INDOGENIUS

ISSN 2828-1365

Volume 4, Issue 1, February (2025) : 224-229

Evaluation of 90 Minute Healthy Napping as an Intervention to Improve Night Shift Nurses' Performance

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Article Info

Article History :
Revised: January 2025
Available online: February 2025

Keywords :
Napping, Night Shift, Fatigue, Alertness, Nurse Performance.

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ABSTRACT

Background & Objective: The night shift among nurses poses risks of circadian rhythm disruption, fatigue, and decreased alertness, which impact their performance. Napping during night shifts has been proposed as a strategy to reduce fatigue and enhance nurses' performance. **Method:** This study aims to analyze the effect of 90-minute healthy napping on the performance of night shift nurses at the Inpatient Installation of RSU Mitra Sejati Medan. This research employs a pre-experimental design with a one-group pretest-posttest approach. A total of 108 nurses participated in the study and were divided into two groups, each taking a 90-minute nap between 01:00–02:30 AM and 02:30–04:00 AM. Nurses' performance was measured before and after the intervention using a questionnaire, and the data were analyzed using the Wilcoxon test. **Result:** The results indicate a significant improvement in nurses' performance following the intervention ($p = 0.000$). Before the intervention, the majority of nurses had a moderate performance level (60.2%), with only 11.1% exhibiting good performance. After the intervention, 61.1% of nurses improved to the good performance category. **Conclusion:** This study concludes that 90-minute healthy napping is effective in enhancing night shift nurses' performance. Implementing this strategy can serve as a solution to maintaining service quality during night shifts.

Introduction

Night shifts are an integral part of the healthcare system, especially for nurses who must ensure 24-hour continuity of patient care. However, working at night has its own challenges, especially related to circadian rhythm disruption, decreased alertness, as well as increased risk of fatigue, occupational stress, and decreased nurse performance in providing services to patients (Di Muzio et al., 2020; Fatna et al., 2024; Prasetya et

al., 2021). Fatigue due to night shifts not only affects individual nurses, but can also reduce the quality of health services and increase the risk of medical errors and the effectiveness of health services that have the potential to jeopardize patient safety (Alsharari et al., 2021; Wilson et al., 2019).

Various factors contribute to the work stress of night shift nurses, including sleep disturbances, unmet sleep needs, as well as higher workloads compared to other shifts (Bagus Winata et al., 2024). Poor sleep quality is significantly associated with decreased alertness and psychomotor ability, which affects nurses' work effectiveness in critical care units (James et al., 2021). The accumulation of fatigue after several consecutive shifts is also an important factor that can affect the cognitive aspects and work readiness of nurses (Chang et al., 2017).

Research by (Ganesan et al., 2019) showed that workers with night shifts experience limited sleep time, especially between consecutive night shifts, which contributes to increased fatigue and decreased alertness. In line with these findings, the study (Huang et al., 2021) also found that nurses' sleep quality deteriorated gradually during consecutive night shifts and experienced only slight improvement after switching to day shifts, with a recovery pattern that did not last long. This suggests that nurses working on night shifts face great challenges in maintaining their sleep quality and alertness during duty.

Various strategies have been proposed to reduce the negative impact of night shifts on nurses, one of which is to implement napping or short sleep during working hours. Several studies have shown that napping can help reduce fatigue, increase alertness, and improve cognitive and psychomotor performance of nurses working on night shifts (Han et al., 2021; Ruggiero & Redeker, 2014). However, research results regarding the effectiveness of napping in improving nurses' performance still show inconsistencies. Some studies report that although napping can reduce drowsiness and increase alertness, these effects are temporary and may be accompanied by sleep inertia, which is a transition period from sleep to consciousness that can hinder rapid response in emergency situations (Neville et al., 2017). In addition, individual factors such as age, sleep patterns before the night shift, as well as the duration and timing of napping can also affect the effectiveness of this strategy (Ganesan et al., 2019).

In addition to the differences in research results, the implementation of napping in the work environment of nurses also faces various challenges, such as limited time and facilities, lack of institutional policies related to rest at work, and a work culture that does not fully support the implementation of this strategy (Alfonsi et al., 2021). Therefore, further research is needed to understand the impact of napping on night shift nurses' performance more comprehensively.

Objective

This research is a quantitative study with a pre-experimental design using a one group pretest-posttest design approach. This design aims to evaluate the effect of 90-minute healthy napping on the performance of night shift nurses at the Inpatient Installation of Mitra Sejati Hospital Medan. This study has obtained ethical approval from the Ethics Commission of Health Research (KEPK) Poltekkes Medan with number 01.25.943/KEPK/Poltekkes Medan 2024.

Method

The study was conducted in partial care nursing rooms consisting of Sakura, Lotus, Bougainville, Tulip, and Flamboyant rooms at Mitra Sejati General Hospital Medan. The study population included 113 nurses, with a total sampling technique that resulted in 108 respondents after applying the exclusion criteria. The criteria included the head of the room, nurses assigned to the intensive care unit, and nurses who were on leave or sick.

During the study, the respondents were divided into two groups that underwent 90 minutes of napping alternately. The first group rested at 01.00-02.30 WIB, while the second group slept at 02.30-04.00 WIB. The sleeping atmosphere was set to be comfortable with dim lighting, appropriate temperature, and a quiet environment. Nurse performance assessment was conducted using a questionnaire before and after the intervention. Data were analyzed using the Wilcoxon test to measure differences in nurse performance before and after the implementation of 90-minute healthy napping.

Results

The characteristics of the respondents aim to identify the specific characteristics of the respondents. Details of respondent characteristics can be seen in Table 1 below:

TABLE 1. Frequency Distribution Based on Respondent Characteristics at Mitra Sejati General Hospital

Age	**Frequency**	**%**
24-28	47	43,5
29-33	28	25,9
34-38	30	27,8
39-43	3	2,8
Gender	**Frequency**	**%**
Male	14	13
Female	94	87
Education	**Frequency**	**%**
Diploma	83	76,9
Nursing	25	23,1
Length of Service	**Frequency**	**%**
<1	9	8,3
1-5	55	50,9
>5	44	40,7
Married status	**Frequency**	**%**
Married	61	56,5
Not Married	47	43,5
Total	**108**	**100**

Based on Table 1, the majority of respondents in this study were nurses aged 24-28 years (43.5%) and female (87%). In terms of education, most had a Diploma 3 Nursing background (76.9%). Based on length of service, more than half had 1-5 years of work experience (50.9%). In addition, the majority of respondents were married (56.5%). The distribution of these characteristics reflects that the majority of nurses participating in this study are young women with relatively early to middle working experience.

TABLE 2. Data Distribution Based on Comparison of Pre-test Performance and Post-test Performance of Nurses at the Inpatient Installation of Mitra Sejati Hospital

Performance Level	Pre-test (%)	Post-test (%)	P-value
Poor	31 (28,7)	2 (1,9)	
Medium	65 (60,2)	40 (37)	0,000
Good	12 (11,1)	66 (61,1)	
Total	108 (100)	108 (100)	

Table 2. shows a comparison of nurse performance before and after the intervention at the Inpatient Installation of Mitra Sejati Hospital. Before the intervention (pre-test), the majority of nurses had a moderate level of performance (60.2%), while only 11.1% had good performance. After the intervention (post-test), there was a significant increase, where most nurses (61.1%) achieved a good level of performance, and only 1.9% were still in the poor category. Statistical tests showed a p value = 0.000, indicating that the difference between the pre-test and post-test was significant. These results indicate that the intervention was effective in improving nurses' performance.

Discussion

The results of this study showed a significant improvement in nurses' performance after the intervention, as seen from the comparison of pre-test and post-test results. Before the intervention, most nurses (60.2%) were at the moderate performance level, and only 11.1% had good performance. However, after the intervention, the number of nurses with good performance increased dramatically to 61.1%, while the category of underperformance dropped significantly from 28.7% to only 1.9%. This suggests that the implemented intervention had a positive impact on improving nurses' performance.

One of the factors that may contribute to this performance improvement is the implementation of napping or short sleep during the night work shift. Based on research (Fallis et al., 2011), nurses who work on night shifts are at risk of sleep deprivation, which can ultimately threaten the safety of patients and nurses themselves. Napping during night shifts can help reduce fatigue and increase alertness, although some nurses avoid it due to the effects of sleep inertia. However, the benefits of these short naps still outweigh the risks, especially in the context of improved occupational safety. A study conducted by Ruggiero and Redeker (2014) showed that although there is a slight period of sleep inertia after napping, overall this strategy can help reduce sleepiness and improve work performance.

In addition, a study conducted by (Han et al., 2021) also showed that nurses who napped during a 12-hour shift experienced a significant reduction in sleepiness and reported improved quality of nursing care. In this study, nurses who took a short nap on the first night of the work shift experienced decreased fatigue and improved quality of care on the following shift. This suggests that napping not only contributes to nurses' physical condition, but also has a direct impact on the quality of patient care.

However, research (Neville et al., 2017) showed that there was no significant difference in global fatigue levels between nurses who napped and those who did not. However, factors such as rotating work shifts, second jobs, and family responsibilities

also affected nurses' overall fatigue levels. Therefore, while napping may be one solution, a holistic approach that considers work-life balance is needed.

Taking into account the various findings of this study, it can be concluded that napping during night shifts has the potential to improve nurses' performance by reducing fatigue and increasing alertness. Therefore, hospital managers should consider implementing a scheduled napping policy as part of a strategy to improve the quality of nursing care, while taking into account environmental factors and patient needs for optimal implementation.

Conclusion

Napping during the night shift was found to be effective in improving nurses' work performance. Future research is recommended to explore the long-term effects of napping on nurses' work performance and its impact on the quality of patient care. Hospitals may consider providing scheduled rest periods for night shift nurses to improve quality of care. However, an approach that takes into account the conditions of the work environment, patient needs, and institutional readiness to support this policy is needed for optimal implementation.

References

1. Alfonsi, V., Scarpelli, S., Gorgoni, M., Pazzaglia, M., Giannini, A. M., & De Gennaro, L. (2021). Sleep-Related Problems in Night Shift Nurses: Towards an Individualized Interventional Practice. In *Frontiers in Human Neuroscience* (Vol. 15). Frontiers Media S.A. https://doi.org/10.3389/fnhum.2021.644570
2. Alsharari, A. F., Abuadas, F. H., Hakami, M. N., Darraj, A. A., & Hakami, M. W. (2021). Impact of night shift rotations on nursing performance and patient safety: A cross-sectional study. *Nursing Open*, *8*(3), 1479–1488. https://doi.org/10.1002/nop2.766
3. Bagus Winata, J., Nur Imallah, R., Kurniasih Sarjana Keperawatan, Y., Ilmu Kesehatan, F., & Yogyakarta, A. (2024). *Hubungan kerja shift dengan kualitas tidur perawat di ruang rawat inap RS PKU Muhammadiyah Gamping* (Vol. 2).
4. Chang, Y. S., Wu, Y. H., Chen, H. L., & Hsu, C. Y. (2017). Four Night Shifts Have a Degree of Performance Adaptation. *Human Factors*, *59*(6), 925–936. https://doi.org/10.1177/0018720817711285
5. Di Muzio, M., Diella, G., Di Simone, E., Novelli, L., Alfonsi, V., Scarpelli, S., Annarumma, L., Salfi, F., Pazzaglia, M., Giannini, A. M., & De Gennaro, L. (2020). Nurses and Night Shifts: Poor Sleep Quality Exacerbates Psychomotor Performance. *Frontiers in Neuroscience*, *14*. https://doi.org/10.3389/fnins.2020.579938
6. Fallis, W. M., McMillan, D. E., & Edwards, M. P. (2011). Napping during night shift: Practices, preferences, and perceptions of critical care and emergency department nurses. *Critical Care Nurse*, *31*(2). https://doi.org/10.4037/ccn2011710
7. Fatna, N., Syah Putra, M., & Sari, N. (2024). Hubungan Stres Kerja Perawat Shift Malam Terhadap Kinerja Perawat Di Ruang Rawat Inap Rumah Sakit Avicenna Bireuen. *Journal of Global and Multidisciplinary*, *2*, 958–967. https://journal.institercom-edu.org/index.php/multipleINSTITERCOMPUBLISHERhttps://journal.institercom-edu.org/index.php/multiple
8. Ganesan, S., Magee, M., Stone, J. E., Mulhall, M. D., Collins, A., Howard, M. E., Lockley, S. W., Rajaratnam, S. M. W., & Sletten, T. L. (2019). The Impact of Shift Work on Sleep, Alertness and Performance in Healthcare Workers. *Scientific Reports*, *9*(1). https://doi.org/10.1038/s41598-019-40914-x

9. Han, K., Hwang, H., Lim, E., Jung, M., Lee, J., Lee, S., Kim, Y.-H., Choi-Kwon, S., & Baek, H. (2021). Scheduled Naps Improve Drowsiness and Quality of Nursing Care among 12-Hour Shift Nurses. *Public Health*, *18*, 891. https://doi.org/10.3390/ijerph
10. Huang, Q., Tian, C., & Zeng, X. T. (2021). Poor Sleep Quality in Nurses Working or Having Worked Night Shifts: A Cross-Sectional Study. *Frontiers in Neuroscience*, *15*. https://doi.org/10.3389/fnins.2021.638973
11. James, L., Elkins-Brown, N., Wilson, M., James, S. M., Dotson, E., Edwards, C. D., Wintersteen-Arleth, L., Stevens, K., & Butterfield, P. (2021). The effects of three consecutive 12-hour shifts on cognition, sleepiness, and domains of nursing performance in day and night shift nurses: A quasi-experimental study. *International Journal of Nursing Studies*, *123*. https://doi.org/10.1016/j.ijnurstu.2021.104041
12. Neville, K., Velmer, G., Brown, S., & Robol, N. (2017). A Pilot Study to Examine the Relationship between Napping and Fatigue in Nurses Practicing on the Night Shift. *Journal of Nursing Administration*, *47*(11), 581–586. https://doi.org/10.1097/NNA.0000000000000546
13. Prasetya, F., Siji, A. F., & Al Asyary, A. A. (2021). Fatigue Through Sleep Time On Night Service Nurses At Kendari City Hospital. *Al-Sihah: The Public Health Science Journal*, *13*(1), 61. https://doi.org/10.24252/al-sihah.v13i1.21538
14. Ruggiero, J. S., & Redeker, N. S. (2014). Effects of Napping on Sleepiness and Sleep-Related Performance Deficits in Night-Shift Workers: A Systematic Review. *Biological Research for Nursing*, *16*(2), 134–142. https://doi.org/10.1177/1099800413476571
15. Wilson, M., Permito, R., English, A., Albritton, S., Coogle, C., & Van Dongen, H. P. A. (2019). Performance and sleepiness in nurses working 12-h day shifts or night shifts in a community hospital. *Accident Analysis and Prevention*, *126*, 43–46. https://doi.org/10.1016/j.aap.2017.09.023