwide, with an increasing trend between 1990 and 2019[4]. The interaction between sleep disturbances and mental distress is well established: poor sleep not only predicts the onset and severity of mental disorders but is also a common symptom and consequence of these conditions[5],[11],[12].

Several studies have emphasized the burden of sleep disorders in university students. Gaultney (2010) reported that nearly 27% of college students were at risk of at least one sleep disorder, which significantly impacted academic performance[5]. Similarly, Lund et al. (2010) highlighted irregular sleep patterns, short sleep duration, and poor quality of sleep as highly prevalent among college students[7]. Rezaei et al. (2018) found that poor sleep quality significantly impaired academic performance among medical sciences students[8]. These findings suggest that sleep health is strongly tied to educational outcomes, making it a crucial concern for student populations.

Beyond academics, sleep disturbance is an important mental health risk factor. Nyer et al. (2013) demonstrated that sleep disturbance was strongly associated with depression, anxiety, and impaired functioning in college students[1]. Longitudinal studies such as the Zurich cohort by Vollrath et al. (1989) confirmed insomnia as a predictor of later mental health problems[11], while Taylor et al. (2003) identified insomnia as an independent health risk factor contributing to both physical and psychiatric morbidity[12]. These studies establish sleep problems as not merely symptoms but also precursors of psychological morbidity.

The COVID-19 pandemic further worsened this scenario. Li Y et al. (2021) reported that college students faced elevated risks of anxiety, depression, and poor sleep due to disrupted routines, uncertainty, and increased digital screen exposure[6]. Such findings underscore the continuing importance of addressing sleep and mental health challenges in student populations.

Physiotherapy students are particularly vulnerable due to the unique demands of their training. Their curriculum combines theoretical coursework, skill-based practical training, and clinical exposure, often requiring long hours of study, irregular schedules, and early patient interactions. Stress, workload, and performance expectations contribute significantly to poor sleep and mental distress[9],[10]. Shaikh et al. (2019) reported high stress levels among physiotherapy students in India, closely linked with poor sleep quality[9]. Similarly, Akhtar et al. (2020) found a strong association between poor sleep and adverse mental health outcomes among physiotherapy students in Pakistan[10]. These findings highlight the susceptibility of physiotherapy students compared to peers in non-health disciplines.

Recent international studies reinforce this concern. Quek et al. (2019) reported that one in three medical students globally suffered from anxiety, while Rotenstein et al. (2016) found that approximately 27.2% experienced depression, with 11.1% reporting suicidal ideation[14],[15]. These findings emphasize that mental health concerns among health sciences students are not confined to specific regions but represent a global challenge.

The bidirectional relationship between sleep disturbances and psychological distress is particularly important. Alvaro et al. (2013), in a systematic review, concluded that insomnia and poor sleep interact with depression and anxiety in a cyclical manner, where each condition worsens the other[16]. This interaction creates a vicious cycle for students, amplifying both academic and psychological difficulties. Such interdependence highlights the need to examine sleep disturbances and mental distress together rather than in isolation.

Despite growing evidence, there remains a scarcity of studies focusing specifically on physiotherapy students. Most existing research targets medical students or general college populations, leaving a gap in understanding the unique vulnerabilities of physiotherapy students. Considering their dual academic and clinical demands, physiotherapy students may face greater risks of sleep disturbance and psychological distress. Therefore, this study aims to determine the prevalence of sleep disturbances and mental distress among physiotherapy students at Dr. B. R. Ambedkar College of Physiotherapy, Bangalore. By focusing on this specific population, the study seeks to generate evidence that can inform institutional interventions, such as stress management workshops, sleep hygiene programs, and mental health support systems. Ultimately, such initiatives aim to enhance both student well-being and academic performance.

NEED OF THE STUDY

Sleep disturbances and mental distress are common among university students. Still, physiotherapy students may be at greater risk because of the combined academic, clinical, and practical training demands of their curriculum. Poor sleep quality and psychological
Distress can impair learning, reduce clinical performance, and negatively influence future
professional competence. Although studies on medical and general college students exist, there is limited research specifically focusing on physiotherapy students in India. Understanding, the prevalence of sleep disturbances, anxiety, and depression in this population is essential to identify their unique vulnerabilities, develop preventive strategies, and guide institutional policies aimed at improving student well-being and academic success.

AIM

The aim of the study is to investigate the impact of sleep disturbances and mental distress among physiotherapy students.

OBJECTIVE

This study aims to examine the prevalence of sleep disturbances and mental distress among physiotherapy students, with particular focus on their sleep quality, anxiety and depression.

HYPOTHESIS

NULL HYPOTHESIS:

There is no significant association between sleep quality and mental distress (anxiety and depression) among physiotherapy students.

ALTERNATIVE HYPOTHESIS:

Poor sleep quality is significantly associated with higher levels of mental distress (anxiety and depression) among physiotherapy students.

METHODOLOGY

Study Design:

A cross-sectional survey was conducted.

Source of Data:

The study was carried out at Dr. B. R. Ambedkar College of Physiotherapy, Bangalore.

Sample Size:

A total of 120 physiotherapy students participated.

Sampling Method:

A stratified sampling method was employed to ensure proportional representation across different years of study.

Study duration: 4 weeks

Inclusion Criteria:

- Enrolled physiotherapy students.
- Access to an online survey.
- Age: 18–26 years.
- Willingness to participate and provide informed consent electronically.

Exclusion Criteria:

- Non-physiotherapy students.
- Graduated or internship-completed students.
- Incomplete survey responses.
- Pre-existing severe medical or psychiatric conditions.

Outcome Measures:

1. **Pittsburgh Sleep Quality Index (PSQI**): Assesses sleep quality over the past month, with scores ranging from 0 to 21. A score >5 indicates poor sleep quality.

2. **Anxiety Symptoms Questionnaire (ASQ):** Evaluates the presence and severity of anxiety symptoms, classifying respondents into normal, mild, moderate, or severe categories.

3. **Beck Depression Inventory (BDI-I):** Measures depressive symptoms across 21 items scored from 0–3, with cut-offs for minimal (0–13), mild (14–19), moderate (20–28), and severe (29–63) depression.

Procedure:

1. The study protocol was approved by the Institutional Ethics Committee, and all participants provided written informed consent prior to participation.

2. Eligible physiotherapy students were invited to participate and were briefed about the study objectives, procedures, and confidentiality measures.

3. Data were collected using a structured online questionnaire that included demographic information and validated instruments: the Pittsburgh Sleep Quality Index (PSQI) for sleep assessment, the Anxiety Symptoms Questionnaire (ASQ) for anxiety evaluation, and the Beck Depression Inventory-I (BDI-I) for depressive symptoms.

4. Participants completed the questionnaire voluntarily, with assurances of anonymity and the right to withdraw at any time.

5. Responses were screened for completeness and eligibility, excluding incomplete or ineligible entries.

6. Cleaned data were entered into SPSS version 23.0 for analysis. Descriptive statistics summarized demographic characteristics and prevalence rates, while the Chi-square test was used to examine associations between sleep quality and mental distress, with significance set at $p<0.05$.

STATISTICAL ANALYSIS

The statistical analysis was done using SPSS 23.0. The categorical variables were represented in frequency and percentage. Categorical variables were analyzed using Chi square test A p value <0.05 was considered statistically significant.

Table 1: Distribution based on age

Age	Frequency	Percentage
<=20 years	55	45.833
>20 years	65	54.167
Total	120	100

The study included a total of 120 participants with ages ranging from 18 to 26 years. The mean age was 20.72 ± 1.51 years. Nearly half of the participants (45.8%) were aged 20 years or below, while the remaining 54.2% were above 20 years, indicating that the study population was almost equally distributed across the two age groups.

Figure 1: Representation of age

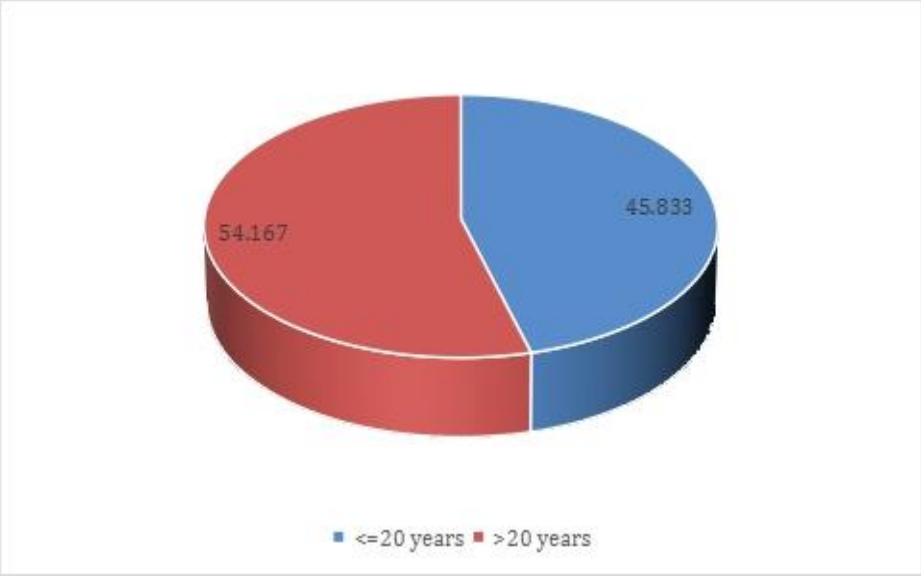


Table 2: Distribution based on gender

Gender	Frequency	Percentage
Female	97	80.8
Male	23	19.2
Total	120	100.0

Out of the 120 participants, the majority were females, accounting for 80.8% (n = 97), while males comprised 19.2% (n = 23). This indicates that the study population was predominantly female.

Figure 2: Representation based gender

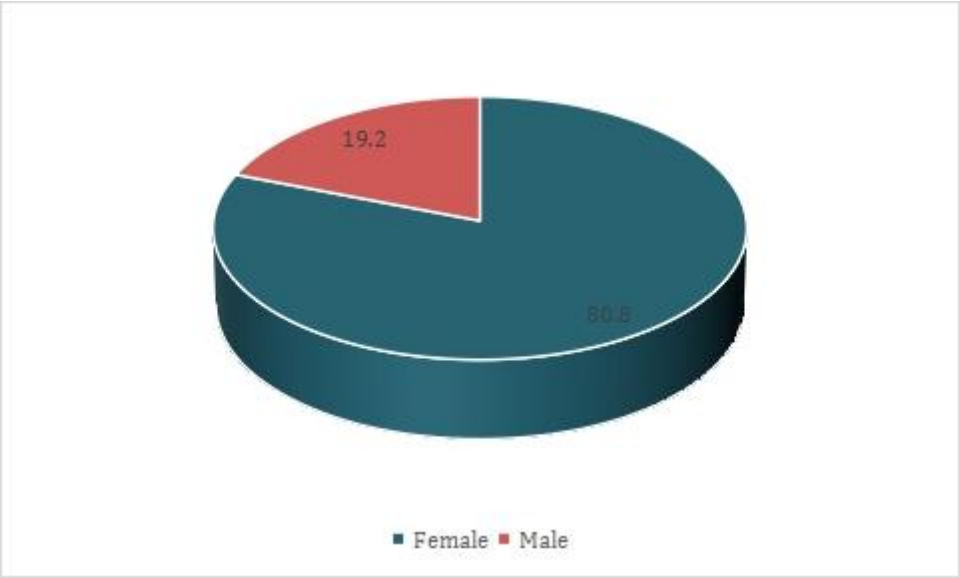


Table 3: Distribution based on Pittsburgh Sleep Quality Index

PSQI	Frequency	Percentage
GOOD SLEEP QUALITY	40	33.3
POOR SLEEP QUALITY	80	66.7
Total	120	100.0

Out of 120 participants, 40 (33.3%) had good sleep quality, while the majority, 80 (66.7%), reported poor sleep quality as per the PSQI assessment.

Figure 3: Representation of Sleep Quality

Table 4: Distribution based on Anxiety Symptoms Questionnaire Index

ANXIETY SYMPTOMS QUESTIONNAIRE(ASQ)	Frequency	Percentage
NORMAL	70	58.3
MILD	28	23.3
MODERATE	15	12.5
SEVERE	7	5.8
Total	120	100.0

According to the Anxiety Symptoms Questionnaire, more than half of the participants (58.3%, n = 70) reported no anxiety symptoms, while 23.3% (n = 28) had mild symptoms. Moderate anxiety symptoms were observed in 12.5% (n = 15) of participants, and 5.8% (n = 7) reported severe anxiety symptoms. This suggests that although the majority were symptom-free, a considerable proportion of participants experienced varying degrees of anxiety.

Figure 4: Representation of Anxiety

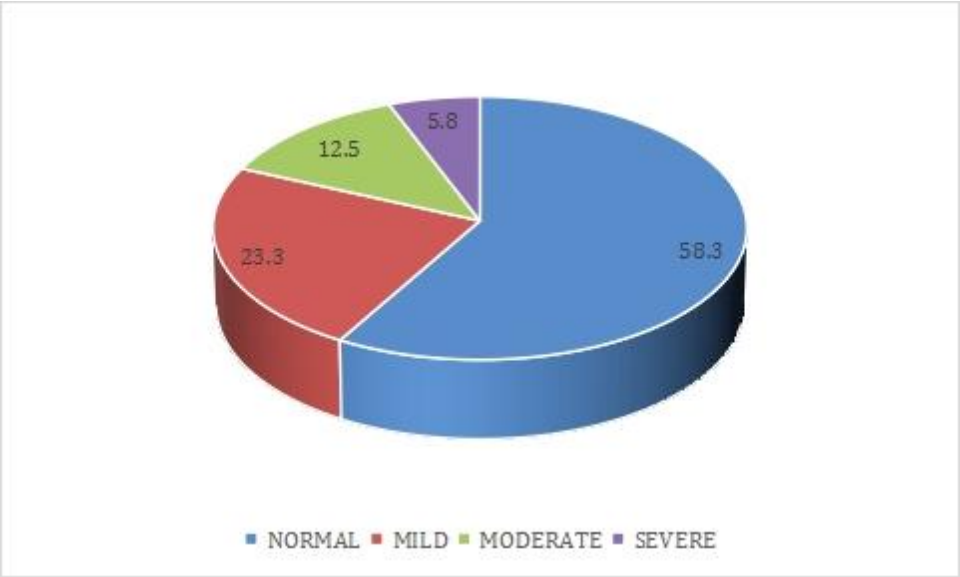


Table 5: Distribution based on Beck Depression Index

BECK DEPRESSION INDEX -1	Frequency	Percentage
MILD DEPRESSION	21	17.5
MINIMAL DEPRESSION	41	34.2
MODERATE DEPRESSION	21	17.5
NO DEPRESSION	8	6.7
SEVERE DEPRESSION	29	24.2
Total	120	100.0

Based on the Beck Depression Inventory (BDI-I), 6.7% (n = 8) of participants reported no depression, while 34.2% (n = 41) had minimal depression. Mild and moderate depression were observed in 17.5% each (n = 21 for both categories). A notable proportion, 24.2% (n = 29), experienced severe depression. These findings indicate that the majority of participants exhibited some level of depressive symptoms, with a considerable percentage falling into the severe depression category.

Figure 5: Representation based on BECK DEPRESSION INDEX -1

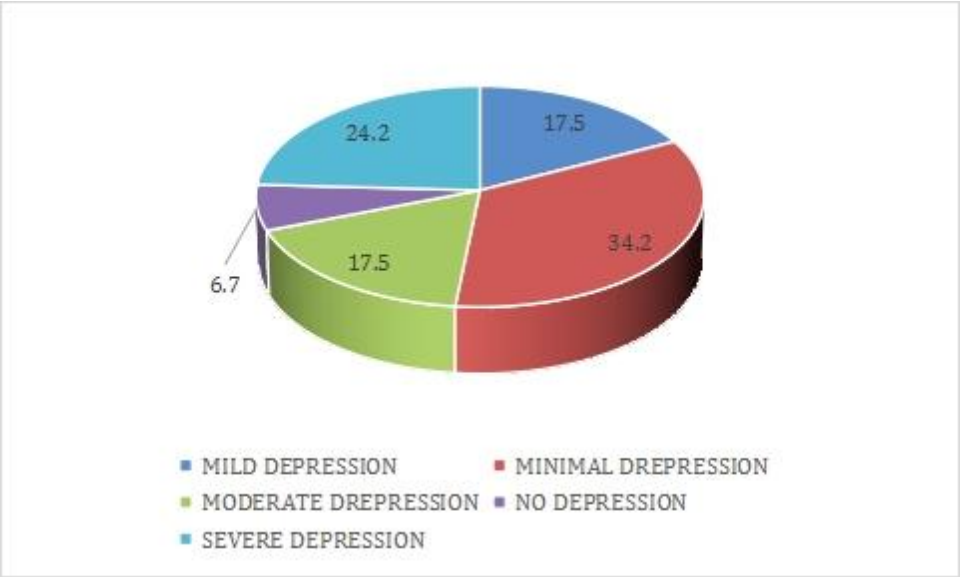


Table 6: Association between Sleep quality and Anxiety

PSQI	ANXIETY				Chi square	p value
	MILD	MODERATE	SEVERE	NORMAL		
GOOD SLEEP QUALITY	6	3	1	30		
	15.0%	7.5%	2.5%	75.0%		
POOR SLEEP QUALITY	22	12	6	40		
	27.5%	15.0%	7.5%	50.0%		
Total	28	15	7	70		
	23.3%	12.5%	5.8%	58.3%	6.986	0.072

Among participants with good sleep quality, most (75%) had normal anxiety levels, while only a small proportion showed mild (15%), moderate (7.5%), or severe anxiety (2.5%). In contrast, those with poor sleep quality had higher proportions of mild (27.5%), moderate (15%), and severe anxiety (7.5%), with only half (50%) showing normal anxiety. The association between sleep quality and anxiety was not statistically significant (χ^2=6.986, p=0.072).

Figure 6: Representation of Sleep quality and Anxiety

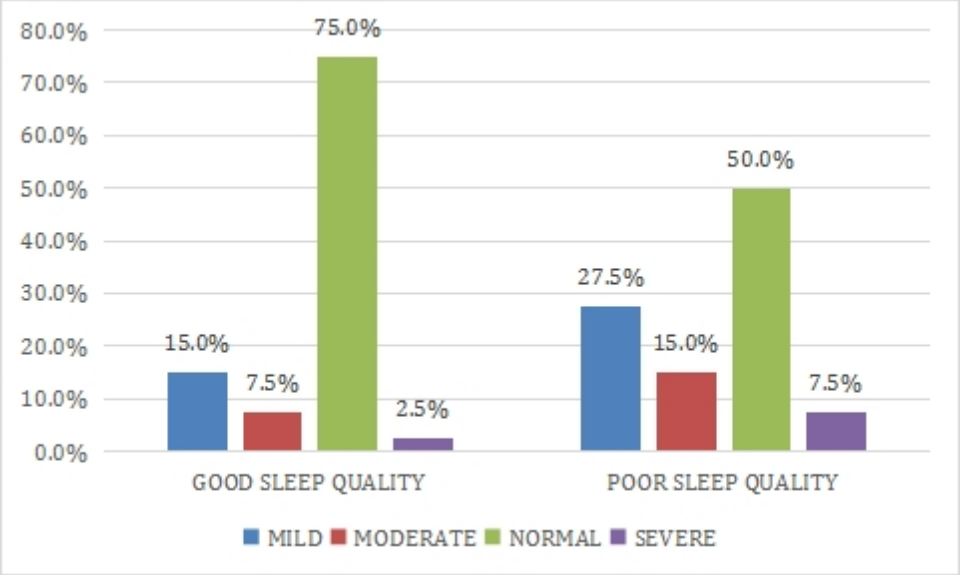
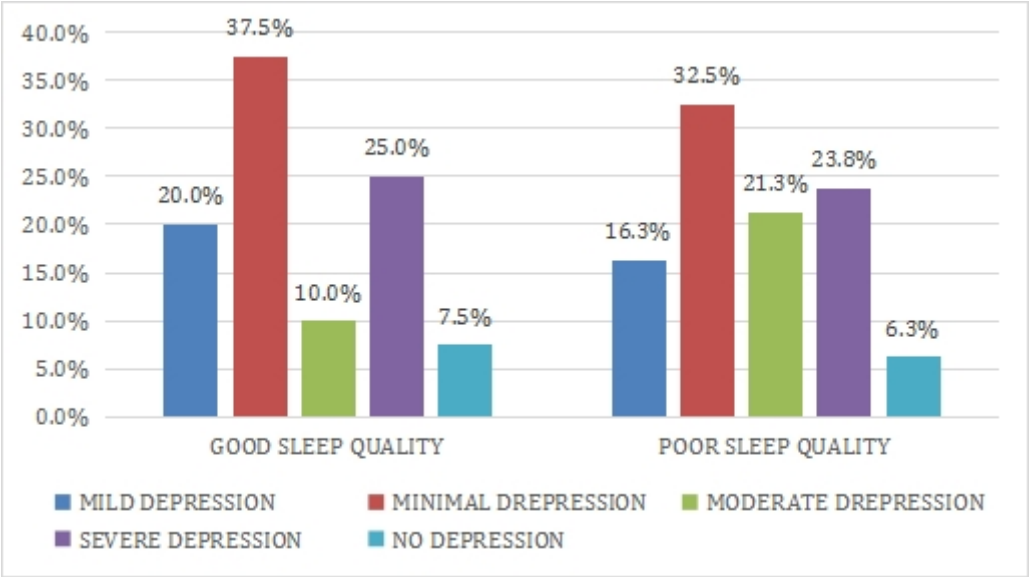


Table 7: Association between Sleep quality and Depression

PSQI	DEPRESSION					Chi square	p value
	MILD DEPRESSION	MINIMAL DEPRESSION	MODERATE DEPRESSION	SEVERE DEPRESSION	NO DEPRESSION		
GOOD SLEEP QUALITY	8	15	4	10	3		
	20.0%	37.5%	10.0%	25.0%	7.5%		
POOR SLEEP QUALITY	13	26	17	19	5		
	16.3%	32.5%	21.3%	23.8%	6.3%		
Total	21	41	21	29	8		0.659
	17.5%	34.2%	17.5%	24.2%	6.7%	2.418	

Among participants with good sleep quality, the highest proportion had minimal depression (37.5%), followed by severe (25%) and mild depression (20%), while moderate (10%) and no depression (7.5%) were less common. In contrast, those with poor sleep quality showed relatively higher rates of moderate depression (21.3%) and comparable levels of minimal (32.5%), severe (23.8%), and mild depression (16.3%). However, the association between sleep quality and depression was not statistically significant (χ^2=2.418, p=0.659).

Figure 8: Representation of Sleep quality and Depression



RESULT

A total of 120 physiotherapy students participated in the study, with ages ranging from 18 to 26 years (mean age 20.72 ± 1.51 years), . Nearly half of the participants (45.8%, n = 55) were 20 years old, while 54.2% (n = 65) were older than 20 years. The majority were female (80.8%, n = 97), with males accounting for 19.2% (n = 23).

Assessment of sleep quality using the Pittsburgh Sleep Quality Index (PSQI) showed that 66.7% (n = 80) of students had poor sleep quality, while 33.3% (n = 40) reported good sleep quality. Regarding anxiety, 58.3% (n = 70) reported no symptoms, whereas 23.3% (n = 28) had mild anxiety, 12.5% (n = 15) had moderate anxiety, and 5.8% (n = 7) experienced severe anxiety.

Depression, measured using the Beck Depression Inventory-I (BDI-I), was also prevalent. Only 6.7% (n = 8) reported no depression, while 34.2% (n = 41) had minimal depression, 17.5% (n = 21) mild depression, 17.5% (n = 21) moderate depression, and 24.2% (n = 29) severe depression.

Chi-square analysis revealed no statistically significant association between sleep quality and anxiety (χ^2 = 6.986, p = 0.072) or between sleep quality and depression (χ^2 = 2.418, p = 0.659). Although poor sleep was more frequent among students with anxiety and depressive symptoms, these trends did not reach statistical significance.

DISCUSSION

This study revealed a high prevalence of sleep disturbances and mental distress among physiotherapy students. Poor sleep quality was reported by 66.7% of participants, consistent with prior research showing that 30–70% of health science students experience significant sleep disruption (Azad et al., 2015; Nair et al., 2024). The demanding nature of physiotherapy education—rigorous academic schedules, early clinical postings, and prolonged study hours—may contribute to this high prevalence. Poor sleep in students is particularly concerning, as it impairs attention, memory consolidation, cognitive performance, and clinical decision-making (Buysse et al., 1989; Lund et al., 2010).

Anxiety symptoms were observed in 41.7% of participants, with mild, moderate, and severe anxiety reported by 23.3%, 12.5%, and 5.8%, respectively. Although the association between sleep quality and anxiety was not statistically significant ($\chi^2 = 6.986$, $p = 0.072$), participants with poor sleep showed higher levels of anxiety than those with good sleep. This trend aligns with previous evidence suggesting that disturbed sleep increases sympathetic nervous system activity and cortisol secretion, leading to hyperarousal and greater susceptibility to anxiety symptoms (Nyer et al., 2013; Moalla et al., 2016).

Depressive symptoms were also highly prevalent. Only 6.7% of students reported no depression, while 34.2% had minimal, 17.5% mild, 17.5% moderate, and 24.2% severe depression. In contrast to prior studies reporting significant associations between poor sleep and depressive symptoms (Lasa et al., 2002; Vaughan et al., 2019), this study did not find a statistically significant relationship ($\chi^2 = 2.418$, $p = 0.659$). This discrepancy may be attributed to multiple factors, including academic workload, psychosocial stressors, lifestyle habits, and interpersonal challenges. The predominance of females (80.8%) in the sample may have also influenced outcomes, as women are generally more likely to report depressive symptoms and heightened stress sensitivity (Schlarb et al., 2017).

The co-occurrence of poor sleep, anxiety, and depression underscores the complex bidirectional relationship between sleep and mental health. Poor sleep may exacerbate psychological distress through mechanisms such as rumination, emotional dysregulation, and circadian rhythm disruption, while anxiety and depression can further impair sleep quality, creating a cyclical pattern (Buysse et al., 1989; Nyer et al., 2013; Lund et al., 2010).

These findings highlight the need to integrate sleep hygiene education and mental health support into physiotherapy curricula. Structured sleep education, stress management workshops, mindfulness programs, yoga, and counseling services may help mitigate sleep disturbances and reduce psychological distress. Early screening and targeted interventions are essential to support academic performance, resilience, and long-term well-being (Azad et al., 2015; Schlarb et al., 2017).

Finally, the use of validated instruments—including the Pittsburgh Sleep Quality Index (PSQI), Anxiety Symptoms Questionnaire (ASQ), and Beck Depression Inventory (BDI)—enhances the reliability of these findings and allows comparison with international data (Buysse et al., 1989; Baker et al., 2019; Beck et al., 1961). Future research employing longitudinal designs and objective sleep assessments (e.g., actigraphy, polysomnography) is warranted to clarify causal relationships and inform tailored interventions.

CONCLUSION

This study revealed a high prevalence of poor sleep quality, anxiety, and depressive symptoms among physiotherapy students. Poor sleep was linked to higher levels of anxiety and moderate depression, although these associations were not statistically significant in this sample. These findings underscore the need for routine screening, preventive measures, and institutional support to manage sleep disturbances and mental distress among physiotherapy students.

LIMITATIONS

1. **Cross-sectional design** — precludes causal or temporal inferences between sleep disturbances and mental distress.
2. **Sample size and power** — with n = 120 and multiple severity categories, the study may be underpowered to detect modest associations.
3. **Single-center sampling and gender imbalance** — the sample was predominantly female (80.8%) and drawn from one institution, which limits generalizability.
4. **Self-report instruments** — PSQI, BDI, and anxiety questionnaires are subject to reporting bias and do not substitute for clinical diagnosis.
5. **Unmeasured confounders** — factors such as substance use, chronic physical illness, academic performance, social support, and objective sleep measures (e.g.,actigraphy,polysomnography) were not included.

RECOMMENDATIONS

1. Use longitudinal designs to clarify causal links.
2. Include larger, multi-center samples for generalizability.
3. Use objective sleep measures like actigraphy or polysomnography.
4. Evaluate targeted interventions for sleep and mental health.

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