Prevalence of sleep disorders among primary healthcare physicians in Tabuk City, Saudi Arabia 2024

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Abstract

Background: Sleep disorders are highly prevalent among healthcare professionals and are linked to occupational stressors, irregular work hours, and poor lifestyle habits. Understanding sleep quality and its risk factors in primary healthcare physicians is critical for improving physician well-being and patient care quality.

Objectives: To assess the prevalence of poor sleep hygiene and excessive daytime sleepiness among primary healthcare physicians in Tabuk City, Saudi Arabia, and to identify associated demographic, occupational, and behavioral risk factors.

Methods: A cross-sectional study was conducted in 2024 among 146 primary healthcare physicians in Tabuk using a structured online questionnaire. Data were collected on sociodemographic and occupational characteristics, the Epworth Sleepiness Scale (ESS) for daytime sleepiness, and the Pittsburgh Sleep Quality Index (PSQI) for sleep hygiene. Descriptive statistics, Chi-square tests, and Fisher's exact tests were performed using SPSS version 28. A p-value < 0.05 was considered statistically significant.

Results: A total of 59.6% of physicians were classified as poor sleepers (PSQI score >7), and 93.8% reported some level of excessive daytime sleepiness. Moderate to severe sleepiness was significantly more common among poor sleepers (p = 0.001). Significant risk factors for poor sleep hygiene included age 26–45 years (p = 0.001), working more than 40 hours/week (p = 0.001), smoking (p = 0.028), night shifts (p = 0.001), staying awake more than 19 hours (p = 0.004), sleeping less than 6 hours in 24 hours (p = 0.031), and lack of sufficient rest breaks and consecutive days off (p < 0.05). Marital status and total rest time per day were not significantly associated with sleep hygiene.

Conclusion: Poor sleep hygiene and daytime sleepiness are prevalent among primary healthcare physicians in Tabuk. These outcomes are strongly influenced by modifiable work-related factors. Institutional interventions, such as optimizing shift schedules, ensuring adequate rest, and promoting sleep health are urgently needed to safeguard physician well-being and healthcare quality.

Keywords
Sleep hygiene, Daytime sleepiness, Primary healthcare physicians, Saudi Arabia

Introduction

Sleep disorders represent a group of conditions that disrupt the quality, timing, and duration of sleep, with profound effects on health, safety, and overall quality of life [1, 2]. These disorders are widely prevalent and are associated with considerable morbidity across different populations [3, 4]. Among healthcare professionals, especially primary healthcare physicians, the risk of sleep disturbances may be heightened due to occupational factors such as irregular work schedules, extended working hours, and the emotional burden of patient care [5, 6]. In the context of Saudi Arabia's rapidly evolving healthcare system, investigating the prevalence and determinants of sleep disorders among primary care physicians is vital for promoting physician well-being and ensuring the consistent delivery of high-quality healthcare services [7, 8].

Specific types of sleep disorders, including insomnia, obstructive sleep apnea, and shift work sleep disorder, have been found to impair both cognitive performance and physical functioning [9]. Insomnia, often characterized by difficulties initiating or maintaining sleep, is frequently observed in physicians, likely as a result of work-related stress and nontraditional working hours [10]. Obstructive sleep apnea, which involves repeated upper airway obstructions during sleep, may be more prevalent in this population due to risk factors such as a sedentary lifestyle and elevated body mass index [11]. Additionally, shift work sleep disorder, a condition caused by chronic misalignment between a person's circadian rhythm and their work schedule is particularly relevant for physicians involved in night or rotating shifts [12, 13].

Although global studies have demonstrated high rates of sleep disturbances among healthcare workers [8], region-specific data from Saudi Arabia remain scarce especially in the context of primary healthcare physicians practicing in Tabuk. This professional group faces not only intense job demands but also cultural and environmental influences unique to the region, underscoring the need for focused research. Understanding the prevalence and associated risk factors of sleep disorders in this group is essential for several reasons. First, it provides the foundation for developing targeted interventions aimed at improving sleep health, such as work schedule modifications, stress reduction programs, and educational initiatives to promote sleep hygiene. Second, identifying socio-demographic and occupational predictors such as age, marital status, smoking, and extended working hours can inform preventative strategies. Lastly, enhancing sleep health among physicians is closely linked to improved well-being, increased job satisfaction, and better patient care outcomes.

Methodology

This study adopted a cross-sectional design to assess the prevalence and risk factors associated with sleep disorders among primary healthcare physicians in Tabuk City, Saudi Arabia. Tabuk, located in the northwestern region of the country, has a growing healthcare system with numerous primary healthcare centers that serve as frontline units for patient care. These centers are staffed by primary healthcare physicians, who were the focus of this research due to their exposure to occupational stressors that may influence sleep patterns. The study population consisted of primary healthcare physicians actively practicing in various primary healthcare centers within Tabuk during the year 2024. Inclusion criteria required participants to be residents of Tabuk City and willing to complete the study questionnaire. Physicians who met these criteria were invited to participate through a structured online survey. A sample size of 146 physicians was determined using a standard formula for prevalence studies, taking into account the population size, an acceptable margin of error, and a confidence level represented by the Z-score. This sample size was selected to ensure statistical adequacy while remaining feasible within the study's time and resource constraints.

Data collection was carried out using a structured online questionnaire, which was disseminated to eligible participants via email. The questionnaire was divided into three key sections. The first section collected sociodemographic data, including age, marital status, work hours, and smoking habits. The second section included the Epworth Sleepiness Scale (ESS)*, a validated tool composed of 8 items rated from 0 to 3. The total score ranges from 0 to 24, and the scale categorizes daytime sleepiness as follows: 0–5 (normal), 6–10 (higher normal), 11–12 (mild), 13–15 (moderate), and 16–24 (severe) excessive daytime sleepiness [1]. The third section included the Pittsburgh Sleep Quality Index (PSQI)** – Arabic version – which assesses sleep quality over the past month using 19 items across seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. Each component is scored from 0 to 3, with a global score >7 indicating poor sleep quality and ≤7 indicating good sleep quality [2]. The questionnaire link was distributed via email, accompanied by a brief explanation of the study's objectives and significance. Informed consent was obtained electronically before participants proceeded with the survey. To maximize participation, reminder emails were sent periodically throughout the data collection period. All data were collected anonymously to maintain confidentiality and ensure ethical compliance.

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Data Analysis

Data were analyzed using IBM SPSS Statistics for Windows, Version 28.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the socio-demographic characteristics and key variables. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were used to describe continuous variables such as PSQI scores. To examine associations between sleep hygiene status (categorized as good or poor) and various socio-demographic and occupational factors, as well as sleep characteristics, Pearson's Chi-square (χ^2) test was employed for categorical variables. When the expected cell counts were less than 5, Fisher's exact test (denoted in tables as Exact probability test) was applied to ensure statistical validity. A p-value less than 0.05 was considered statistically significant.

Results

The socio-demographic profile of the 146 primary healthcare physicians in Tabuk City in 2024 was obtained. Considering age distribution, the majority of participants (108 physicians, 74.0%) were between 26 and 45 years old, followed by 33 physicians (22.6%) aged 18–25 years and only 5 participants (3.4%) aged 46–60 years. Regarding marital status, the majority were unmarried (123, 84.2%), while only 23 (15.8%) were married. Concerning working hours per week, most physicians (103, 70.5%) reported working less than 40 hours, whereas 43 (29.5%) worked more than 40 hours weekly. As for smoking habits, only a small proportion of the participants were smokers (18, 12.3%), with the majority being non-smokers (128, 87.7%).

Table 1. Socio-Demographic Characteristics of the Studied Primary Healthcare Physicians in Tabuk City, Saudi Arabia 2024 (N=146)

Socio-demographics	No	%
Age in years		
18-25 year	33	22.6%
26-45 year	108	74.0%
46-60 year	5	3.4%
Marital status		
Unmarried	123	84.2%
Married	23	15.8%
How many hours do you work per week?		
Less than 40 hours	103	70.5%
More than 40 hours	43	29.5%
Smoking		
Yes	18	12.3%
No	128	87.7%

Table 2 shows the Epworth Sleepiness Scale among the 146 primary healthcare physicians in Tabuk City and provides insights into their levels of daytime sleepiness across various situations. Exactly 68.4% reported a moderate or high chance of dozing while sitting and reading, and 73.3% reported similar levels while watching television, indicating substantial levels of sleepiness during passive activities. Additionally, 82.2% indicated at least a slight chance of dozing as a passenger in a car for an hour without a break. In more socially engaging or active contexts, like sitting and talking to someone, only 20.5% reported a moderate or high chance of dozing. However, 64.4% of participants reported a moderate to high chance of dozing after lunch while sitting quietly, which is a known time of increased physiological sleep drive.

Table 2. Distribution of Epworth Sleepiness Scale Responses among Primary Healthcare Physicians in Tabuk City, Saudi Arabia (N = 146)

Epworth sleepiness scale	Would never doze		Slight chance of dozing		Moderate chance of dozing		High chance of dozing	
	No	%	No	%	No	%	No	%
Sitting and reading	9	6.2%	37	25.3%	83	56.8%	17	11.6%
Watching television	8	5.5%	31	21.2%	76	52.1%	31	21.2%
Sitting inactive in public place as meeting	16	11.0%	67	45.9%	50	34.2%	13	8.9%
As passenger in a car for an hour without break	17	11.6%	90	61.6%	27	18.5%	12	8.2%
Lying down to rest in the afternoon	9	6.2%	34	23.3%	85	58.2%	18	12.3%
Sitting and talking to some one	15	10.3%	101	69.2%	20	13.7%	10	6.8%
Sitting quietly after lunch	9	6.2%	43	29.5%	59	40.4%	35	24.0%
In a car while stopped in traffic	33	22.6%	77	52.7%	26	17.8%	10	6.8%

Figure 1 presents the overall prevalence of daytime sleepiness among primary healthcare physicians in Tabuk City (N = 146). The majority of participants (137 physicians, 93.8%) reported experiencing some level of excessive daytime sleepiness. Specifically, 57 physicians (39.0%) had mild excessive daytime sleepiness, 45 (30.8%) experienced moderate, and 35 (24.0%) had severe excessive daytime sleepiness. In contrast, only 9 physicians (6.2%) exhibited normal daytime sleepiness.

Figure 1. The Overall Prevalence of Daytime Sleepiness among Primary Healthcare Physicians in Tabuk City, Saudi Arabia (N = 146)

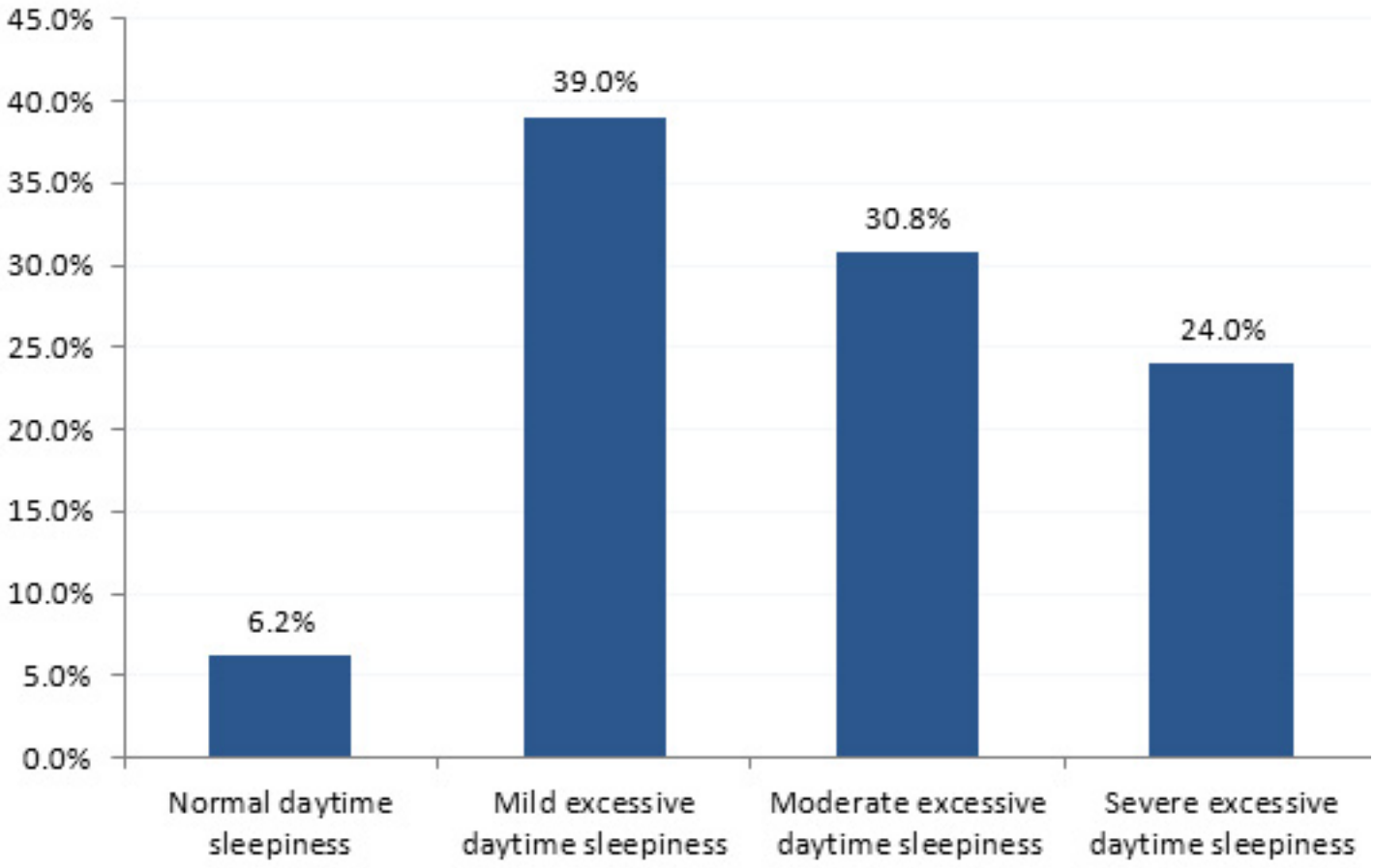

Table 3 presents the distribution of Pittsburgh Sleep Quality Index (PSQI) components among 146 primary healthcare physicians in Tabuk City. Regarding subjective sleep quality, the majority of physicians rated their sleep as either fairly good (79, 54.1%) or fairly bad (45, 30.8%), while only a small percentage (2, 1.4%) reported very good sleep quality. Sleep latency was a concern, with 52 physicians (35.6%) indicating fairly bad and 7 (4.8%) very bad latency. Considering sleep duration, most physicians (123, 84.2%) reported sleeping between 6–7 hours per night, while only 13 (8.9%) exceeded 7 hours. Short sleep duration was noted in 10 participants (6.8%) who slept less than 6 hours. Habitual sleep efficiency was relatively high among the majority (122, 83.6%) who reported efficiency between 75–84%, but only 14 (9.6%) exceeded 85%. Sleep disturbances were mostly low, with 89 physicians (61.0%) reporting fairly low and 21 (14.4%) very low disturbances, although 33 (22.6%) experienced fairly high levels. The use of sleeping medication was minimal, with 123 (84.2%) not using any, while a small proportion (10, 6.8%) used medication three or more times a week. Finally, daytime dysfunction was reported as very low by 63 physicians (43.2%) and fairly low by 52 (35.6%), but 31 physicians (21.2%) reported fairly high to very high levels of dysfunction.

Table 3. Pittsburgh Sleep Quality Index (PSQI) Components among Primary Healthcare Physicians in Tabuk City, Saudi Arabia (N = 146)

PSQI	No	%
Subjective sleep quality		
Very good	2	1.4%
Fairly good	79	54.1%
Fairly bad	45	30.8%
Very bad	20	13.7%
Sleep latency		
Very good	8	5.5%
Fairly good	79	54.1%
Fairly bad	52	35.6%
Very bad	7	4.8%
Sleep duration		
> 7 hours	13	8.9%
6-7 hours	123	84.2%
5-6 hours	5	3.4%
< 5 hours	5	3.4%
Habitual sleep efficiency		
> 85%	14	9.6%
75-84%	122	83.6%
65-74%	5	3.4%
< 65%	5	3.4%
Sleep disturbances		
Very low	21	14.4%
Fairly low	89	61.0%
Fairly high	33	22.6%
Very high	3	2.1%
Use of sleeping medication		
Not Using	123	84.2%
Less than once	12	8.2%
once or twice	1	.7%
Three or more times	10	6.8%
Daytime dysfunction		
Very low	63	43.2%
Fairly low	52	35.6%
Fairly high	26	17.8%
Very high	5	3.4%

Figure 2 illustrates the overall sleep hygiene status among primary healthcare physicians in Tabuk City based on the Pittsburgh Sleep Quality Index (PSQI). The data show that a significant majority, 87 physicians (59.6%), were classified as poor sleepers, while only 59 (40.4%) demonstrated good sleep hygiene. The global PSQI scores ranged from 3.00 to 16.00, with a mean score of 7.24 (±2.88), which exceeds the conventional cutoff point of 7, further confirming the prevalence of poor sleep quality in this population.

Figure 2. The Overall Sleep Hygiene among Primary Healthcare Physicians in Tabuk City, Saudi Arabia (N = 146)

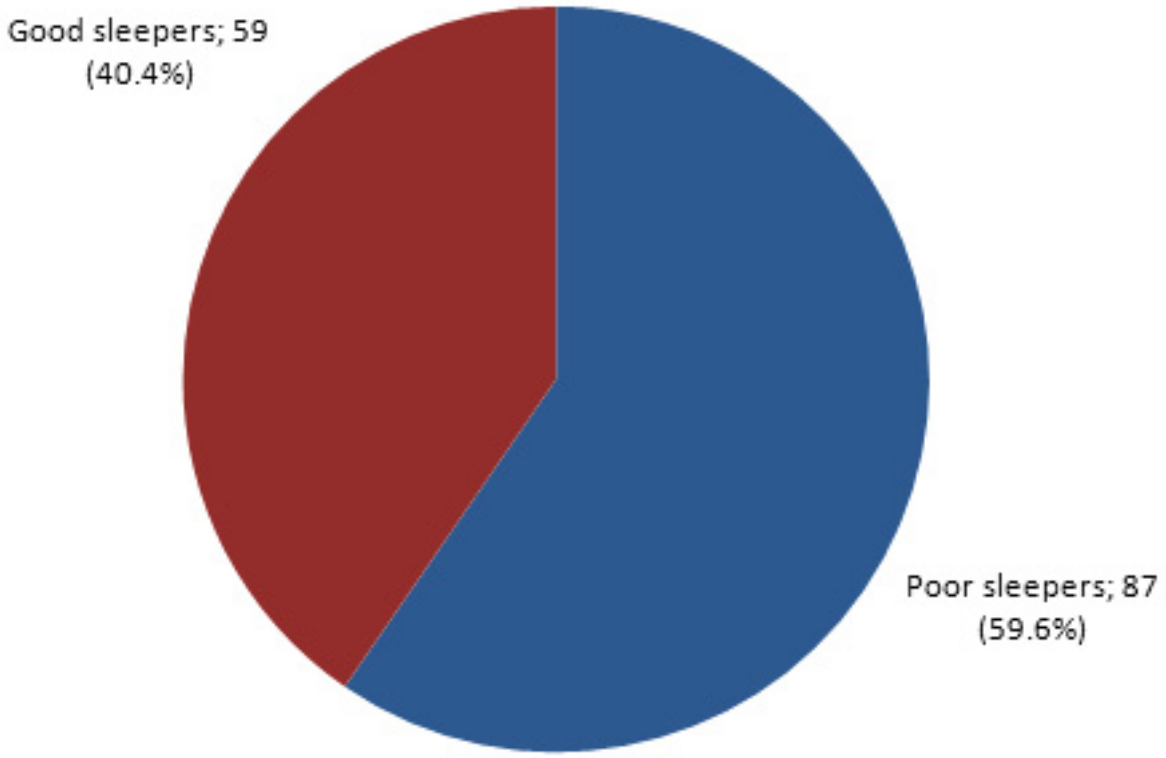

Table 4 presents the factors associated with sleep disorders among primary healthcare physicians in Tabuk City. Age was significantly associated with sleep hygiene (p = 0.001^). Physicians aged 26–45 years had the highest proportion of poor sleepers (74, 68.5%), whereas younger physicians (18–25 years) had a lower rate (36.4%) and those aged 46–60 years had the lowest (20.0% poor sleepers). Weekly working hours were also strongly associated with sleep hygiene (p = 0.001). Among those working more than 40 hours per week, 81.4% were poor sleepers, compared to only 50.5% of those working less than 40 hours. Smoking was another significant factor (p = 0.028). A higher percentage of smokers (83.3%) were poor sleepers compared to non-smokers (56.3%). On the other hand, marital status did not show a statistically significant association with sleep hygiene (p = 0.430).

Table 4. Factors Associated with Sleep Disorders among Primary Healthcare Physicians in Tabuk City, Saudi Arabia (N = 146)

Factors	Sleep hygiene				p-value
	Poor sleepers		Good sleepers		
	No	%	No	%	
Age in years					
18-25 year	12	36.4%	21	63.6%	.001*^
26-45 year	74	68.5%	34	31.5%	
46-60 year	1	20.0%	4	80.0%	
Marital status					
Unmarried	75	61.0%	48	39.0%	.430
Married	12	52.2%	11	47.8%	
How many hours do you work per week?					
Less than 40 hours	52	50.5%	51	49.5%	.001*
More than 40 hours	35	81.4%	8	18.6%	
Smoking					
Yes	15	83.3%	3	16.7%	.028*
No	72	56.3%	56	43.8%	

P: Pearson X2 test ^: Exact probability test * P < 0.05 (significant)

Table 5 shows the risk factors associated with poor sleep hygiene among primary healthcare physicians in Tabuk City. Physicians who stayed awake for more than 19 hours were significantly more likely to be poor sleepers (87.0% vs. 13.0%, p = 0.004). Similarly, those who worked night shifts between 12 am and 6 am had a high prevalence of poor sleep (86.7% vs. 13.3%, p = 0.001). Having less than six hours of continuous sleep in 24 hours was also significantly associated with poor sleep hygiene, with 81.0% of those affected classified as poor sleepers (p = 0.031). Another strong predictor was having less than two consecutive nights of good sleep, where 76.7% were poor sleepers compared to 23.3% good sleepers (p = 0.001). Moreover, those who worked continuously for five hours with less than a 30-minute break were significantly more likely to report poor sleep (82.8%, p = 0.001). Experiencing unrefreshing or interrupted sleep was also highly correlated, with 81.7% of these participants being poor sleepers (p = 0.001). Additionally, the lack of regular breaks during work was significantly associated with poor sleep hygiene (75.9%, p = 0.001), as was having less than two consecutive days off per week, where all affected individuals were poor sleepers (100%, p = 0.039). In contrast, factors such as working shifts exceeding 14–16 hours, total rest time of less than 8 hours per day, and working more than 64 hours in seven days did not show significant associations with sleep hygiene (p > 0.05).

Table 5. Risk Factors of Sleep Disorders among Primary Healthcare Physicians in Tabuk City, Saudi Arabia (N = 146)

Factors	Sleep hygiene				p-value
	Poor sleepers		Good sleepers		
	No	%	No	%	
Do you work a total hours of shift exceeding 14-16 hrs?					.241^
No	85	59.0%	59	41.0%	
Yes	2	100.0%	0	0.0%	
Do you stay a wakeful exceeding 19 hrs?					.004*
No	67	54.5%	56	45.5%	
Yes	20	87.0%	3	13.0%	
Do you work between 12 am and 6 am?					.001*
No	61	52.6%	55	47.4%	
Yes	26	86.7%	4	13.3%	
Do you have less than six hours of continuous sleep in 24 hrs?					.031*
No	70	56.0%	55	44.0%	
Yes	17	81.0%	4	19.0%	
Is your rest time <8 hrs./24 hours?					.487^
No	80	58.8%	56	41.2%	
Yes	7	70.0%	3	30.0%	
Do you have continuous work beyond 64 hours in seven-days?					.863^
No	82	59.4%	56	40.6%	
Yes	5	62.5%	3	37.5%	
Do you have less than two consecutive nights of good sleep?					.001*
No	21	35.0%	39	65.0%	
Yes	66	76.7%	20	23.3%	
Do you continuously work for five hours with <30 minutes break?					.001*
No	34	41.5%	48	58.5%	
Yes	53	82.8%	11	17.2%	
Do you have unrefreshing and /or interrupted sleep?					.001*
No	20	31.3%	44	68.8%	
Yes	67	81.7%	15	18.3%	
Is work performed without regular breaks?					.001*
No	43	48.9%	45	51.1%	
Yes	44	75.9%	14	24.1%	
Do you have less than 2 consecutive days off per week?					.039*^
No	81	57.9%	59	42.1%	
Yes	6	100.0%	0	0.0%	

P: Pearson X2 test ^: Exact probability test * P < 0.05 (significant)

Table 6 illustrates a statistically significant association between levels of daytime sleepiness and sleep hygiene among primary healthcare physicians in Tabuk City (p = 0.001). The majority of physicians with severe excessive daytime sleepiness were classified as poor sleepers (32, 36.8%) compared to only 3 (5.1%) among good sleepers. Similarly, moderate daytime sleepiness was more common among poor sleepers (31, 35.6%) than good sleepers (14, 23.7%). In contrast, mild excessive daytime sleepiness was more frequently reported among good sleepers (35, 59.3%) than poor sleepers (22, 25.3%), and normal daytime sleepiness was observed in only 2 (2.3%) of poor sleepers, compared to 7 (11.9%) among good sleepers.

Table 6. Association between Daytime Sleepiness and Sleep Hygiene among Primary Healthcare Physicians in Tabuk City, Saudi Arabia (N = 146)

Daytime sleepiness	Sleep hygiene				p-value
	Poor sleepers		Good sleepers		
	No	%	No	%	
Normal daytime sleepiness	2	2.3%	7	11.9%	.001*
Mild excessive daytime sleepiness	22	25.3%	35	59.3%	
Moderate excessive daytime sleepiness	31	35.6%	14	23.7%	
Severe excessive daytime sleepiness	32	36.8%	3	5.1%	

P: Pearson X2 test * P < 0.05 (significant)

Discussion

This study aimed to explore the prevalence of sleep disorders among primary healthcare physicians in Tabuk City, Saudi Arabia, in 2024. The sample predominantly consisted of young physicians. The high proportion of unmarried participants may also be relevant, as marital status can impact social support systems, stress levels, and lifestyle habits all of which are known to affect sleep quality. Work hours emerged as another important factor, with most physicians reporting fewer than 40 hours per week. While this could indicate manageable workloads, further investigation is needed to determine whether irregular shifts, on-call duties, or job-related stress still disrupt sleep patterns despite the relatively lower weekly hours. Besides, the low prevalence of smoking among participants is encouraging, as tobacco use is a known risk factor for sleep disorders.

As for the sleep disorders, the study revealed significant sleep disturbances in these participants, with 59.6% classified as poor sleepers (mean PSQI score: 7.24 ± 2.88). These results match with regional and international studies highlighting sleep disturbances among healthcare workers, though variations exist due to differing work environments and cultural factors. The high prevalence of poor sleep (59.6%) in this study is comparable to rates reported in Brazil (62%) [14] and China (56.8%) [15] among physicians. However, Western studies often report lower prevalence (30–45%) [16, 17], possibly due to better-regulated work hours. The minimal use of sleep medications (84.2% non-users) contrasts with U.S. data, where 15–20% of physicians use sleep aids [18].

Locally, our study matches results in a Riyadh study where 63% of physicians reported poor sleep quality due to work stress [19]. A higher prevalence was reported by Alamri et al [20] where the prevalence of poor sleep quality was 85.9% as median the sleep quality score was 10, range (3-21).

In more detail, the majority of physicians reported fairly good or fairly bad subjective sleep quality, with only 1.4% experiencing very good sleep. Sleep latency was problematic, with 35.6% reporting fairly badly and 4.8% very bad difficulty falling asleep. Also, most participants slept 6–7 hours, while only a few participants exceeded 7 hours. Short sleep duration (<6 hours) was lower than reports from high-stress medical fields (e.g., 20–30% among residents in the U.S.) [21]. However, sleep efficiency was relatively high contrasting with studies from India where 42% of doctors had low sleep efficiency due to erratic schedules [22].

The high prevalence of excessive daytime sleepiness (EDS) among primary healthcare physicians in Tabuk City is particularly concerning, with most participants reporting some degree of EDS (Figure 1). These results match with, but are more pronounced, than findings from a study of Saudi resident physicians, which reported 63% experiencing EDS [23]. The higher prevalence in our study may reflect differences in work schedules or the cumulative effect of chronic sleep deprivation among primary care physicians. Similar to our findings, an Oman study found 68% of physicians reported significant daytime sleepiness, though with lower rates of severe cases (15%) compared to our 24% [24]. The severity gradient observed (mild to severe EDS) reflects patterns seen in high-stress medical specialties internationally. For instance, a U.S. study of resident physicians reported 45% with moderate to severe EDS [25], while our study found 54.8% in these categories. This consistent pattern across different healthcare systems suggests that EDS may be an occupational hazard of medical practice globally, though our data indicate particularly high severity in the Saudi context. The clinical implications are significant, as EDS has been directly linked to medical errors in multiple studies [26, 27]. The finding that nearly one-quarter of physicians experience severe EDS is especially troubling given established associations between this level of sleepiness and impaired cognitive function [28].

The study revealed multiple significant risk factors associated with poor sleep hygiene among primary healthcare physicians in Tabuk City. Physicians aged 26–45 years had the highest prevalence of poor sleep compared to both younger and older colleagues. Occupational factors played a major role, with those working more than 40 hours per week showing significantly poorer sleep outcomes than their counterparts working fewer hours. Smoking was also associated with poor sleep quality, as 83.3% of smokers were classified as poor sleepers compared to 56.3% of non-smokers. Sleep and work pattern disruptions emerged as the most critical predictors. Extended wakefulness beyond 19 hours and night shift work between 12 am and 6 am were strongly linked to poor sleep. Other high-risk thresholds included getting less than 6 hours of continuous sleep in 24 hours, experiencing fewer than two consecutive nights of good sleep and working five continuous hours without sufficient breaks. Notably, all physicians who had fewer than two consecutive days off per week were poor sleepers, highlighting the importance of recovery periods.

Interestingly, factors such as shifts longer than 14–16 hours and total rest time under eight hours did not show a statistically significant relationship with sleep quality, suggesting that the pattern and quality of rest may be more impactful than total rest duration alone. These findings are consistent with global studies on physician sleep health [29-31], but offer context-specific insights relevant to the Saudi healthcare system.

Conclusions and Recommendations

In conclusion, this study reveals a high prevalence of poor sleep hygiene and excessive daytime sleepiness among primary healthcare physicians in Tabuk City. Nearly 60% of participants were classified as poor sleepers, and over 93% reported some level of excessive daytime sleepiness, with a significant portion experiencing moderate to severe symptoms. Key demographic and occupational factors such as being aged 26–45 years, working more than 40 hours per week, and smoking were significantly associated with poor sleep hygiene. Furthermore, specific work-related behaviors including extended wakefulness, night shifts, inadequate sleep duration, insufficient rest breaks, and lack of consecutive days off emerged as strong predictors of poor sleep outcomes. Importantly, poor sleep hygiene was also significantly linked with the severity of daytime sleepiness, highlighting its impact on alertness and functioning. These findings underline the urgent need for institutional and policy-level interventions aimed at improving sleep health among primary healthcare physicians. Recommendations include such as work schedule reforms, implementing regulated working hours, limiting night shifts, and ensuring physicians receive at least two consecutive days off per week to allow for adequate rest and recovery, As well as establishing structured break periods during shifts to prevent prolonged continuous work without rest, particularly during night duties. Sleep Health Promotion such as introducing educational programs on sleep hygiene and the risks of sleep deprivation, particularly tailored for healthcare workers are also mandatory.

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