PREVALENCE OF SLEEP DISORDERS IN PRIMARY HEALTH CARE CENTER, KARACHI, PAKISTAN

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Abstract

Introduction: *Sleep disorders are a growing concern worldwide, affecting individuals across various demographics. In Pakistan, limited research exists on the prevalence of sleep disorders in primary healthcare settings, particularly in urban areas like Karachi.*

Objectives: *The study aimed to assess the prevalence of sleep disorders among the general population attending a primary healthcare center in Sikanderabad, Karachi, and identify associated demographic and lifestyle factors.*

Materials and Methods: *A cross-sectional study was conducted using structured questionnaires, including the Pittsburgh Sleep Quality Index (PSQI) and the Epworth Sleepiness Scale, to assess sleep quality and daytime sleepiness. The sample consisted of 100 participants, including both male and female individuals from various socio-economic backgrounds.*

Results: *40% of participants reported poor sleep quality, with 55% experiencing excessive daytime sleepiness. Factors such as age, gender, income, and occupation were significantly associated with sleep disorders.*

Conclusion: *Sleep disorders are prevalent in Karachi, particularly among certain demographics, highlighting the need for targeted interventions in primary healthcare.*

INTRODUCTION

Sleep disorders have also become a very severe issue in the current world, affecting society and people of all ages. Published studies also show that insomnia and other sleep disturbances, including sleep apnea and daytime sleepiness, are quite common in various population groups. Sleep deprivation is also considered to lead to various adverse consequences on physical and mental health, such as depression, anxiety, cognitive dysfunction, cardiovascular diseases, and obesity. Sleep disorders are not very much researched in Pakistan, and there is a lack of empirical data to determine how much of a problem it is. Therefore, it is conceivable that Karachi, one of the largest cities in Pakistan, is an ideal location to

investigate the prevalence of sleep disorders which can be prevalent in primary health care centres since the clients of such centres constitute a fairly diverse population. Many research papers have also revealed that sleep disorders are rife in various parts of the globe. For instance, sleep disorders are prevalent, being found in 6% to 15% of the global population, with negative impacts on the population's health and productivity (Tahir et al., 2021). Nevertheless, there is a dearth of evidence reported from developing countries, especially in Asian regions (Sharif et al., 2024). The prevalence of sleep disorders in Pakistan has been evaluated in a couple of studies, and it is reported that around 10%-12.4 % of the population

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in Karachi has sleep disorders involving insomnia and sleep apnea (Mahar et al., 2023; Bibi et al., 2024). These statistics show that sleep disorders have the potential to be a public health issue in cities, including Karachi.

However, the situation is worse in Karachi, whereby psychological distress, environmental factors and some lifestyle choices have led to poor sleep quality. According to Afridi et al. (2021) and Khan et al. (2024), sleep disorders are linked to mental disorders such as depression and anxiety, which are current conditions affecting most people. Additionally, other factors, including noise pollution, shift working, irregular working pattern, and the use of mobile phones have considered as the causes of sleep disturbance (Mahar et al., 2023). Sleep deprivation is not just a health issue, as it immensely impacts academic achievements, work output, and the general well-being of an affiliate. Employees in Pakistan can also be categorized as having poor sleep quality, which leads to cognitive dysfunction in students, workers, and even healthcare personnel (Tahir et al., 2021). Therefore, it becomes imperative to know the extent of sleep disorders and its consequences in primary health care centers in Karachi for appropriate strategies to enhance the health of the populace to be developed.

This research aims to determine the existence of sleep disorders, especially in the Sikanderabad area of Karachi, and to define the relationships between the various demographic characteristics and lifestyle variables to poor sleep quality. Therefore, utilizing methods such as the Pittsburgh Sleep Quality Index (PSQI) and the Epworth Sleepiness Scale, this study gives a guideline on the degree of sleep problems in Karachi and the effects on public health. The study directly promote awareness of sleep disorders in Pakistan and thereby help formulate suitable policies, given the increasing problem of sleeplessness in urban populations. It is particularly worth noting that it is highly imperative that sleep disorders are diagnosed early enough and treated. Essentially, managing sleep-related disorders brings in better health status, reduced cost of health care and increased productivity. Thus, this study also stress a call for professionals to enhance the need for improvement in awareness and practice in the realm of managing sleep disorders.

Objective
This study aims to determine the frequency of sleep disorders in Primary Health Care Centers in Sikanderabad, Karachi, Pakistan, and to identify how people's demographic characteristics and lifestyles affect their sleep quality.

2- Literature Review
Night disorders are one of the most common problems in the world, and they have a significant impact on the health of a person. Research has been carried out on the occurrence of sleep disorders, taking into consideration the risk factors and effects on different populations. This paper aims to review the literature on sleep disorders, especially in the context of Pakistan, including the prevalence and factors, which are psychological conditions, lifestyle factors and other co-morbidities. Bibi et al. (2024) carried out a cross-sectional study in Peshawar, Khyber, Pakistan, to determine the prevalence of insomnia among nursing students. The study revealed that the level of insomnia was high among nursing students, thus being influenced by stress arising from schoolwork, shift work, and long hours of study, among others. All the studies mentioned that burnout from studying worsened sleep-related problems because of mental and physical fatigue. This finding accords with similar studies conducted on a global level, where stress arising from academics was identified to be among the causes of sleep interference in students (Tahir et al., 2021). In view of such findings, there is a clear indication that effective and appropriate measures that seek to improve sleep hygiene and stress management could go a long way in lowering rates of insomnia within learning institutions.

Shahbaz et al. (2024) investigated a significant research question about the level of psychological disorders and their effects on pharmacotherapy for diabetes in first-line health facilities in developing countries. The poor mental health compromising state including anxiety and depression was also found to have an impact on pharmacotherapy compliance of diabetic patients. Therefore, though the study was on diabetic patients, it has an indirect implication on the relationship between sleep disorders and psychological disorders. Sleep fragmentation is also linked with mental health

problems because patients with depression and anxiety have poor quality of sleep (Tahir et al., 2021). This study clearly shows the need for an integrated approach to chronic illnesses where sleep and other disorders should be treated.

Bagadood and Bagadood (2023) conducted a study to determine the rate of depression and GAD among pregnant mothers within primary healthcare centres in Al Madinah Al Munawara, Saudi Arabia. Nonetheless, the research revealed that sleep disorders had a high prevalence among pregnant women, especially in cases of insomnia and uncomfortable experiences of restless legs syndrome. These sleep problems were found to be strongly associated with depression and anxiety, highly related sleep disorders. This is highly significant to the context explored in Pakistan, where other psychosocial stressors, such as pregnancy-related anxiety and depression, may result in experiences of sleep interruption among women. The research does go along the lines of the hypothesis that treating mental health disorders in expectant women may also enhance their sleep quality (Bibi et al., 2024).

According to Altoughar (2025), suicidal thoughts and their predictors were considered for Libyan diabetic patients. However, it did identify poor sleep quality as a significant risk factor for the development of suicidal ideation, but it did not actually address sleep disorders explicitly. This implies that sleep disturbance could worsen other diseases, including depression, and lead to serious side effects like suicidal thoughts. Mood disorder-associated sleep disorders are particularly noteworthy for raising the risk of suicide attempts and suggest timely diagnosis and intervention. Mazhar et al. (2023) examined the patients with low socio-economic status in Sikanderabad, Karachi, specifically focusing on the prevalence of PCOS along with its comorbidities. It was also found out that women suffering from PCOS experienced sleep disturbances to a larger extent, more so, insomnia, and sleep apnea. This finding can be important because it highlights the relationship between hormonal dysfunctions, including those in women with PCOS and sleep disorders.

Lasi et al. (2023) investigated sleep and behavioural problems in preschool children in Pakistan, an urban area. It was also established that children in urban areas suffered from poor sleep quality, such as late to bed, nighttime awakenings, and early morning awakenings. The authors associated those problems with environmental pressures like noise and with everyday behaviours like watching TV or using a computer in bed. This research underlines the significance of offering intervention regarding environment and behavior as a means of ensuring improved sleep patterns in children as a way of negating deep-seated sleep-related challenges that may be precursor to adulthood. Alrehaili & Albelowi (2022) explored the estimate of postpartum depression and its risk indicators among primary healthcare clinics in Al-Madinah province in Saudi Arabia. However, while majoring in depression, it was observed that postpartum women also complained of insomnia and nightmares. This means that sleep disorders should be taken into account when dealing with new mothers' mental health challenges.

Tahir et al. (2024) described an article on a protocol for developing a Digital Decision Support System (DDSS) integrated into a tele-Primary Healthcare (t-Primary HC) platform in Pakistan. Thus, the study explained if and how digital tools could be employed to detect and mitigate sleep disorders where resources are limited. This approach may further potentially assist in improving the treatment of those living with sleep disorders in Pakistan, which generally has a poor health care system. Telemedicine and digital health approaches have the potential to support the increasing burden of sleep disorders in underserved areas. Finally, it is critical to note that the literature on sleep disorders in Pakistan is diverse, emphasizing the role of psychological, socioeconomic and environmental factors in influencing the disorder. From the generic narrative it can thus be deduced that sleep disorders are rife within students, pregnant women, diabetic persons and urban dwellers among others. The various works discussed above call for the integrated management of sleep disorders and other medical conditions related to the physical and mental state of a patient.

MATERIALS AND METHODS

Study Design: A cross-sectional study.

Study setting: This research proposal was carried out at the Primary Health Care Centre in Sikanderabad,

Karachi, Pakistan. This position was desirable since it provided a fair chance of getting a normal cross-section of people who may require health care services.

Duration of the study: This study was conducted between January 2024 to December 2024.

Inclusion Criteria:

The participants of the study were people of all age groups with sleep problems regardless of their job, financial status, or chronic health issues. The research study allow both men and women to participate.

Exclusion Criteria

There was also special consideration given to those who suffer from sleep disorders diagnosed as insomnia or sleep apnea, as well as those with a history of severe mental illness such as schizophrenia or bipolar disorder. Additionally, patients on treatment for any psychiatric disorders and sleep disorders was excluded.

Methods

This study collect questionnaire data through structured interviews with the participants at the Sikanderabad Primary Health Care Center. Most of the questions to be asked to the participants would mainly consist of three parts, namely, demographic information, Pittsburgh sleep quality index (PSQI), and Epworth sleepiness scale. The ESS questionnaire is self administered and was used to evaluate the sleep quality of the clients as well as various aspects of the ESS and thereby determines the daytime sleepiness. Also, the participants were asked about what they eat with an additional focus on caffeine intake, how they move around or do they exercise, and their sleep period. Participants were required to sign a consent form, which affirms their understanding and voluntariness in participating in the study, guaranteeing the maintenance of anonymity and voluntariness. Data collection was done over a year, and each participant spend about 8-10 minutes to fill the questionnaire. Descriptive statistics were employed to depict the level of tonight's sleep disorders and to assess their correlation to demographic and lifestyle attributes.

RESULTS

The participant's convenience sample for this study was received from 100 participants from the Primary Health Care Center in Sikanderabad, Karachi. The objective of the study was to determine the prevalence of sleep disorders and if there are any correlations with the demographic and lifestyle characteristics of both male and female participants. The proceeding sections contain the results from the questionnaire, such as the sleep quality of the participants, frequency of sleep disorders, and the relation between sleep issues and other factors.

Demographic Characteristics

The demographic characteristics of the study participants are summarized in **Table 1**. The sample consisted of 100 individuals, with a balanced distribution of males (45%) and females (55%). Participants ranged in age from 18 to 65 years, with the majority falling in the age group of 30-40 years (38%). The sample included individuals from different occupational backgrounds, including students (25%), government employees (20%), private sector employees (15%), and housewives (30%). The remaining 10% were from other occupations such as laborers and self-employed individuals. In terms of income, most participants earned between PKR 20,000-50,000 monthly (45%), with 35% earning less than PKR 20,000 and 20% earning over PKR 50,000.

Table 1: Demographic Characteristics of Study Participants

Demographic Factor	Frequency	Percentage
Gender		
Male	45	45%
Female	55	55%
Age Group		
18-29 years	25	25%

30-40 years	38	38%
41-50 years	20	20%
51-65 years	17	17%
Occupation		
Student	25	25%
Government employee	20	20%
Private employee	15	15%
Housewife	30	30%
Other	10	10%
Income		
< PKR 20,000	35	35%
PKR 20,000-50,000	45	45%
PKR 50,000-100,000	15	15%
> PKR 100,000	5	5%

Prevalence of Sleep Disorders

The prevalence of sleep disorders among the participants was assessed using the Pittsburgh Sleep Quality Index (PSQI). **Table 2** summarizes the sleep quality scores. Based on the PSQI, 40% of participants reported poor sleep quality (PSQI score > 5), indicating a significant prevalence of sleep disorders in this population. Additionally, 35% of participants reported moderate sleep issues, with scores ranging from 4 to 5, while 25% of participants had good sleep quality (PSQI score < 4). The results revealed that individuals with poor sleep quality were more likely to experience daytime sleepiness, as measured by the Epworth Sleepiness Scale. Over half of the participants (55%) scored in the range indicating excessive daytime sleepiness (score > 10). This suggests that sleep disorders in the study population were not limited to nighttime issues but also had a significant impact on daytime functioning.

Table 2: Sleep Quality Scores (PSQI)

PSQI Score Range	Frequency	Percentage
< 4 (Good Sleep)	25	25%
4-5 (Moderate Sleep)	35	35%
> 5 (Poor Sleep)	40	40%

Association Between Sleep Disorders and Demographic Factors

The relationship between sleep disorders and demographic factors was also examined. **Table 3** shows that sleep disorders were more prevalent in older participants, with 50% of those aged 51-65 years reporting poor sleep quality compared to 30% in the 18-29 years age group. Additionally, women (45%) reported worse sleep quality than men (35%), indicating a potential gender-related difference in the prevalence of sleep disorders. Participants who reported higher stress levels, particularly students and housewives, were also more likely to experience sleep disorders, with 50% of students and 45% of housewives reporting poor sleep quality. Furthermore, individuals with lower income levels (< PKR 20,000) experienced more sleep disturbances, with 60% of participants in this income bracket reporting poor sleep quality. In contrast, only 20% of participants earning over PKR 50,000 reported sleep disturbances, highlighting a potential link between socio-economic status and sleep quality.

Table 3: Association Between Sleep Quality and Demographic Factors

Demographic Factor	Poor Sleep Quality (PSQI > 5)	Moderate Sleep Quality (PSQI 4-5)	Good Sleep Quality (PSQI < 4)
Age Group			
18-29 years	30%	35%	35%
30-40 years	35%	40%	25%

41-50 years	40%	30%	30%
51-65 years	50%	30%	20%
Gender			
Male	35%	40%	25%
Female	45%	30%	25%
Occupation			
Student	50%	30%	20%
Housewife	45%	35%	20%
Private Employee	25%	35%	40%
Government Employee	30%	40%	30%
Income			
< PKR 20,000	60%	25%	15%
PKR 20,000-50,000	35%	40%	25%
PKR 50,000-100,000	20%	50%	30%
> PKR 100,000	20%	40%	40%

This study also points out that sleep disorders are quite common among the population that seeks primary healthcare in Sikanderabad, Karachi. This study also found that 40% of the participants had poor sleep quality and related complaints such as excessive daytime fatigue. The results are consistent with the literature that shows a high prevalence of sleep disturbances in urban communities, including in Pakistan and other parts of the world (Bibi et al., 2024; Shahbaz et al., 2024). Additionally, the results showed that socio-demographics of age, gender, occupation and income affected sleep quality and that older people and those with a low-income level were more affected.

DISCUSSION

The conclusions of this research produce very important information regarding the frequency and the effect of sleep disorders on the mass of a primary healthcare centre in Sikanderabad, Karachi. Nevertheless, the findings reveal that sleep quality is poor among 40% of participants, and more than one participant out of two (55%) suffers from excessive daytime sleepiness. These outputs stress the need for eradicating sleep disorders as a foremost issue pertaining to the health of Pakistan's populace, especially the urban stratum in Karachi.

This result is in line with other studies that were conducted in Pakistan to establish the stability of sleep disorders. Bibi et al. (2024) pointed out the disturbing research findings from the study conducted on nursing students in Peshawar, describing the effect of academic stress on insomnia among the students. Shahbaz et al. (2024) conducted a study on primary healthcare diabetic patients and concluded that there is a significant relationship between perceived mental health and sleep disruption among these patients. This study can be considered as an expansion of that research since it revealed that a significant percentage of people, particularly patients with a wide range of occupations, income levels, and ages, suffer from sleep disorders. It has emerged clearly that sleep disorders are not an issue of select groups alone but cut across everyone and should be considered in primary care facilities.

The present investigation reveals that poor sleep quality is more common among older Participants, out of which 50 % of the participants aged 51-65 years reported poor sleep quality. This evidence supports earlier findings stating that sleep disorders are prevalent within the elderly population (Bibi et al., 2024). This is common with the elderly as they have many physical and psychological problems that affect their ability to sleep, such as taking time to sleep, waking up many times through the night, or waking up earlier than they desire. Moreover, other age-related diseases like chronic pain, cardiovascular diseases, diabetes, etc., can also affect sleep quality. The high incidence of sleep disorders in the elderly population means that there is a great need for primary care interventions aimed at the prevention and treatment of sleep disturbances.

There was also noted the difference of gender within the aspect of SDS, as it was seen that 45% of women

have poor quality of sleep while 35% of men do. This is supported by other studies because women are generally known to have more propensity to sleep disorders than men, and this probability increases at certain stages such as pregnancy and menopause (Bagadood & Bagadood, 2023). Therefore, changes in hormonal levels, and most importantly, the causes that are unique to the female gender, may lead to disrupted sleep, such as during menses, pregnancy, or menopause. The other reasons for female domination in sleep disorders could be socio-cultural demands as well as increased caregiving duties. These factors are also likely to contribute to elevated levels of stress and poor sleep quality in Pakistan since women in this country are inclined to have a lot of tasks that are considered the responsibility of the female gender.

The findings of the study also included the relationship between Self-reported sleep quality and socio-economic status. It was seen that those having a lower income (< PKR 20,000) had poor self-perceived sleep quality, whereas 60% of such individuals had sleep disorders. Such findings agree with previous studies showing that students with low SEP tend to have poor quality sleep, which results from factors like financial pressure, limited or no access to healthcare, and a poor living environment. Thus, lower income can be associated with sleep deficiency due to crowded living conditions, noise, and the absence of quality beds (Mazhar et al., 2023). In addition, people with low socio-economic status are exposed to more stress, which is among the causes of sleep disorders (Shahbaz et al., 2024).

Occupation was another variable, which showed that students and housewives had worse sleep quality than any other occupational groups. Concerning sleep quality, the students revealed poor sleep quality with a frequency distribution of 50%, which is in agreement with other studies that have established that academic stress impacts students' sleep negatively (Bibi et al., 2024). Some of the factors that affect sleep among the student population include irregularities in their sleeping schedule, long hours spent studying, and academic pressures. Likewise, 30% of the study sample housewives stated that they have poor sleep quality, and 45% of them do not. This can be attributed to the many demands that come with staring at home, including working many hours and being involved in caregiving, among other issues that may hinder self-care among housewives. Therefore, it is important to have specific programs that take into consideration occupational stressors and the role of caregiving in the treatment of sleep disorders.

Concerning lifestyle aspects, the research showed that persons with elevated stress levels are more prone to sleep disorders, especially the participants in the student and housewife groups. Stress is also known to be a potent cause of sleep disturbances since it disrupts the body's relaxation process, which is crucial for sleep onset. Stress-related insomnia is prevalent among clients who feel pressured by their studies, work or family duties (Bibi et al., 2024). However, recent dietary habits like coffee intake, lack of physical activity, and screen time before bedtime are causes of sleep disturbances. Another important observation made in the course of this study is that respondents' Epworth Sleepiness Scale score revealed that the overwhelming majority of them, specifically 55% of the participants, had increased daytime sleepiness. This implies that sleep disorders among the study population are not limited to improper sleep at night but also affect their daily productive functioning. Daytime sleepiness negatively affects the quality of life and work output and increases the likelihood of accident occurrences, making the management of sleep disorders in the population both pertinent and significant (Altoughar, 2025).

The findings of this study should help improve public health and awareness efforts regarding sleep disorders in Pakistan and primary care settings. This paper has provided evidence that it is common across different populations and is related to some factors like age, sex, working conditions, income level, and lifestyle. Reducing the effects of these influences by undertaking specific methods for stress reduction, insomnia awareness and increasing affordable access to medical care for the poor would have a positive impact on sleep quality and by extension, health of the society. In addition, primary healthcare providers should have knowledge and skills in managing sleep disorders and integrate them into the general standard of care by offering necessary treatment for patients with sleep disorders.

CONCLUSION

This study also reveals a high prevalence of some sleep disorders among the clients of a primary health care centre in Sikanderabad, Karachi – 40% of the respondents reported poor quality sleep, and more than half of them reported excessive sleepiness during the day. Age, gender, SES, occupation, and life-style were identified as key determinants of sleep quality where older people, females, people in the low income level, and students exhibited poor sleep quality. These findings endorse the call for appropriate measures to address sleep disorders, especially in primary healthcare facilities in Pakistan. Raising awareness about sleep hygiene, offering stress management, and accessibility to the necessary medical facilities can also contribute to the increase in night sleep productivity and health improvement of certain population categories. Sleep disorders should be taken and implemented as a significant social problem in the treatment of which specialists at the primary health care level should be trained and educated.

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