

Original Research

## Workload and Sleep Quality Among Medical-Surgical Ward Nurses in a Private Hospital in Eastern Indonesia

Neni Ekaristi Br Sianturi, Nora Berliana Permatasari Gulo, Petronela Apriliani D. Kelen, Janwar Olang\*, Mega Sampepadang

\* Faculty of Nursing Universitas Pelita Harapan, Indonesia

### ARTICLE INFO

#### Keywords:

Medical  
Surgical,  
Nurses,  
Sleep quality,  
Workload

### ABSTRACT

Nurses in medical-surgical wards manage high patient loads, complex clinical conditions, administrative responsibilities, and extended working hours. These demands may increase physical and psychological strain, potentially impairing sleep quality and affecting job performance and patient safety. This study aimed to examine the relationship between workload and sleep quality among nurses in a private hospital in Eastern Indonesia. Methods: A quantitative cross-sectional design was employed. All 96 nurses working in the medical-surgical wards were included using a total sampling technique. Workload was assessed using a standardized workload questionnaire, while sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI). Descriptive statistics were used to summarize respondent characteristics, and the Chi-square test was performed to determine the association between workload and sleep quality. Results: A statistically significant relationship was found between workload and nurses' sleep quality ( $p = 0.006$ ). Among nurses with a heavy workload, 98.2% experienced poor sleep quality, compared with 82.5% of those with a light workload. Overall, 58.3% of nurses reported a heavy workload, while 91.7% experienced poor sleep quality. These findings indicate that nurses with heavier workloads were more likely to experience poor sleep quality than those with lighter workloads. Conclusion: Higher workload was significantly associated with poorer sleep quality among nurses. Hospitals are encouraged to routinely evaluate staffing patterns and workload distribution, implement fatigue-management strategies, and promote occupational health programs to improve nurses' well-being and maintain the quality and safety of patient care.

Received 25 March 2026;

Received in revised form 11 June 2026;

Accepted 15 June 2026

<https://doi.org/10.19166/ncjk.v14i1.10910>

\* Corresponding author.

E-mail addresses: [Janwar.olang@uph.edu](mailto:Janwar.olang@uph.edu)

This is an open-access article under the [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/)



## INTRODUCTION

Health services are organized efforts aimed at maintaining and improving health, preventing disease, and providing promotive, preventive, curative, and rehabilitative care for individuals and communities. In Indonesia, healthcare delivery is implemented through an integrated and collaborative system involving multiple healthcare professionals to ensure patient safety and quality of care (Ministry of Health of the Republic of Indonesia, 2017). Within this system, nurses play a central role because they provide continuous patient care, maintain direct interaction with patients, and coordinate multidisciplinary healthcare services. In addition to implementing nursing interventions, nurses are responsible for monitoring patients' conditions, facilitating communication among healthcare teams, educating patients and families, and ensuring continuity of care. These responsibilities position nurses as key contributors to healthcare outcomes and patient safety (Stimpfel et al., 2020).

Globally, nurses represent the largest proportion of healthcare workers and serve as frontline providers of hospital-based care. The increasing complexity of healthcare systems, technological advancements, and rising patient acuity have substantially expanded nurses' responsibilities beyond bedside care to include clinical decision-making, comprehensive documentation, and adherence to patient safety standards (Stimpfel et al., 2020). Consequently, nurses frequently experience substantial occupational demands, particularly in medical-surgical wards where patient conditions are often unstable and require continuous monitoring. In these settings, nurses are expected to manage high patient turnover, respond rapidly to emergencies, and maintain accurate clinical documentation while simultaneously ensuring the quality and safety of care.

Nurses account for approximately 75% of hospital healthcare personnel, making them the dominant workforce in clinical settings (Nurjanah & Sakka, 2017). This substantial presence increases exposure to the physical, cognitive, and emotional demands associated with nursing practice. Nursing workload extends beyond working hours and encompasses multiple dimensions, including physical activities, cognitive processing, emotional engagement, and organizational responsibilities. Excessive workload may arise from prolonged shifts, overtime, inadequate staffing, and increasing patient dependency, all of which may reduce opportunities for adequate recovery and rest (Stimpfel et al., 2020). Although Indonesian regulations generally establish working hours of 120–150 hours per month, nurses

frequently exceed these limits because of workforce shortages and increasing healthcare demands. Persistent exposure to excessive workload has been associated with fatigue, burnout, decreased job satisfaction, and impaired quality of patient care (Phillips, 2020).

The relationship between workload and sleep quality can be explained through the fatigue–recovery model, which proposes that continuous occupational demands without sufficient recovery periods may lead to cumulative fatigue and physiological exhaustion. In nursing, inadequate recovery due to prolonged working hours and shift rotations may impair sleep quality and hinder physical and psychological restoration. Furthermore, circadian disruption theory suggests that rotating and night-shift schedules interfere with the body's biological clock, resulting in difficulties initiating and maintaining restorative sleep. These theoretical perspectives indicate that excessive workload and irregular scheduling may negatively affect nurses' sleep patterns and overall well-being.

Sleep is a fundamental physiological requirement that is essential for maintaining cognitive performance, emotional regulation, immune function, and physical health. Adequate sleep is particularly important for nurses because their professional responsibilities require sustained concentration, rapid clinical judgment, and continuous vigilance. Sleep quality refers not only to sleep duration but also to sleep continuity, efficiency, and the subjective perception of restfulness. Conversely, poor sleep quality is characterized by fragmented sleep, insufficient sleep duration, difficulty initiating sleep, and non-restorative sleep (Maisa et al., 2021). Inadequate sleep among nurses has been associated with fatigue, impaired concentration, reduced productivity, emotional instability, and an increased risk of occupational incidents and patient safety events.

Shift work further contributes to sleep disturbances among nurses. Rotating schedules and night shifts disrupt circadian rhythms and reduce opportunities for restorative sleep, particularly among nurses working in medical-surgical units where patient care activities continue around the clock. Previous studies have demonstrated that nurses working rotating shifts frequently experience insomnia, daytime sleepiness, chronic fatigue, and reduced sleep efficiency. Persistent sleep disruption may also contribute to long-term health consequences, including cardiovascular disease, metabolic disorders, anxiety, and depression. These findings indicate that sleep quality is not only an individual health concern but also an important determinant of healthcare performance and patient safety.

Empirical evidence consistently demonstrates a significant relationship between workload and sleep disturbances

among nurses. Phillips (2020) reported that nurses in medical-surgical units frequently perceived their workload as excessive, contributing to occupational strain and reduced quality of care. Similarly, international studies have shown that high workload and inadequate staffing are associated with fatigue and sleep disturbances, particularly in hospital units characterized by high patient dependency and demanding clinical environments. Excessive workload may therefore compromise both nurses' well-being and the effectiveness of healthcare delivery.

Evidence from Indonesia reflects similar patterns. A study conducted in Manado identified a significant association between workload and sleep disturbances among nurses, with 59.4% of respondents reporting sleep-related problems (Tareluan, 2016). In Kupang City, Mesa et al. (2018) found that 90.48% of shift nurses experienced mild sleep disturbances associated with prolonged working hours and fatigue. Other Indonesian studies have similarly reported that rotating shifts, overtime, and inadequate staffing contribute to fatigue and reduced sleep quality among nurses. These conditions may adversely affect nurses' physical endurance, psychological well-being, and work performance, ultimately influencing patient safety and healthcare quality.

Despite growing evidence regarding workload and sleep quality among nurses, research focusing on private hospitals in Eastern Indonesia remains limited. Most previous studies have been conducted in public hospitals or urban healthcare facilities in western regions of Indonesia, potentially limiting the generalizability of the findings to other healthcare contexts. Differences in staffing systems, hospital resources, workload distribution, and organizational management may influence occupational health outcomes among nurses in Eastern Indonesia. Therefore, further investigation is needed to better understand the relationship between workload and sleep quality within this specific healthcare setting.

Preliminary interviews with nurses in a private hospital in Eastern Indonesia revealed several occupational challenges, including irregular scheduling, limited opportunities for rest during shifts, overtime work, and substantial work pressure. Some nurses reported difficulty maintaining regular sleep patterns because of rotating shifts and prolonged working hours. These conditions may contribute to cumulative fatigue and impaired recovery, potentially affecting nurses' physical health, psychological well-being, and quality of patient care. If left unaddressed, these issues may increase absenteeism, reduce workforce productivity, and negatively affect healthcare service delivery.

Given the essential role of nurses in maintaining safe and effective healthcare services, identifying factors that influence sleep quality is critically important. Understanding the relationship between workload and sleep quality may provide evidence to support workforce management strategies, staffing policies, and occupational health interventions in hospital settings. Therefore, this study aimed to examine the relationship between workload and sleep quality among medical-surgical ward nurses in a private hospital in Eastern Indonesia. The findings are expected to contribute to evidence-based interventions that support nurses' occupational well-being and improve the quality and safety of patient care.

## METHOD

This study employed a quantitative cross-sectional design and was conducted in the medical-surgical ward of a private hospital in Eastern Indonesia, specifically in East Nusa Tenggara Province, from February to March 2025. The study population consisted of all nurses working in the medical-surgical inpatient ward during the study period, totaling 96 nurses. A non-probability sampling technique using a total sampling approach was applied, whereby all eligible nurses were invited to participate. The inclusion criteria were nurses who worked in the medical-surgical ward, had been employed for at least six months, were actively working during the data collection period, and agreed to participate by providing informed consent. Nurses who were on leave, absent, or undergoing medical treatment during the data collection period were excluded. Since all eligible nurses agreed to participate, the final sample consisted of 96 respondents. Data were collected using structured self-administered questionnaires consisting of three sections: demographic characteristics, workload assessment, and sleep quality assessment. Demographic data included age, gender, educational level, marital status, and length of employment.

Workload was measured using the Workload Questionnaire developed by Elizar (2019). The instrument consists of 25 items rated on a four-point Likert scale ranging from strongly disagree to strongly agree. The questionnaire includes four favorable items (16, 17, 20, and 21) and 21 unfavorable items (1–15, 18–19, and 22–25). Favorable items were scored from 1 to 4, whereas unfavorable items were reverse-scored. Higher total scores indicated higher perceived workload. Previous validity testing involving 50 respondents demonstrated that all 25 items were valid, with item-total correlation coefficients exceeding the critical  $r$ -value of 0.279. Reliability testing yielded a Cronbach's alpha coefficient of 0.939, indicating excellent internal consistency (Elizar, 2019).

Sleep quality was assessed using the Indonesian version of the Pittsburgh Sleep Quality Index (PSQI), translated and validated by Ratnasari (2016). The PSQI consists of 18 self-rated items grouped into seven components: subjective

sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Each component is scored on a scale ranging from 0 to 3, producing a global score between 0 and 21. A global PSQI score of  $\leq 5$  indicates good sleep quality, whereas a score of  $>5$  indicates poor sleep quality. Validity testing of the Indonesian PSQI conducted among 30 respondents demonstrated item correlation coefficients ranging from 0.365 to 0.733, exceeding the critical  $r$ -value of 0.361. Reliability analysis yielded a Cronbach's alpha coefficient of 0.741, indicating acceptable internal consistency.

Data collection was conducted after obtaining approval from hospital management and ethical clearance from the Ethics Committee of the Faculty of Nursing, Universitas Pelita Harapan. Eligible participants were informed about the study procedures and provided written informed consent before participation. Questionnaires were distributed directly to respondents during working hours and supervised by research assistants to ensure proper completion and maximize response rates. Completed questionnaires were checked for completeness and consistency before data entry.

Data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS) version 30. Univariate analysis was performed to describe respondents'

demographic characteristics, workload levels, and sleep quality using frequencies and percentages. Bivariate analysis was conducted using the Chi-square test to examine the relationship between workload and sleep quality. Prior to the Chi-square analysis, the assumptions regarding expected cell frequencies were assessed to ensure that no more than 20% of cells had expected counts below five and that no cell had an expected count below one. Statistical significance was set at  $p < 0.05$ .

Ethical principles were strictly maintained throughout the study. Participation was entirely voluntary, and respondents retained the right to withdraw at any time without consequence. Participant anonymity was ensured through the use of identification codes rather than names. All collected data were kept confidential, securely stored, and used exclusively for research purposes.

## RESULT

The demographic characteristics of respondents indicated that most nurses were within the productive age range, predominantly female, and held a professional nursing qualification (D4/S1 + Ners). Most respondents also had relatively short work experience, ranging from one to three years. Detailed demographic characteristics are presented in Table 1.

**Table 1.** Demographic Characteristics of Respondents (n=96)

Demographic Data	N	%
<b>Age:</b>		
22-28 years	36	37,50
29-35 years	44	45,83
36-42 years	16	16,67
<b>Total</b>	<b>96</b>	<b>100</b>
<b>Gender:</b>		
Male	10	10,42
Female	86	89,58
<b>Total</b>	<b>96</b>	<b>100</b>
<b>Level Of Education:</b>		
D3	14	14,58
D4/S1 + Ners	82	85,42
<b>Total</b>	<b>96</b>	<b>100</b>
<b>Length of work:</b>		
1-3 years	65	67,71
4-6 years	18	18,75
> 6 years	13	13,54
<b>Total</b>	<b>96</b>	<b>100</b>

The distribution of workload categories showed that the majority of nurses perceived their workload as heavy. This finding suggests

that nurses working in the medical-surgical ward experienced considerable occupational demands. The distribution of workload levels is presented in Table 2.

**Table 2.** Workload Levels Among Medical-Surgical Ward Nurses (n=96)

Category	N	%
Heavy	56	58.30
Light	40	41.70
Total	96	100

The findings related to sleep quality revealed that most respondents experienced poor sleep quality. This result indicates that sleep

disturbances were common among nurses working in the medical-surgical ward. Detailed results are presented in Table 3.

**Table 3.** Sleep Quality Data among Medical-Surgical Room Respondents (n=96)

Category	N	%
Poor	88	91.70
Good	8	8.30
Total	96	100

The bivariate analysis demonstrated a statistically significant association between workload and sleep quality among nurses. Nurses with heavier workloads were more likely to report poor

sleep quality than those with lighter workloads. Detailed findings are presented in Table 4.

**Table 4.** Association Between Workload and Sleep Quality Among Nurses

Workload	Sleep Quality				P value
	Poor		Good		
	N	%	N	%	
Heavy	55	57.30	1	1.00	0,006
Light	33	34.40	7	7.30	
Total	88	91.70	8	8.30	

The Chi-square analysis revealed a statistically significant relationship between workload and sleep quality ( $p = 0.006$ ). Among nurses with a heavy workload, 55 (98.2%) reported poor sleep quality, whereas 33 (82.5%) of those with a light workload reported poor sleep quality. The Phi coefficient value of 0.32 indicated a moderate association between workload and sleep quality, suggesting that heavier workloads were moderately associated with poorer sleep quality among nurses.

## DISCUSSION

This study demonstrated a significant relationship between workload and sleep quality among nurses working in a medical-surgical ward at a private hospital in Eastern Indonesia. Nurses who experienced heavier workloads were more likely to report poor sleep quality, indicating that occupational demands may substantially affect nurses' physical and psychological recovery. These findings support previous studies suggesting that excessive workload contributes to fatigue, sleep disturbances, and reduced occupational well-being among nurses (Kakemam et al., 2021; Wijanarti et al., 2022).

Most respondents in this study were aged between 29 and 35 years, representing nurses in early to middle adulthood. At this stage,

nurses are commonly expected to balance demanding professional responsibilities with personal and social obligations. Younger nurses may be particularly vulnerable to occupational stress because they are still adapting to clinical responsibilities while managing high expectations for performance and productivity. O'Hara & Reid (2024) reported that nurses under 35 years of age are more likely to experience burnout when exposed to excessive workloads. Similarly, Heijden et al. (2019) and Dall'Ora et al. (2020) found that younger nurses are at greater risk of fatigue and emotional exhaustion due to cumulative occupational demands. These conditions may reduce opportunities for adequate recovery and contribute to sleep disturbances.

The predominance of female nurses in this study reflects the demographic composition of the nursing workforce both nationally and globally. Although female nurses are often recognized for their strong interpersonal and caregiving abilities, they may also experience dual burdens associated with professional and domestic responsibilities. The combination of shift work, emotional labor, and family obligations may intensify fatigue and psychological stress, both of which are known contributors to poor sleep quality. Previous research has demonstrated that female healthcare workers are more likely to report sleep disturbances and work-related exhaustion, particularly in high-demand clinical settings (Rahim &

Irwansyah, 2021; Zhang et al., 2017).

An important finding of this study was the extremely high prevalence of poor sleep quality, with 91.7% of respondents categorized as having poor sleep quality. This proportion is considerably higher than that reported in several previous studies and may indicate substantial occupational strain within the study setting. Several contextual factors may explain this condition. Nurses in medical-surgical wards are frequently exposed to prolonged standing, continuous patient monitoring, emergency situations, high patient turnover, and extensive documentation requirements. These demands often reduce opportunities for adequate rest during and after shifts. In addition, rotating schedules and overtime work may disrupt circadian rhythms and impair physiological recovery processes (Oetelaar van den et al., 2020).

From a physiological perspective, chronic sleep deprivation activates stress-response mechanisms involving increased cortisol secretion, sympathetic nervous system activity, and inflammatory responses. Persistent circadian disruption may impair melatonin regulation, reduce sleep efficiency, and contribute to cumulative fatigue. Over time, inadequate sleep may negatively affect cognitive performance, concentration, decision-making ability, and emotional regulation. For nurses, these impairments are particularly concerning because clinical practice requires sustained vigilance, rapid judgment, and precise interventions. Sleep deprivation among nurses has also been associated with an increased risk of medication errors, reduced patient safety, occupational accidents, and lower quality of care (Chang, 2024; Ferri et al., 2016). Therefore, the high prevalence of poor sleep quality observed in this study should be considered not only an occupational health issue but also a patient safety concern.

The finding that more than half of the respondents experienced a heavy workload further supports the assumption that excessive occupational demands may contribute to impaired sleep quality. Heavy workload in nursing is not limited to physical tasks but also includes the cognitive and emotional burdens associated with patient care responsibilities. Nurses in medical-surgical wards must simultaneously manage clinical monitoring, multidisciplinary coordination, documentation, and emergency responses. When these demands exceed an individual's adaptive capacity, recovery time becomes insufficient, resulting in cumulative fatigue. According to the fatigue-recovery model, prolonged occupational demands without adequate recovery may lead to physical and mental exhaustion, thereby impairing sleep quality and overall well-being (Ivziku et al., 2024).

The statistically significant relationship identified between workload and sleep quality is consistent with previous evidence demonstrating that workload-related fatigue is a major determinant of sleep disturbances among nurses (Kakemam et al., 2021). Nurses experiencing heavier workloads may have difficulty achieving restorative sleep because persistent physical exhaustion and psychological stress interfere with normal sleep patterns.

Furthermore, work-related stress may increase physiological arousal and delay the transition into deeper stages of sleep, resulting in fragmented and non-restorative sleep. This mechanism may explain why nurses with heavier workloads in this study were more likely to report poor sleep quality. Similar findings were reported by (Dall'Ora et al., 2020), who found that excessive workload, long working hours, and insufficient recovery time contribute significantly to fatigue, burnout, and sleep problems among nurses.

In addition, Stewart & Arora (2019) explained that occupational stress and sustained psychological demands can disrupt circadian rhythms and impair sleep duration and quality among healthcare workers. Moreover, (Lin et al., 2023) demonstrated that emotional exhaustion and work-related stress were strongly associated with insomnia symptoms and poor sleep quality among hospital nurses. Consistent with these findings, Booker et al. (2020) also reported that high workload and shift-related fatigue increased the risk of sleep disturbances and impaired recovery among nurses working in demanding clinical environments.

Interestingly, several nurses who reported lighter workloads also experienced poor sleep quality. This finding suggests that sleep quality is influenced by multiple interacting factors beyond workload alone. Shift rotation patterns, night-shift frequency, organizational support, psychosocial stress, lifestyle habits, and environmental factors may also contribute to sleep disturbances. Rotating shifts are particularly important because they disrupt circadian rhythms and alter the body's natural sleep-wake cycle, even when perceived workload is relatively low (Adrianti et al., 2024; Ferri et al., 2016). Consequently, improving sleep quality among nurses requires not only workload management but also broader organizational strategies that address scheduling systems, recovery periods, and occupational support.

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design limits the ability to determine causal relationships between workload and sleep quality. Second, the study was conducted in a single private hospital in Eastern Indonesia, which may limit the generalizability of the findings to other healthcare settings. Third, this study primarily focused on workload and did not comprehensively examine other factors that may influence sleep quality, such as psychological stress, organizational climate, shift rotation frequency, and personal lifestyle behaviors. Despite these limitations, the study provides important evidence regarding the occupational health challenges experienced by nurses in medical-surgical settings and highlights the importance of workload management in maintaining nurses' well-being and ensuring patient safety.

## CONCLUSION

This study demonstrated a significant relationship between workload and sleep quality among nurses working in the medical-surgical ward of a private hospital in Eastern Indonesia. Nurses

experiencing heavier workloads were more likely to report poor sleep quality, indicating that excessive occupational demands may adversely affect nurses' physical recovery and psychological well-being. The high prevalence of poor sleep quality identified in this study highlights an important occupational health concern in hospital settings. Inadequate sleep among nurses may impair concentration, clinical decision-making, emotional regulation, and work performance, which may ultimately compromise patient safety and the quality of care. These findings emphasize the importance of implementing effective workload management strategies, adequate staffing allocation, structured rest periods, and healthier shift-scheduling systems to support nurses' well-being and optimize healthcare service quality. Future research should involve multicenter settings, longitudinal designs, and additional organizational and psychosocial variables to provide a more comprehensive understanding of the factors influencing nurses' sleep quality.

## ACKNOWLEDGEMENT

The authors express their sincere gratitude to the Institute for Research and Community Service (LPPM) of Universitas Pelita Harapan for providing financial support for this study. The authors also extend their appreciation to all individuals and institutions who contributed to and supported the implementation of this research. This study received ethical approval from the Faculty of Nursing Ethics Committee, Universitas Pelita Harapan (Reference No. 094/KEPFON/II/2025).

## REFERENCES

- Adrianti, S., Kaunang, T. M. D., Wahongan, G. J. P., Lampus, F. H., & Victoria R D. (2024). *Impact of Sleep Quality, Workload, Job stress, and Coping Strategies on Work Fatigue among Nurses at Hermina Hospital Manado*. <https://doi.org/10.35960/vm.v17i2.1475>
- Booker, L. A., Sletten, T. L., Alvaro, P. K., Barnes, M., Collins, A., Chai-Coetzer, C. L., Naqvi, A., McMahon, M., Lockley, S. W., Rajaratnam, S. M. W., & Howard, M. E. (2020). *Exploring the associations between shift work disorder, depression, anxiety and sick leave taken amongst nurses*. *Journal of Sleep Research*, 29(3). <https://doi.org/10.1111/jsr.12872>
- Chang Hyoung Eun. (2024). *Sleep quality and hours of nurses according to shift type and schedule: A cross-sectional study*. <https://doi.org/10.1080/07420528.2024.2434165>
- Dall'Orta, C., Ball, J., Reinius, M., & Griffiths, P. (2020). *Burnout in nursing: A theoretical review*. In *Human Resources for Health (Vol. 18, Number 1)*. BioMed Central Ltd. <https://doi.org/10.1186/s12960-020-00469-9>
- Elizar E. (2019). *Pengaruh stres kerja, beban kerja dan kepuasan kerja terhadap kinerja perawat di ruang rawat inap RSUD datu baru takengong*. <http://dx.doi.org/10.30829/jumantik.v5i1.6809>
- Ferri, P., Guadi, M., Marcheselli, L., Balduzzi, S., Magnani, D., & Di Lorenzo, R. (2016). *The impact of shift work on the psychological and physical health of nurses in a general hospital: A comparison between rotating night shifts and day shifts*. *Risk Management and Healthcare Policy*, 9, 203–211. <https://doi.org/10.2147/RMHP.S115326>
- Heijden. B V D, Mahoney. C. B, & Xu, Y. (2019). *Impact of job demands and resources on nurses' burnout and occupational turnover intention towards an age-moderated mediation model for the nursing profession*. *International Journal of Environmental Research and Public Health*, 16(11). <https://doi.org/10.3390/ijerph16112011>
- Ivziku, D., Gualandi, R., Ferramosca, F. M. P., Lommi, M., Tolentino Diaz, M. Y., Raffaele, B., Montini, G., Porcelli, B., Stievano, A., Rocco, G., Notarnicola, I., Latina, R., De Benedictis, A., & Tartaglino, D. (2024). *Decoding Nursing Job Demands: A Multicenter Cross-Sectional Descriptive Study Assessing Nursing Workload in Hospital Medical-Surgical Wards*. *SAGE Open Nursing*, 10. <https://doi.org/10.1177/23779608241258564>
- Kakemam, E., Chegini, Z., Rouhi, A., Ahmadi, F., & Majidi, S. (2021). *Burnout and its relationship to self-reported quality of patient care and adverse events during COVID-19: A cross-sectional online survey among nurses*. *Journal of Nursing Management*, 29(7), 1974–1982. <https://doi.org/10.1111/jonm.13359>
- Lin, Y. E., Lin, C. T., Hu, M. L., Tzeng, S., & Chien, L. Y. (2023). *The relationships among perceived stress, resilience, sleep quality and first-month retention of newly employed nurses: A cross-sectional survey*. *Nursing Open*, 10(6), 4004–4012. <https://doi.org/10.1002/nop2.1659>
- Maisa, E. A., Andrial, Murni, D., & Sidaria. (2021). *Hubungan stres akademik dengan kualitas tidur mahasiswa keperawatan tingkat akhir program alih jenjang*. *Jurnal Ilmiah Universitas Batanghari Jambi*, 21(1), 438. <https://doi.org/10.33087/jiubi.v21i1.1345>
- Mesa, E., Manurung, I. F. E., Magdalena, M., & Wahyuni, D. (2018). *Gambaran Kualitas Tidur Pada Pekerja Bergilir Di Rumah Sakit S.K. Lerik Kota Kupang Tahun 2018*. <https://doi.org/10.35508/tjph.v1i2.2131>
- Ministry of Health of the Republic of Indonesia. (2017). *Pengembangan jenjang karir profesional perawat profesional perawat klinis*. [www.peraturan.go.id](http://www.peraturan.go.id)
- Nurjanah, S., & Sakka, A. (2017). *Analisis beban kerja tenaga perawat di instalasi rawat inap rumah sakit umum daerah (RSUD) kota Kendari tahun 2016 (Vol. 2, Number 5)*. <https://ojs.uho.ac.id/index.php/JIMKESMAS/article/view/2008>
- Oetelaar van den, W. F. J. M., Rhenen van, W., Stellato, R. K., & Grolman, W. (2020). *Balancing workload of nurses: Linear mixed effects modelling to estimate required nursing time on surgical wards*. *Nursing Open*, 7(1), 235–245. <https://doi.org/10.1002/nop2.385>
- O'Hara, C., & Reid, M. (2024). *The Under 35 Nursing Workforce in 2022: Overworked, Under Supported, and Burned Out*. *Journal of Nursing Regulation*, 15(1), 45–55. [https://doi.org/10.1016/S2155-8256\(24\)00028-0](https://doi.org/10.1016/S2155-8256(24)00028-0)
- Phillips, C. (2020). *Relationships between workload perception, burnout, and intent to leave among medical-surgical nurses*. *International Journal of Evidence-Based Healthcare*, 18(2), 265–273. <https://doi.org/10.1097/XEB.0000000000000220>

- Rahim, H., & Irwansyah, I. (2021). *Diferensiasi Peran Perawat Laki-laki Dan Perempuan Di RSUD Haji Kota Makassar*. <https://doi.org/http://eprints.unm.ac.id/id/eprint/20167>
- Ratnasari, C. (2016). *Gambaran kualitas tidur pada komunitas game online mahasiswa teknik elektro Universitas Diponegoro*. <https://eprints2.undip.ac.id/cgi/oai>
- Stewart, N. H., & Arora, V. M. (2019). *The Impact of Sleep and Circadian Disorders on Physician Burnout*. *CHEST*, 156(5), 1022–1030. <https://doi.org/10.1016/j.chest.2019.07.008>
- Stimpfel, A. W., Fatchi, F., & Kovner, C. (2020). *Nurses' sleep, work hours, and patient care quality, and safety*. *Sleep Health*, 6(3), 314–320. <https://doi.org/10.1016/j.sleh.2019.11.001>
- Tareluan, T. (2016). *Hubungan Antara Beban Kerja Dengan Gangguan Pola Tidur Perawat Di Instalasi Gawat Darurat Non Trauma*. <https://doi.org/10.35790/jkp.v4i2.12912>
- Zhang, Y., Punnett, L., & Nannini, A. (2017). *Work-Family Conflict, Sleep, and Mental Health of Nursing Assistants Working in Nursing Homes*. *Workplace Health and Safety*, 65(7), 295–303. <https://doi.org/10.1177/216>

