

# The Mediating Role of Perceived Stress and Coping Styles in the Association Between Sleep Quality and Job Burnout Among Physicians at Medical Centers Affiliated with Mashhad University of Medical Sciences

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### ABSTRACT

The present study aimed to investigate the mediating role of perceived stress and coping styles in the relationship between sleep quality and job burnout among physicians working in medical centers affiliated with Mashhad University of Medical Sciences. This study employed a descriptive–correlational design and was conducted using structural equation modeling (SEM). The statistical population consisted of physicians employed in medical centers affiliated with Mashhad University of Medical Sciences as well as active clinics across Mashhad during the 2024–2025 academic year. Based on Cochran’s formula, a final sample size of 367 participants was determined. Data were collected using the Pittsburgh Sleep Quality Index (PSQI), the Maslach Burnout Inventory (MBI), and the Perceived Stress Scale developed by Cohen et al. (1983). Data analysis was performed using SPSS version 26 and SMART PLS 3 software. The results indicated that the mediating role of perceived stress and coping styles in the relationship between sleep quality and job burnout was confirmed. The indirect effect (0.331) was greater than the direct effect (0.187), highlighting the substantial importance of the mediating variables in this relationship.

**Keywords:** Perceived Stress; Coping Styles; Sleep Quality; Job Burnout; Structural Equation Modeling

## 1. Introduction

The contemporary healthcare environment is characterized by increasing complexity, high patient expectations, and continuous exposure to critical and life-threatening situations, all of which place substantial psychological and physical demands on medical professionals. Among healthcare providers, physicians are particularly vulnerable to occupational strain due to the intensity of their responsibilities, long working hours, and the necessity of making rapid, high-stakes decisions. These cumulative pressures have led to growing scholarly attention toward job burnout as a critical occupational health issue within medical settings. Job burnout is conceptualized as a multidimensional psychological syndrome emerging from chronic workplace stress, typically manifesting in emotional exhaustion, depersonalization, and reduced personal accomplishment. This condition not only undermines physicians' well-being but also negatively impacts patient care quality, healthcare system efficiency, and organizational sustainability (Galanis et al., 2024; Gun et al., 2025).

In recent years, the prevalence of burnout among healthcare professionals has increased significantly, particularly in the aftermath of global crises such as the COVID-19 pandemic, which intensified workload, uncertainty, and emotional burden. Empirical evidence indicates that healthcare workers frequently report moderate to high levels of burnout, often accompanied by psychological distress, fatigue, and diminished job satisfaction (Al Sabei et al., 2022; Rezaei, 2023). These findings underscore the urgency of identifying underlying determinants and mechanisms that contribute to burnout in order to design effective preventive and interventional strategies.

One of the most critical yet often overlooked determinants of occupational well-being is sleep quality. Sleep is a fundamental biological process essential for physical restoration, cognitive functioning, and emotional regulation. High-quality sleep supports memory consolidation, attention, decision-making, and resilience to stress, whereas poor sleep quality is associated with impairments in these domains. Importantly, sleep quality extends beyond mere duration to include factors such as sleep latency, continuity, depth, and subjective satisfaction (Pierson-Bartel & Ujma, 2024). A growing body of research has demonstrated that disruptions in sleep can lead to significant psychological and physiological consequences,

including increased vulnerability to stress, reduced coping capacity, and heightened risk of burnout (Scott et al., 2021).

Within healthcare settings, physicians are particularly susceptible to sleep disturbances due to irregular schedules, night shifts, and prolonged working hours. Shift work, in particular, disrupts circadian rhythms and has been consistently linked to poor sleep quality and reduced work ability. Studies among emergency personnel and healthcare workers indicate that irregular work patterns and high workload significantly impair sleep quality, thereby compromising overall occupational functioning (Allahyari & Mahboobi, 2024; Elyasi Gomari et al., 2023). Furthermore, occupational stressors such as time pressure, emotional demands, and responsibility for patient outcomes exacerbate sleep problems, creating a vicious cycle in which poor sleep and stress mutually reinforce each other.

The relationship between sleep quality and job burnout has been extensively documented in both domestic and international literature. Empirical findings consistently demonstrate that individuals with poorer sleep quality report higher levels of burnout, suggesting that sleep disturbances may serve as both a precursor and a consequence of burnout. For example, studies conducted among nurses and healthcare workers have shown that sleep quality is inversely related to burnout dimensions, with poorer sleep associated with greater emotional exhaustion and depersonalization (Heydari et al., 2023; Rashidi et al., 2021). Similarly, research during the COVID-19 pandemic highlighted that reduced sleep quality significantly predicted occupational stress and burnout among healthcare staff (Rezaei, 2023). These findings emphasize the critical role of sleep as a protective factor against occupational strain.

Despite the established association between sleep quality and burnout, the mechanisms through which sleep influences burnout are not yet fully understood. Contemporary research has increasingly focused on psychological mediators that may explain this relationship. Among these, perceived stress has emerged as a key explanatory variable. Perceived stress refers to an individual's subjective evaluation of environmental demands as exceeding their coping resources. Unlike objective stressors, perceived stress captures the cognitive appraisal process through which individuals interpret and respond to stress-inducing situations. Evidence suggests that poor sleep quality impairs cognitive functioning and emotional regulation, thereby increasing individuals' susceptibility to perceiving situations as stressful and uncontrollable (Kim & Jung, 2022).

High levels of perceived stress, in turn, have been strongly linked to burnout. Chronic exposure to perceived stress depletes psychological resources, leading to emotional exhaustion and reduced motivation. In healthcare contexts, where demands are inherently high, elevated perceived stress can accelerate the development of burnout symptoms. Empirical studies have confirmed that perceived stress significantly predicts burnout among healthcare professionals, acting as a central mechanism through which occupational demands translate into psychological strain (Sadra Abrghouei et al., 2025). Moreover, research indicates that perceived stress mediates the relationship between various occupational factors and burnout, highlighting its pivotal role in the stress–burnout pathway.

Another critical psychological mechanism influencing the relationship between sleep quality and burnout is coping style. Coping styles refer to the cognitive and behavioral strategies individuals employ to manage stress. These strategies are broadly categorized into adaptive (problem-focused) and maladaptive (emotion-focused or avoidant) coping. Adaptive coping involves actively addressing stressors and seeking solutions, whereas maladaptive coping includes avoidance, denial, and rumination, which often exacerbate stress and hinder effective problem-solving. Research has demonstrated that coping styles significantly influence psychological outcomes, including stress, well-being, and burnout (Cheng et al., 2022).

Sleep quality plays an important role in determining individuals' coping capacity. Poor sleep impairs executive functioning and emotional regulation, reducing the ability to employ adaptive coping strategies and increasing reliance on maladaptive responses. Consequently, individuals with poor sleep quality are more likely to engage in ineffective coping, which further intensifies stress and contributes to burnout. Empirical evidence supports this mechanism, indicating that coping styles mediate the relationship between stress and psychological well-being, as well as between sleep quality and burnout (Nasr Esfahani et al., 2025). Additionally, maladaptive coping strategies such as rumination have been identified as significant mediators linking occupational stress and sleep disturbances, further highlighting the interconnectedness of these variables (Mahmoudi & Karimian, 2025).

The interplay between perceived stress and coping styles is also noteworthy. These variables are not independent but rather interact dynamically in shaping individuals' responses to stress. High perceived stress often leads to the adoption of maladaptive coping strategies, which in turn exacerbate

stress and increase the likelihood of burnout. This reciprocal relationship suggests that perceived stress and coping styles may function as complementary mediators in the pathway from sleep quality to burnout. Understanding this dual mediation process is essential for developing comprehensive models that capture the complexity of occupational stress dynamics.

In addition to psychological mechanisms, organizational and contextual factors also influence the relationship between sleep, stress, and burnout. For instance, organizational support, work environment, and leadership styles can either buffer or amplify the effects of stress on burnout. Research has shown that burnout can mediate the relationship between organizational support and disengagement behaviors such as quiet quitting, highlighting the broader implications of burnout for organizational outcomes (Gun et al., 2025). Furthermore, emotional intelligence has been identified as a protective factor that can mitigate the negative effects of stress and reduce burnout, suggesting that individual differences play a significant role in these processes (Galanis et al., 2024).

Despite the growing body of literature on sleep quality, perceived stress, coping styles, and burnout, several gaps remain. First, many studies have focused on bivariate relationships, examining the direct association between sleep and burnout without considering underlying psychological mechanisms. Second, research that simultaneously investigates perceived stress and coping styles as parallel mediators is limited, particularly within specific occupational groups such as physicians. Third, cultural and contextual factors may influence these relationships, necessitating research in diverse settings to enhance the generalizability of findings. In this regard, studies conducted in Iran have provided valuable insights into the relationships among sleep quality, stress, and burnout among healthcare workers, but comprehensive models integrating multiple mediators remain scarce (Hani et al., 2024).

Furthermore, occupational characteristics such as workload, fatigue, and physical strain contribute to both sleep disturbances and psychological stress, reinforcing the need for integrative models that account for multiple interacting variables. Research in industrial and healthcare settings has demonstrated that workload and fatigue are closely linked to sleep quality and musculoskeletal disorders, indicating that physical and psychological factors jointly influence occupational health outcomes (Elyasi Gomari et al., 2023). These findings highlight the

importance of adopting a holistic approach to understanding burnout, one that incorporates biological, psychological, and organizational dimensions.

In light of these considerations, there is a clear need for research that examines the complex pathways linking sleep quality to job burnout, with particular attention to the mediating roles of perceived stress and coping styles. Such an approach not only advances theoretical understanding but also has practical implications for intervention design. By identifying key mediators, interventions can be tailored to target specific mechanisms, such as improving sleep hygiene, enhancing stress management skills, and promoting adaptive coping strategies. Evidence suggests that interventions aimed at improving sleep quality can lead to significant improvements in mental health and well-being, further supporting the importance of this line of inquiry (Lai et al., 2024; Scott et al., 2021).

Overall, the integration of sleep quality, perceived stress, and coping styles into a unified explanatory model represents a significant step toward understanding the multifaceted nature of job burnout among physicians. Given the critical role of physicians in healthcare systems, addressing burnout is not only a matter of individual well-being but also a public health priority. Therefore, investigating these relationships within specific cultural and organizational contexts can provide valuable insights for developing targeted and effective interventions.

Accordingly, the aim of the present study is to examine the relationship between sleep quality and job burnout among physicians, with a specific focus on the mediating roles of perceived stress and coping styles.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study was applied in terms of purpose and descriptive–correlational in terms of method and was conducted as a cross-sectional study within a specific time frame. Given the conceptual relationships among sleep quality, perceived stress, coping styles, and burnout, structural equation modeling (SEM) was employed to simultaneously test direct and indirect relationships among observed and latent variables.

The statistical population consisted of all general practitioners and specialists working in medical centers affiliated with Mashhad University of Medical Sciences and active clinics across the city of Mashhad during the 2024–2025 academic year. According to statistics from the

Medical Council Organization, the population was estimated at approximately 8,400 physicians. Sample size was calculated using Cochran's formula for finite populations, with a 95% confidence level and 5% margin of error. Additionally, in line with SEM requirements, a minimum ratio of 10 participants per observed variable was considered, resulting in a final sample size of 367 participants. To compensate for potential attrition and incomplete questionnaires, 380 questionnaires were distributed. Sampling was conducted using convenience, non-random sampling, and data were collected from physicians who voluntarily agreed to participate.

### 2.2. Measures

Data were collected using four standardized instruments. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), which includes 19 items across seven components, with total scores ranging from 0 to 21, where higher scores indicate poorer sleep quality. Burnout was measured using the Maslach Burnout Inventory (MBI) for human services professions, consisting of 22 items across three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment. Perceived stress was measured using the 14-item Perceived Stress Scale (PSS) developed by Cohen, assessing perceived stress over the past month. Coping styles were measured using the Lazarus and Folkman Coping Styles Questionnaire, consisting of 66 items and eight coping strategies. The content and construct validity of all instruments have been confirmed in previous studies, and their reliability, assessed via Cronbach's alpha, has been reported as acceptable in both domestic and international research, generally exceeding 0.70. The Persian versions of these instruments have also demonstrated satisfactory validity and reliability.

Data collection commenced after obtaining ethical approval from the university ethics committee and coordinating with medical center administrators. The purpose and importance of the study were explained to participants, and informed consent was obtained. Participants were assured of confidentiality and voluntary participation. Questionnaires were completed in person and via self-report in selected medical centers, with the researcher present to clarify any ambiguities. Completion time ranged from 20 to 25 minutes, and data collection occurred over three months.

2.3. Data analysis

Data analysis was conducted at descriptive and inferential levels using SPSS version 26 and SmartPLS 3. Descriptive statistics included measures of central tendency and dispersion for quantitative variables and frequencies and percentages for qualitative variables. Statistical assumptions, including normality and outliers, were examined. At the inferential level, Pearson correlation coefficients were first calculated, followed by SEM to test hypotheses. Measurement models were evaluated for convergent and discriminant validity, and structural models were assessed using fit indices.

3. Findings and Results

The results presented in Table 1 demonstrate that the measurement model possesses satisfactory convergent

validity and internal consistency reliability across all latent constructs. Specifically, the composite reliability (CR) values for sleep quality (0.876), burnout (0.892), perceived stress (0.884), problem-focused coping (0.823), and emotion-focused coping (0.831) all exceed the recommended threshold of 0.70, indicating strong internal consistency among the indicators of each construct. Furthermore, the average variance extracted (AVE) values for all variables range from 0.542 to 0.734, surpassing the minimum acceptable criterion of 0.50. This suggests that each latent construct explains more than half of the variance of its respective indicators, thereby confirming adequate convergent validity. Collectively, these findings indicate that the measurement instruments used in this study are both reliable and valid for capturing the underlying constructs.

Table 1

Convergent validity and reliability indices of the measurement model

Latent Variable	Composite Reliability (CR)	Average Variance Extracted (AVE)	Result
Sleep quality	0.876	0.542	Acceptable
Burnout	0.892	0.734	Acceptable
Perceived stress	0.884	0.718	Acceptable
Problem-focused coping	0.823	0.698	Acceptable
Emotion-focused coping	0.831	0.712	Acceptable

Table 2 provides evidence regarding the discriminant validity of the measurement model by comparing the square root of AVE values with inter-construct correlations. The diagonal elements, representing the square root of AVE for each construct, are all greater than the corresponding off-diagonal correlation coefficients. For instance, the square root of AVE for sleep quality (0.736) exceeds its correlations with burnout (0.542), perceived stress (0.587), problem-focused coping (-0.412), and emotion-focused coping (0.368). Similarly, burnout (0.857), perceived stress (0.847),

problem-focused coping (0.835), and emotion-focused coping (0.844) all show higher diagonal values compared to their inter-construct correlations. These results confirm that each construct is empirically distinct and captures a unique aspect of the conceptual model. Additionally, the negative correlations between problem-focused coping and other variables, particularly perceived stress (-0.523) and burnout (-0.487), align with theoretical expectations, indicating that adaptive coping strategies are inversely related to stress and burnout levels.

Table 2

Discriminant validity (comparison of square root of AVE with inter-construct correlations)

Variable	1	2	3	4	5
Sleep quality	0.736				
Burnout	0.542	0.857			
Perceived stress	0.587	0.623	0.847		
Problem-focused coping	-0.412	-0.487	-0.523	0.835	
Emotion-focused coping	0.368	0.452	0.498	-0.287	0.844

The structural model fit indices reported in Table 3 indicate that the proposed model demonstrates an acceptable and robust fit to the observed data. The chi-square value ( $\chi^2 = 287.456$ ) relative to degrees of freedom ( $df = 124$ ) yields a  $\chi^2/df$  ratio of 2.318, which is below the recommended threshold of 3, suggesting an acceptable model fit. Incremental fit indices, including the Comparative Fit Index (CFI = 0.942), Incremental Fit Index (IFI = 0.943), Tucker–Lewis Index (TLI = 0.935), and Normed Fit Index (NFI = 0.928), all exceed the benchmark of 0.90, further supporting the adequacy of the model. Absolute fit indices such as the

Goodness-of-Fit Index (GFI = 0.921) and Adjusted Goodness-of-Fit Index (AGFI = 0.892) also fall within acceptable ranges. Moreover, the Root Mean Square Error of Approximation (RMSEA = 0.059) and Root Mean Square Residual (RMR = 0.041) are below their respective thresholds of 0.08 and 0.05, indicating a good approximation of the model to the data. Overall, these indices collectively confirm that the structural model provides a satisfactory representation of the relationships among the study variables.

**Table 3**

*Structural model fit indices*

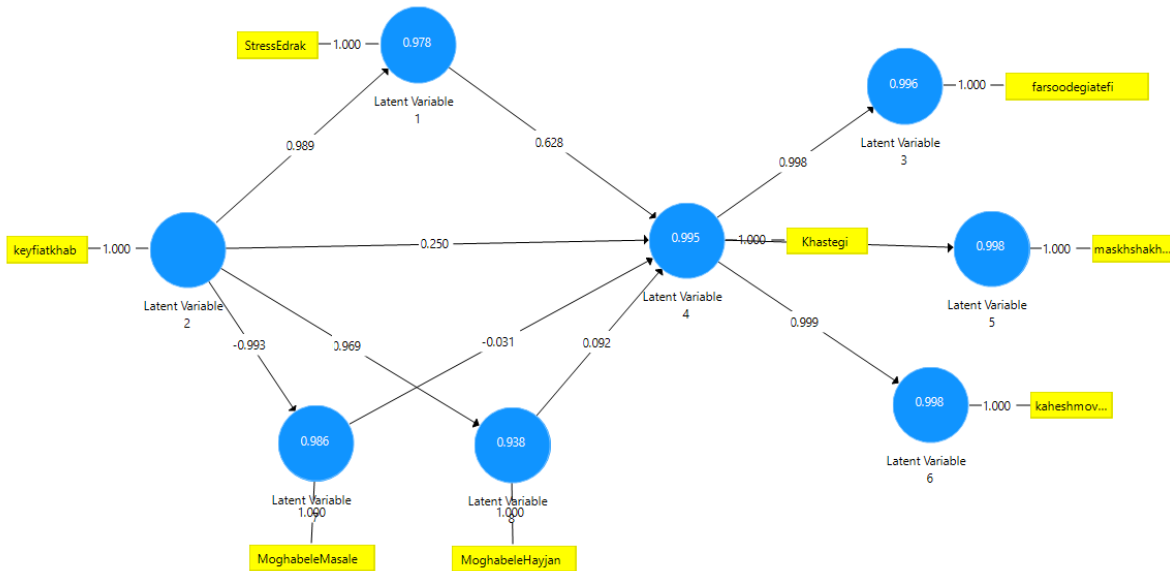
Fit Index	Obtained Value	Acceptable Threshold	Result
$\chi^2$	287.456	–	–
df	124	–	–
$\chi^2/df$	2.318	< 3	Acceptable
CFI	0.942	> 0.90	Acceptable
IFI	0.943	> 0.90	Acceptable
GFI	0.921	> 0.90	Acceptable
AGFI	0.892	> 0.80	Acceptable
RMSEA	0.059	< 0.08	Acceptable
RMR	0.041	< 0.05	Acceptable
TLI	0.935	> 0.90	Acceptable
NFI	0.928	> 0.90	Acceptable

The structural model depicted in the figure illustrates the direct and indirect relationships among sleep quality, perceived stress, coping styles, and burnout. Sleep quality shows a strong positive effect on perceived stress ( $\beta = 0.989$ ), indicating that poorer sleep quality is associated with higher levels of perceived stress. It also exhibits a moderate direct effect on burnout ( $\beta = 0.250$ ), suggesting that sleep disturbances contribute directly to increased burnout. Additionally, sleep quality negatively influences problem-focused coping ( $\beta = -0.993$ ) and positively influences emotion-focused coping ( $\beta = 0.969$ ), implying that poor sleep reduces adaptive coping while increasing reliance on maladaptive strategies. Perceived stress has a substantial

positive effect on burnout ( $\beta = 0.628$ ), reinforcing its central mediating role. Furthermore, problem-focused coping shows a small negative effect on burnout ( $\beta = -0.031$ ), whereas emotion-focused coping has a positive effect ( $\beta = 0.092$ ), indicating differential impacts of coping strategies. The high factor loadings of burnout components—emotional exhaustion, depersonalization, and reduced personal accomplishment (all approximately  $\beta \approx 0.998-0.999$ )—demonstrate strong construct validity. Overall, the figure confirms that perceived stress and coping styles function as meaningful mediators in the relationship between sleep quality and burnout, with perceived stress playing a particularly dominant role.

Figure 1

Final Research Model



#### 4. Discussion

The findings of the present study provide a comprehensive understanding of the complex relationships among sleep quality, perceived stress, coping styles, and job burnout among physicians, offering both theoretical and practical insights into occupational health in medical settings. The results indicated that sleep quality had a direct and significant effect on job burnout, such that poorer sleep quality was associated with higher levels of burnout. This finding is consistent with a substantial body of empirical research emphasizing the critical role of sleep as a foundational psychological and physiological resource. In high-demand professions such as medicine, inadequate or disrupted sleep reduces cognitive functioning, emotional regulation, and physical resilience, thereby increasing susceptibility to occupational stress and eventual burnout (Lai et al., 2024; Scott et al., 2021). The observed relationship aligns with prior studies conducted among healthcare professionals, which consistently report that individuals experiencing poor sleep quality exhibit higher levels of emotional exhaustion and depersonalization (Heydari et al., 2023; Rashidi et al., 2021). Furthermore, the findings support the argument that sleep disturbances may function as an early warning indicator of burnout,

particularly in environments characterized by chronic stress and high responsibility (Rezaei, 2023).

Beyond the direct relationship, the present study demonstrated that sleep quality significantly predicts perceived stress, indicating that physicians with poorer sleep quality tend to experience higher levels of stress perception. This result can be interpreted within the framework of cognitive appraisal theory, which posits that individuals' evaluation of environmental demands is influenced by their internal resources. Poor sleep impairs attention, emotional control, and executive functioning, thereby increasing the likelihood that individuals interpret situations as threatening or overwhelming. This finding is consistent with previous research highlighting the role of sleep in maintaining psychological resilience and stress tolerance (Kim & Jung, 2022). Additionally, studies conducted in occupational settings have shown that poor sleep quality exacerbates the perception of workload and environmental pressures, thereby intensifying stress experiences (Allahyari & Mahboobi, 2024; Elyasi Gomari et al., 2023). The present results therefore reinforce the notion that sleep quality is not merely a physical necessity but also a key determinant of psychological appraisal processes.

The study further revealed that perceived stress had a strong and significant effect on job burnout, confirming its central role as a predictor of burnout among physicians. This

finding is in line with extensive literature demonstrating that chronic exposure to perceived stress leads to the depletion of psychological resources, ultimately resulting in emotional exhaustion and reduced professional efficacy. In healthcare environments, where stressors are persistent and often unavoidable, high levels of perceived stress can accelerate the progression toward burnout. The present finding is supported by empirical evidence indicating that perceived stress is one of the most robust predictors of burnout across various healthcare professions (Al Sabei et al., 2022; Sadra Abrghouei et al., 2025). Moreover, the results are consistent with studies showing that stress-related processes mediate the impact of occupational demands on psychological outcomes, highlighting the importance of addressing stress perceptions in interventions aimed at reducing burnout.

One of the most significant contributions of this study lies in demonstrating the mediating role of perceived stress in the relationship between sleep quality and burnout. The findings indicated that a substantial portion of the effect of sleep quality on burnout operates indirectly through perceived stress, suggesting that poor sleep increases stress perception, which in turn leads to higher burnout. This mediating mechanism provides a more nuanced understanding of how sleep disturbances translate into occupational strain. Similar findings have been reported in prior studies, where stress-related variables mediated the relationship between sleep and mental health outcomes, underscoring the interconnectedness of these constructs (Mahmoudi & Karimian, 2025). The identification of perceived stress as a key mediator highlights the importance of interventions that not only improve sleep quality but also enhance stress management and cognitive appraisal processes.

In addition to perceived stress, the study examined the role of coping styles as another critical mediator. The results showed that sleep quality significantly influenced coping styles, with poorer sleep associated with decreased use of problem-focused coping and increased reliance on emotion-focused coping. This finding is theoretically meaningful, as effective coping requires cognitive clarity, emotional stability, and self-regulation—capacities that are compromised by inadequate sleep. Consistent with this result, previous research has demonstrated that individuals with poor sleep quality are more likely to engage in maladaptive coping strategies such as avoidance, rumination, and emotional disengagement (Cheng et al., 2022). Moreover, domestic studies have also reported that ineffective coping strategies are associated with higher

levels of burnout and psychological distress in occupational settings (Nasr Esfahani et al., 2025).

The study also found that coping styles significantly predict burnout, with problem-focused coping negatively associated with burnout and emotion-focused coping positively associated with it. This pattern aligns with stress-coping theories, which suggest that adaptive coping strategies can mitigate the effects of stress, whereas maladaptive strategies exacerbate psychological strain. The negative association between problem-focused coping and burnout indicates that physicians who actively address stressors and seek solutions are less likely to experience burnout. In contrast, reliance on emotion-focused coping, which often involves avoidance or emotional suppression, contributes to increased burnout. These findings are consistent with empirical evidence demonstrating the protective role of adaptive coping and the detrimental impact of maladaptive coping on occupational well-being (Cheng et al., 2022).

Importantly, the results confirmed that coping styles mediate the relationship between sleep quality and burnout, further supporting the proposed dual mediation model. This finding suggests that poor sleep not only increases stress perception but also impairs coping capacity, thereby creating multiple pathways leading to burnout. The combined mediating effects of perceived stress and coping styles provide a comprehensive explanation of the mechanisms through which sleep quality influences burnout. This integrative perspective advances existing literature by demonstrating that these mediators operate simultaneously and interactively rather than independently. The findings are also consistent with research indicating that coping processes play a crucial role in linking stress and psychological outcomes in healthcare professionals (Nasr Esfahani et al., 2025).

The interplay between perceived stress and coping styles observed in this study further underscores the dynamic nature of psychological processes in occupational contexts. High levels of perceived stress may push individuals toward maladaptive coping strategies, which in turn intensify stress and contribute to burnout. This reciprocal relationship creates a self-reinforcing cycle that exacerbates psychological strain over time. The present findings align with theoretical models emphasizing the interaction between stress appraisal and coping responses, highlighting the importance of addressing both components in interventions. Additionally, the results are consistent with research suggesting that emotional intelligence and other individual

factors can buffer the negative effects of stress and reduce burnout, indicating potential avenues for future intervention (Galanis et al., 2024).

From a broader perspective, the findings of this study highlight the importance of adopting a multidimensional approach to understanding and addressing burnout among physicians. Rather than focusing solely on external stressors or individual outcomes, the results emphasize the need to consider underlying psychological mechanisms, including sleep quality, stress perception, and coping strategies. This approach is particularly relevant in healthcare settings, where interventions must address both individual and organizational factors. The results also suggest that improving sleep quality could have cascading effects on stress and coping, ultimately reducing burnout. Evidence from intervention studies supports this notion, indicating that improvements in sleep quality lead to better mental health outcomes and enhanced resilience (Scott et al., 2021).

## 5. Conclusion

The findings have implications for organizational policies and practices. Given the strong association between sleep quality and burnout, healthcare organizations should prioritize strategies aimed at improving physicians' sleep, such as optimizing work schedules, reducing excessive workloads, and providing resources for sleep hygiene. Additionally, training programs focused on stress management and adaptive coping could further mitigate the risk of burnout. The importance of organizational support is highlighted by studies showing that supportive work environments can reduce stress and improve well-being among healthcare professionals (Gun et al., 2025). Therefore, a combination of individual-level and organizational-level interventions is likely to be most effective in addressing burnout.

Despite the valuable contributions of this study, several limitations should be acknowledged. The cross-sectional design of the study limits the ability to draw causal inferences regarding the relationships among sleep quality, perceived stress, coping styles, and burnout. Additionally, the use of self-report measures may introduce response bias, including social desirability and recall bias, which could affect the accuracy of the findings. The sample was also limited to physicians working in medical centers affiliated with a specific university, which may restrict the generalizability of the results to other populations or healthcare settings. Furthermore, potential confounding

variables such as personality traits, organizational culture, and environmental factors were not explicitly controlled in the analysis.

Future research should address these limitations by employing longitudinal and experimental designs to better understand causal relationships and temporal dynamics among the studied variables. Expanding the sample to include diverse healthcare professionals and different cultural contexts would enhance the generalizability of findings. Additionally, future studies could incorporate objective measures of sleep quality and physiological indicators of stress to complement self-report data. Investigating additional mediating and moderating variables, such as emotional intelligence, resilience, and organizational support, could further enrich the understanding of burnout mechanisms. Advanced analytical approaches, such as multi-level modeling, may also be useful in examining the interaction between individual and organizational factors.

From a practical standpoint, the findings of this study suggest that interventions aimed at reducing burnout among physicians should adopt a comprehensive approach that addresses sleep quality, stress management, and coping skills simultaneously. Healthcare organizations should implement policies that promote adequate rest and work-life balance, including flexible scheduling and limits on excessive working hours. Training programs focused on developing adaptive coping strategies and stress management techniques could empower physicians to better overcome occupational challenges. Additionally, providing access to psychological support services and fostering a supportive work environment may further enhance physicians' well-being and reduce burnout risk.

## Authors' Contributions

Authors equally contributed to this article.

## Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

## Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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### Declaration of Interest

The authors report no conflict of interest.

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### Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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