

Assessment of Sleep Quality Among Physicians Working at Tertiary Care Centers in Saudi Arabia: A Cross-Sectional Study

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Background: Adequate sleep is essential for physicians to maintain alertness, accuracy, and emotional stability in clinical care. However, no studies focused solely on physicians, particularly in Saudi Arabia.

Objective: To determine the prevalence and determinants of sleep quality among physicians in tertiary care centers in Saudi Arabia.

Methods: A cross-sectional survey was conducted between January and March 2025 using the validated Pittsburgh Sleep Quality Index (PSQI). Demographic, occupational, and lifestyle data were obtained through an electronic questionnaire. Poor sleep quality was defined as a global PSQI score >5. Bivariate analyses used the chi-square test, and multivariable logistic regression estimated adjusted odds ratios (aOR) with 95% confidence intervals (CI).

Results: A total of 412 physicians participated (61% male; 72% aged 20–39 years). The mean PSQI score was 8.6 ± 3.1 (median = 8), and 75.2% (95% CI: 71.1–79.4) of physicians were classified as poor sleepers. Shift work (aOR 2.58, 95% CI 1.61–4.13) and on-call duties (aOR 1.76, 1.12–2.76) significantly increased the odds of poor sleep. Later bedtimes (1:00–3:00 AM; aOR 3.12, 1.98–4.91), prolonged daytime naps (>30 min; aOR 2.95, 1.65–5.26), and screen use before sleep (aOR 1.67, 1.08–2.61) were also associated with poorer sleep quality. Being married (aOR 0.47, 0.33–0.69), having children (aOR 0.51, 0.32–0.81), and avoiding caffeine ≥ 6 hours before bedtime (aOR 0.50, 0.27–0.90) were protective.

Conclusion: This study highlights a high prevalence of poor sleep quality among physicians working in tertiary care centers in Saudi Arabia, driven by occupational and behavioral factors. Behavioral changes and institutional measures promoting regulated work schedules and improved sleep hygiene are essential to mitigate sleep-related risks and enhance physician well-being.

Keywords: sleep quality, PSQI, physicians, Saudi Arabia, shift work

Introduction

Sleep is a vital biological process that enhances our daily well-being, alertness, emotional regulation, and clinical decision-making. Even though sleep seems like a natural smooth daily process that occurs without effort, it is more complex than imagined.^{1,2} For physicians, adequate sleep is especially vital because fatigue and impaired cognition can compromise diagnostic accuracy and patient safety.² Disturbed sleep among healthcare professionals has been associated with increased medical errors, burnout, and reduced work satisfaction.³ Recent international studies have shown that the COVID-19 pandemic further disrupted sleep patterns among healthcare workers, owing to heightened stress, increased workload, and shift irregularities. HCWs in Kuwait reporting 78.8% poor sleep during the pandemic).⁴ A study in China documenting worsened sleep and daytime sleepiness among primary care workers during COVID-19 and a large multinational HCW survey linking poor sleep with burnout and absenteeism.^{1,5} While these studies are among general HCWs, the distinct schedule demands and responsibilities of physicians remain understudied.

Despite this evidence, data from Saudi Arabia, particularly in tertiary care centers where clinical and academic responsibilities overlap, remain limited. These high-acuity settings involve continuous coverage, frequent on-call schedules, and complex patient care demands, all of which may exacerbate sleep disturbances. Therefore, this study aimed to assess the prevalence of poor sleep quality among physicians working in tertiary care centers in Saudi Arabia and identify the demographic, occupational, and behavioral factors associated with it.

Methods

Study Design and Setting

This research employed a cross-sectional design conducted between January and March 2025 among physicians working in tertiary care centers across Saudi Arabia. These centers provide high-acuity, subspecialty services and maintain 24-hour physician coverage.

Participants and Recruitment

Eligible participants were licensed physicians actively practicing in tertiary hospitals in Saudi Arabia. Inclusion criteria were: (1) current clinical practice for ≥ 6 months and (2) consent to participate. Exclusion criteria included: (1) non-clinical administrative physicians, (2) residents or interns on research or academic leave, and (3) incomplete questionnaires. Invitations explaining the purpose of the study with consent to participate were distributed through institutional Email and professional communication platforms. Participation was voluntary and anonymous. Of the 440 physicians who received the invitation, 412 completed the survey (response rate was 93.6%). Incomplete responses were automatically excluded by the survey settings.

Data Collection and Measures

Sleep quality was assessed using the validated Pittsburgh Sleep Quality Index (PSQI).⁶ A global score > 5 was used to classify participants as poor sleepers. Following the original PSQI validation, the questionnaire also gathered demographic (age, sex, marital status, parenthood), occupational (shift work, on-call duties, specialty), and behavioral (bedtime, nap duration, screen exposure, caffeine restriction) variables. The English version of the Pittsburgh Sleep Quality Index (PSQI) was used, as all participating physicians are bilingual and use English as the primary language in their clinical and academic work.

Sample Size

We targeted a minimum sample size of ~ 370 physicians based on estimating the prevalence of poor sleep with a 5% absolute precision and 95% confidence, assuming a conservative prevalence of 60% from prior physician studies. Using $n = Z_0.975^2 p(1 - p)/d^2$ with $Z = 1.96$, $p = 0.60$, and $d = 0.05$ yielded $n \approx 369$. We enrolled 412 physicians, exceeding the target.

Statistical Analysis

Data were analyzed using SPSS version 28. Categorical variables were summarized as frequencies and percentages; continuous variables as means \pm standard deviation. Chi-square tests assessed bivariate associations. Variables with $p < 0.20$ in bivariate analysis or of clinical importance (sex, age, shift work, on-call duty, bedtime, screen use, caffeine restriction) were entered into multivariable logistic regression to identify independent predictors of poor sleep quality. Results are reported as odds ratios (OR) and adjusted odds ratios (aOR) with 95% confidence intervals (CI). A two-sided $p < 0.05$ was considered statistically significant.

Ethical Considerations

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board (IRB) at King Abdullah International Medical Research Centre (KAIMRC). The study approval number is NRR24/028/6. Written informed consent was obtained from all participants.

Results

A total of 412 physicians were included in the analysis. The mean age of the participants was 36.8 ± 7.9 years.

As summarized in Table 1, most participants were male (61.4%), 20–39 years old (72%), married (57%), with no children (52%), who have at least 6 years of experience (53%), with non-critical specialty (75%), do not work on shifts

Table 1 Demographic, Occupational, and Lifestyle Characteristics of Physicians

Characteristics	Factors	Category	n (%)
Demographic	Gender	Female	159 (39%)
		Male	253 (61%)
	Age	20-39 years old	298 (72%)
		40-59 years old	102 (25%)
		60-69 years old	12 (2.9%)
Marital status	Married	233 (57%)	
	Single	179 (43%)	
Having children	No	213 (52%)	
	Yes	199 (48%)	
Number of children	Less than 2 children	47 (24%)	
	2-4 children	120 (60%)	
	More than 4 children	32 (16%)	
Work-related	Years of experience	1-5 years	195 (47%)
		6-10 years	85 (21%)
		>10 years	132 (32%)
	Specialty group	Critical	59 (14%)
		Non-critical	307 (75%)
Surgical		46 (11%)	
Work on shifts	No	343 (83%)	
	Yes	69 (17%)	
Have on calls	No	67 (16%)	
	Yes	345 (84%)	
Frequency of shift change	Every fourth shifts	27 (41%)	
	Every month	5 (8%)	
	Every second shifts	13 (20%)	
	Every two weeks	3 (5%)	
	Every week	17 (26%)	
Lifestyle-related	Bedtime (past month)	5:00 PM-9:00 PM	25 (7%)
		10:00 PM-12:00 AM	136 (39%)
		1:00 AM-3:00 AM	190 (54%)
	Nap (daytime)	No	251 (61%)
		Yes	157 (39%)
Nap duration	20-30 minutes	25 (16%)	
	>30 minutes	131 (84%)	
Screen use before sleep	No	28 (6%)	
	Yes	384 (93%)	
Caffeine restriction \geq 6 hours before bedtime	No	210 (51%)	
	Yes	202 (49%)	

(83%) but have on-calls duty (84%). Participants who change their shift every fourth shift were 41%, regarding bedtime participants who go to bed between 1:00 AM and 3:00 AM were 54%, do not have daytime nap (61%), participants who take a nap more than 30 minutes were 84%, use screen before sleep (93%), and follow caffeine restriction ≥ 6 hours (49%).

Sleep quality was classified using the Pittsburgh Sleep Quality Index (PSQI), with scores >5 indicating poor sleep. Overall, 310 participants 75.2% (95% CI 71.1–79.4) were categorized as poor sleepers. The mean PSQI score was 8.6 ± 3.1 , with a median of 8, indicating generally poor sleep quality across participants. This highlights a substantial burden of sleep disturbance among physicians in tertiary centers.

Table 2 depicts the associations between poor sleep quality and demographics, work-related, and life-style factors. Age, marital status, having children, years of experience, working on shifts, having on-call duty, bedtime (past month), nap

Table 2 Bivariate Analysis of Factors Associated with Sleep Quality

Characteristics	Categories	Quality of Sleep		Chi-square	p-value
		Good N (%)	Poor N (%)		
Gender	Female	33 (21%)	126 (79%)	2.22	0.14
	Male	69 (27%)	184 (73%)		
Age	20-39 years old	64 (21%)	234 (79%)	8.22	0.017*
	40-59 years old	36 (35%)	66 (65%)		
	60-69 years old	2 (17%)	10 (83%)		
Marital status	Married	72 (31%)	161 (69%)	10.12	< 0.001*
	Single	30 (17%)	149 (83%)		
Having children	No	39 (18%)	174 (82%)	9.84	0.002*
	Yes	63 (32%)	136 (68%)		
Number of children	Less than 2 children	13 (28%)	34 (72%)	0.85	0.7
	2-4 children	38 (32%)	82 (68%)		
	More than 4 children	12 (38%)	20 (63%)		
Years of experience	1-5 years	43 (22%)	152 (78%)	6.70	0.035*
	6-10 years	16 (19%)	69 (81%)		
	>10 years	43 (33%)	89 (67%)		
Specialty group	Critical	12 (20%)	47 (80%)	1.41	0.5
	Non-critical	76 (25%)	231 (75%)		
	Surgical	14 (30%)	32 (70%)		
Work on shifts	No	92 (27%)	251 (73%)	4.05	0.03*
	Yes	10 (14%)	59 (86%)		
On-call duty	No	23 (34%)	44 (66%)	3.34	0.047*
	Yes	79 (23%)	266 (77%)		
Frequency of shift change	Every fourth shift	5 (19%)	22 (81%)	2.51	0.7
	Every month	0 (0%)	5 (100%)		
	Every second shift	1 (7.7%)	12 (92%)		
	Every two weeks	1 (33%)	2 (67%)		
	Every week	3 (18%)	14 (82%)		
Bedtime (past month)	05:00PM-09:00PM	11 (44%)	14 (56%)	96.46	< 0.001*
	10:00PM-12:00AM	53 (39%)	83 (61%)		
	1:00AM-3:00AM	38 (19%)	152 (78%)		

(Continued)

Table 2 (Continued).

Characteristics	Categories	Quality of Sleep		Chi-square	p-value
		Good N (%)	Poor N (%)		
Nap (daytime)	No	71 (28%)	180 (72%)	4.51	0.025*
	Yes	29 (18%)	128 (82%)		
Nap duration	20 - 30 minutes	9 (36%)	16 (64%)	6.90	< 0.001*
	>30 minutes	19 (8%)	212 (92%)		
Screen use before sleep	No	12 (43%)	16 (57%)	4.29	0.022*
	Yes	90 (23%)	294 (77%)		
Caffeine restriction \geq 6 hours before bedtime	No	48 (23%)	162 (77%)	18.19	0.021*
	Yes	87 (43%)	115 (57%)		

Notes: * Bold number means p-value is significant at level ≤ 0.05 .

(daytime), nap duration, using screen before sleep, and caffeine restriction ≥ 6 hours before bedtime were significantly associated with poor sleep quality with p-value < 0.05 . Physicians aged 40–59 years had the lowest prevalence of poor sleep (65%), compared with 79% among those aged 20–39 years and 83% among those aged 60–69 years ($p = 0.017$). The estimates for the oldest age group should be interpreted with caution due to the relatively small number of participants in this category. Single participants with poor sleep quality were 83%, where the married participants with poor sleep quality were 69% ($p = < 0.001$). Having children appeared protective in the univariate analysis (poor sleep in 68.3% of those with children vs 82% of those without, $p = 0.002$). The highest prevalence of poor sleep quality was among those who have 6 to 10 years of experience (81%, 67%, $p = 0.035$). Physicians with good sleep quality averaged 6.7 hours per night compared with 5.7 hours among poor sleepers ($p < 0.001$). Workload-related factors were major contributors. Shift work was strongly associated with poor sleep (86% vs 73% among non-shift workers, $p = 0.03$). Similarly, physicians with frequent on-call duties had higher rates of poor sleep (77% vs 66%, $p = 0.047$). Bedtime has strong association with PSQI score. Physicians going to bed between 1:00 and 3:00 a.m. had markedly higher rates of poor sleep ($p < 0.001$). A nap during the day has an association with poor quality of sleep. 82% of participants who have a nap during the day have a poor quality of sleep ($p = 0.025$). Nap duration also influenced sleep quality: those who napped > 30 minutes were significantly more likely to have poor sleep than those taking 20–30-minutes nap ($p = 0.001$). Screen exposure before bedtime was another risk factor (84% poor sleep among users vs 63% among non-users, $p = 0.007$). Restricting caffeine for ≥ 6 hours before sleep was associated with better sleep quality in univariate analysis ($p = 0.023$).

Table 3 displays the strength of association between potential factors and poor sleep quality using a multivariable binary logistic regression. The model demonstrated acceptable goodness-of-fit (Hosmer–Lemeshow test $p = 0.62$) and explained approximately 28% of the variance in sleep quality (Nagelkerke $R^2 = 0.28$). Physicians aged 40–59 years had higher odds of poor sleep quality compared with those aged 20–39 years ($p = 0.012$, aOR = 1.82, 95% CI = 1.14–2.90). The odds of poor sleep quality are significantly higher among females than males ($p = 0.004$, aOR = 2.46, 95% CI = 1.33–4.55). Compared to married physicians, the odds of poor sleep quality among single physicians are more than two-fold higher ($p < 0.001$, aOR = 2.11, 95% CI = 1.45–3.07). The odds of poor sleep quality among physicians with more than 10 years of experience increases by 89% compared to those having 1–5 years of experience ($p = 0.005$, aOR = 1.89, 95% CI = 1.20–2.98). Similarly, the odds of poor sleep quality among those who have work shifts or on-call duty is more than three-fold of that who do not ($p = 0.003$, aOR = 3.90, 95% CI = 1.60–9.70; $p = 0.006$, aOR = 3.40, 95% CI = 1.40–8.10, respectively). Physicians who reported a bedtime between 1:00–3:00 AM, nap duration longer than 30 minutes, and screen use before sleep had significantly higher odds of poor sleep quality compared with their respective reference groups. ($p < 0.001$, aOR = 3.12, 95% CI = 1.98–4.91; $p < 0.001$, aOR = 2.95, 95% CI = 1.65–5.26; $p = 0.015$, aOR = 3.90, 95% CI = 1.30–11.70, respectively). Interpretation of the bedtime reference category (5:00–9:00 PM) should be made cautiously, as this group included a relatively small number of physicians.

Table 3 Multivariable Logistic Regression Analysis of Predictors of Poor Sleep Quality

Characteristics	Categories	OR	95% CI	aOR	95% CI for aOR	p-value
Age	20-39	Reference group				
	40-59	2.06	1.26–3.36	1.82	1.14–2.90	0.012*
	60-69	0.74	0.14–3.96	0.75	0.32–1.73	0.49
Gender	Male	Reference group				
	Female	1.39	0.90–2.16	2.46	1.33–4.55	< 0.004*
Marital status	Married	Reference group				
	Single	2.23	1.41–3.54	2.11	1.45–3.07	< 0.001*
Having children	Yes	Reference group				
	No	0.48	0.31–0.77	0.61	0.26–1.43	0.25
Experience	1-5 years	Reference group				
	6-10 years	2.28	1.23–4.34	1.12	0.64–1.94	0.68
	>10 years	1.56	1.02–2.39	1.89	1.20–2.98	0.005*
Work on shifts	No	Reference group				
	Yes	2.43	1.17–5.03	3.90	1.60–9.70	< 0.003*
On-call duty	No	Reference group				
	Yes	1.7	1.01–2.85	3.40	1.40–8.10	0.006*
Bedtime (past month)	5:00PM-9:00PM	Reference group				
	10:00PM-12:00AM	0.94	0.41–2.18	0.78	1.44–1.39	0.40
	1:00AM-03:00AM	5.39	2.39–12.15	3.12	1.98–4.91	< 0.001*
Nap (daytime)	No	Reference group				
	Yes	2.95	1.67–5.21	1.61	0.95–2.72	0.075
Nap duration	20-30 min	Reference group				
	>30 min	9.98	3.75–26.55	2.95	1.65–5.26	< 0.001*
Screen use before sleep	No	Reference group				
	Yes	2.45	1.12–5.37	3.90	1.30–11.70	0.015*
Caffeine restriction ≥ 6 hours before bedtime	No	Reference group				
	Yes	0.39	0.26–0.60	1.04	0.59–1.83	0.90

Notes: * Bold number means p-value is significant at level ≤ 0.05.

Abbreviations: OR, Odds ratio; CI, Confidence interval; aOR, adjusted Odds ratio; aCI, adjusted Confidence intervals.

Discussion

The present study provides one of the few comprehensive evaluations of sleep quality among physicians working in tertiary care centers in Saudi Arabia. Using the Pittsburgh Sleep Quality Index (PSQI), the overall prevalence of poor sleep quality was remarkably high, affecting approximately three-quarters of the participants (75.2%). The mean PSQI score was 8.6 ± 3.1, with a median of 8, indicating generally poor sleep quality across participants. This proportion is substantially higher than that reported in several international studies, where poor sleep among physicians has ranged from 45% to 65%, depending on specialty, workload, and institutional context. The finding underscores the considerable

burden of sleep disturbance among healthcare professionals in high-demand environments and highlights the need for structured programs promoting healthy sleep practices and work–life balance within hospital systems.^{2,7}

This study further sought to examine the predictors of poor sleep quality among physicians in tertiary care centers in Saudi Arabia. Physicians aged 20–39 exhibited poor sleep quality. This variability in sleep quality by age is consistent with the findings of study conducted in the United States, which observed that young medical doctors had a short sleep duration of less than 7 hours, which is below the threshold recommended by the American Academy of Sleep Medicine and Sleep Research Society.⁸ While this study established a statistically significant association between sleep quality and the age of a physician, the association was not linear, as physicians aged 40–59 had poorer quality of sleep than the younger age groups. The variation by age group could stem from the training schedule and shift work among young physicians and the limitation of biological aging and sustained work demand on the older physicians. While the oldest age group, 60–69, may have a suitable work schedule and are agile in responding to the demands of clinical work, in our findings, this group, when adjusted for confounders, did not show a statistically significant association.

Marital status emerged as a protective factor, with single physicians experiencing poor sleep quality than married participants. This finding suggests that spousal support may lead to improved sleep quality among physicians. Having children as a male also appeared to be associated with better sleep quality. However, the number of children did not have a statistically significant impact on sleep quality, suggesting that parental responsibilities difference between males and females might play a role and reflect on sleep disruption. Female physicians in this study reported slightly poorer sleep, which may be due to physiological factors affecting their circadian rhythm, such as the menstrual cycle and pregnancy which ultimately was not statistically significant.

There was a strong correlation between professional experience and poor sleep quality. Physicians with higher levels of experience reported poorer sleep quality than those with low experience, reasons behind early career poor quality might be related to multiple factors; the need to work and learn at the same time, the stresses of obtaining degrees and certificates while working during the first few years and unpredictable schedules. On the other hand, although experienced doctors may have increased autonomy in their work, predictable work schedules, they have more responsibilities and extra tasks to cover, and are likely to get involved in more stressful decision making or hiring multiple positions in the same time, which add more work to their clinical duties. The lack of association between specialty and sleep quality was inconsistent with the findings in a prior study that established that surgeons had poorer sleep quality than resident physicians and this might be explained by lower number of surgeons participating in this study.⁹ Shift work and on-call duties were strong predictors of poor sleep quality. These results are consistent with prior research that irregular work schedules disrupt the circadian rhythm, this being statistically significant aligns with logical understanding of the nature of on call duty and shift workers and their impact in reducing the quality of sleep.^{10,11} Our finding that the frequency of shift changes did not significantly affect sleep quality suggests that any form of shift work leads to poor sleeping habits, and the anticipation of emergency calls when on-call duty may reduce sleep efficiency. Therefore, the predictability of work schedules impacts the sleep quality of physicians.

On lifestyle-related factors, bedtime timing and technology use before bed negatively affect sleep quality. Physicians with bedtimes after midnight reported the poorest sleep quality, which is in line with evidence that aligning sleep time with natural circadian rhythm leads to an improvement in sleep quality. Moreover, minimizing exposure to blue light before bedtime enhances sleep quality.¹² It is worth noting that the reference category for bedtime (5:00 PM–9:00 PM) included only a small proportion of participants ($n = 25$), which may have contributed to instability in the crude odds ratio and the observed reversal in direction after adjustment. This shift highlights the influence of confounding factors, such as screen exposure, shift work, and lifestyle behaviors, which were accounted for in the multivariate model. While naps allow individuals to reduce fatigue, our results showed that sleep quality declined with an increase in napping duration, which is consistent with prior studies that have shown that short naps can improve alertness without inducing sleep inertia.¹³ Prolonged napping could cause delayed bedtime, which leads to poor sleep quality. The unadjusted odds ratio for prolonged naps (>30 minutes) was inflated likely due to confounding and the small reference group (20–30 minutes, $n = 25$). After adjustment for sleep hygiene and other variables, the association remained significant, supporting prolonged napping as an independent risk factor for poor sleep quality.” In contrast, caffeine restriction lost significance after adjustment (aOR = 1.04, 95% CI 0.59–1.83, $p = 0.90$), suggesting that its apparent protective effect was confounded by other sleep-hygiene practices and likely related to cultures and behaviors around drinking caffeinated drinks.¹⁴

The high prevalence and multifactorial nature of poor sleep observed in this study align with international research showing that physicians frequently experience insufficient and poor-quality sleep due to demanding schedules and behavioral factors. Similar studies from Canada, China, and the Middle East report comparable patterns, with shift work, screen exposure, and late bedtimes emerging as consistent predictors. Creating policies to address shift rotations and on-call responsibilities could improve physician well-being. Studies have shown that medical professionals working on night shifts experience depressive symptoms, leading to poor sleep quality.⁹

Addressing this problem arising from shift work requires institutional support policies for physicians working in various shifts to address the challenges they face, to improve their work satisfaction, and to reduce the incidence of depression. These findings have direct implications for patient safety, as physician fatigue has been consistently linked to diagnostic inaccuracies, medication errors, and reduced vigilance. Prioritizing adequate rest periods and fatigue-risk management within hospital scheduling policies could therefore improve both clinician well-being and quality of care.¹⁵ On the behavioral side of the story, targeted sleep education is necessary to ensure physicians understand the importance of sleep consistency, short nap times, and reduced screen time before bed in improving their sleep quality. A study exploring the gaps and opportunities in sleep education for medical students showed that many did not have awareness of education on insomnia, shift work, and sleep assessment.¹⁶ Considering that this study also established that specific behaviors like screen time before bed affect sleep quality, incorporating messaging, like “Turn off screens an hour before bed”, within health facilities for doctors on such risks could be a suitable solution to addressing the problem.

Limitation and Generalizability

The study presents valuable insights into quality assessment topics, but its generalizability might be somewhat limited due to certain constraints. First, it employed a cross-sectional design that precludes causal inference. Second, data were self-reported, which may introduce recall or social-desirability bias. Third, we did not account for all potential confounding factors, such as chronotype or mental health conditions, that might influence sleep. In addition, some subgroup analyses, particularly those involving older physicians and very early bedtime categories, were based on relatively small numbers and should therefore be interpreted cautiously. Moreover, although this study employed the global PSQI score to classify overall sleep quality, parameters such as total sleep time, variation between workdays and free days, and consistency of bedtime and wake-up times were not analyzed separately. Therefore, our findings capture general sleep quality but do not reflect the full multidimensional profile of sleep disturbances described by the PSQI. Future research incorporating component-level analysis could provide deeper insight into which aspects of sleep are most affected among physicians.

Conclusion

Our study provides novel insights relevant to workforce well-being at the national level in Saudi tertiary centers. Poor sleep quality is highly prevalent among physicians and is influenced by multiple demographic, occupational, and behavioral factors. Addressing modifiable risk factors such as shift scheduling, on-call load, and nighttime screen exposure could significantly improve sleep quality and overall well-being. Institutional initiatives focusing on workload management and education in sleep hygiene are essential to support a healthier work–life balance and sustain physician performance. These results present a real opportunity for stakeholders to rearrange physician schedules, invest in sleep health education, and promote healthier workplace environments. Improving the sleep quality of physicians is not only essential for their personal well-being but also fundamental to ensuring safer, higher-quality patient care.

Data Sharing Statement

Data supporting the findings of this study are available on request from the corresponding author.

Author Contributions

Ashraf A' Aquolah: Conceptualization, Formal analysis, Investigation, Methodology, Supervision, Writing – original draft and Writing – review & editing; Tamer Abusido: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft and Writing – review & editing; Abdulmajeed Alfadhel: Data curation, Formal

analysis, Investigation, Writing – review & editing; Farah Kalmey: Methodology, Writing – review & editing; Raghiv Abusaris: Formal analysis, Methodology, Writing – review & editing.

All authors gave final approval for the version to be published; have agreed on the journal to which the article has been submitted; and agreed to be accountable for all aspects of the work.

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Disclosure

The authors report there are no conflicts of interest in this work.

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