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The effect of shift workload on the sleep quality of nurses at Bekasi Regency Hospital

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ABSTRACT

Nurses form a very important arm of healthcare providers that offer direct patient care services in treatment facilities. Constant shift work is typical to the nursing profession more so in hospitals that are opened round the clock medical facilities. The major challenge encountered is the lack of perfect correlation between shift workload and quality of sleep among the nurses of RSUD Bekasi. Therefore, the purpose of the study is to established the correlation between sleep quality and shift workload of the nurses in RSUD Kabupaten Bekasi. The study adopts a quantitative research approach with observational analytical research design and cross-sectional study design. The population comprises the nurses who work at night shift in the Bekasi District Hospital. The sample was purposively selected in this study. The research variables are shift workload and sleep quality. Data collection involved the use of the Occupational Fatigue Exhaustion Recovery (OFER) and the Pittsburgh Sleep Quality Index. (PSQI). Descriptive statistics were used to compare variables during data analysis by employing statistical tests. The study involved 203 respondents, with the majority being female (58.9%) and working in inpatient wards (76.7%). The results of the statistical test show a significant relationship between shift workload and sleep quality ($p<0.001$). The higher the shift workload, the worse the nurses' sleep quality. There is a significant correlation between shift workload and nurses' sleep quality at the Bekasi District Hospital. The research recommends a reconsideration of the shift work system to maintain the well-being of nurses and the quality of healthcare services.

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INTRODUCTION

A hospital is a health service institution that provides complete individual health services that provide inpatient, outpatient and emergency services (Mayasari et al., 2020). Health care facilities are one of the workplaces with high risks to occupational safety and health (Sholikin, 2020). Based

on PPSDM data in 2017, the number of health human resources in Indonesia is 1,149,437 people (Kemenkes RI, 2022) Sleep disturbances are one of the health and safety effects that can occur in workers. It is estimated that every year 20-40% of adults have trouble sleeping and 17% of them have serious problems. The effects of this difficulty sleeping can affect endurance, decreased work performance, irritability, depression, lack of concentration and can endanger the safety of oneself and others (Giorgi et al., 2018)

Nurses are very important health workers in the health care system, with complex shift workloads. About 1 in 5 workers have a shift work schedule, and 2.7-4.6 percent of them experience rapid shift changes (Wickwire et al., 2017) In nursing services, work accidents often occur in health services and nursing services. As many as 35-75% of health workers have been pierced by syringes and other sharp object injuries and are very prone to being infected with the hepatitis B virus, hepatitis C, and HIV/AIDS (Wijanarti & Anisyah, 2022) Heavy workloads and sleep disturbances influenced by sleep deprivation and circadian rhythm disturbances are the most frequent factors causing work fatigue in nurses (Armadani & Paskarini, 2023) The impacts that can arise from rotational shift work are low quantity and quality of sleep, disturbances in family life and social life, complaints about the digestive system and cardiovascular system, and mental health problems (Xiong et al., 2023).

Untreated sleep disorders can result in mood problems, poor work performance, high levels of work accidents and other health problems (Chung et al., 2009) Sleep disturbances are often experienced by workers who work shifts which are characterized by insomnia or excessive sleepiness when the worker wakes up (Wulandari et al., 2023) These complaints are usually felt for more than 1 month (Boivin & Boudreau, 2014) There is a significant association between shift work and metabolic disease which is thought to be due to reduced sleep quality (Kecklund & Axelsson, 2016) Based on these problems, this study aims to determine the relationship between shift workload and sleep quality in nurses at Bekasi Regency Hospital (Aryanti & Indriani, 2022).

RESEARCH METHOD

This study will use a quantitative research design with an integrated analysis approach to evaluate the effect of shift workload and sleep quality on nurses working at Bekasi Regency Hospital. This study will use a questionnaire distributed to nurses.

The target population of this study is nurses who work at the Bekasi Regency Hospital who have a night shift work schedule. Samples will be selected using the purposive sampling technique to ensure that respondents meet the inclusion criteria of the study. The inclusion criteria include nurses who still have a night shift work schedule and are willing to provide information through surveys and interviews. The sample size will be determined based on statistical calculations to ensure the strength and validity of the analysis. The research instrument consists of two main components. First, a workload questionnaire (Occupational Fatique Exhaustion Recovery) designed to identify the workload experienced due to shift work. This instrument consists of an assessment of chronic work-related fatigue, acute post-work fatigue, and slow recovery between shift work. Second, the Pittsburgh Sleep Quality Index, which is a scale for measuring sleep quality, where a high score indicates a sleep quality disorder (Åkerstedt & Wright Jr, 2009).

Data collection will be carried out through two methods. The patient survey will involve distributing questionnaires to patients who meet the inclusion criteria. Workload questionnaires to assess workload and PSQI to measure sleep quality will be distributed electronically or paper, depending on availability and patient preferences. In addition, semi-structured interviews will be conducted with healthcare professionals involved in patient care to gain additional insight into factors affecting workload and sleep quality. Data analysis will be carried out in two stages. Descriptive analysis will be used to assess the distribution of variables, including patient

demographic characteristics, workload scores and PSQI scores. Furthermore, a logistic regression model will be used to evaluate the relationship between psychiatric factors and shift workload (based on the OFER score) and sleep quality (based on the PSQI score).

This research will be carried out in accordance with the ethical guidelines for health research. Ethical approval will be obtained from the ethics committee of the relevant institution. Information about the research objectives, procedures, benefits, and risks will be communicated to participants before they give written consent. The confidentiality and privacy of participant data will be maintained throughout the research process (Yang et al., 2017).

RESULTS AND DISCUSSIONS

Characteristics Responden

This study involved 203 respondents who met the inclusion criteria. The majority of respondents were women (58.9%), while men amounted to 41.1%. Based on work units, most nurses work in the inpatient room (76.7%), followed by the emergency room (9.4%), ICU (7.4%), and Recovery Room (6.4%). The distribution of respondents can be seen in Table 1.

Tabel 1. Distribution of respondents by gender and work unit

Characteristic	Category	Number of Respondents (n)	Percentage (%)
Gender	Man	83	41.1
	Woman	120	58.9
Work Unit	ICU	15	7.4
	Hospitalization	156	76.7
	IGD	19	9.4
	Recovery Room	13	6.4

Respondents' Sleep Quality

Most of the respondents had good sleep quality (65.0%), while 25.1% had poor sleep quality, and 9.9% had very poor sleep quality. The duration of sleep for most respondents was 5–6 hours (71.4%), followed by <5 hours (26.1%) and 6–7 hours (2.5%). The time to fall asleep was generally 15–30 minutes (56.2%), followed by 31–60 minutes (23.2%) and >60 minutes (20.7%). As many as 38.9% of respondents reported sleep disorders, but none of the respondents used sleeping pills. Details of respondents' sleep quality are summarized in Table 2.

Table 2. Distribution of respondents' sleep quality based on PSQI Score

Indicator	Category	Number of Respondents (n)	Percentage (%)
Sleep Quality	Good	132	65.0
	Bad	51	25.1
	Very Bad	20	9.9
Time to Fall asleep	15–30 minute	114	56.2
	31–60 minute	47	23.2
	>60 minute	42	20.7
Sleep Duration	6–7 hour	5	2.5
	5–6 hour	145	71.4
	<5 hour	53	26.1
Difficulty sleeping (Disturbance)	Experiencing a glitch	79	38.9
	No interruptions	124	61.1
Use of Sleeping Pills	Not Using	203	100
	Using	0	0

Responder Shift Workloa

The average shift workload score, measured using OFER (Occupational Fatigue Exhaustion Recovery), shows the following average values: Acute Work Fatigue of 60, Chronic Fatigue of 70, and Intershift Recovery of 73.

The Relationship Between Workload and Sleep Quality

Statistical analysis showed a significant relationship between shift workload (OFER) and sleep quality (PSQI) with a $p <$ value of 0.001. The higher the shift workload, the worse the nurse's sleep quality. On the other hand, there was no significant relationship between age and length of work and sleep quality ($p > 0.05$) (Ilahi et al., 2023).

Discussion

The results of this study show a significant relationship between shift workload and sleep quality of nurses at Bekasi Regency Hospital. Night shift workload significantly affects the sleep quality of nurses, as shown by the high score on the Pittsburgh Sleep Quality Index (PSQI) in nurses who experience sleep disorders. These findings are in line with previous research that suggests that shift work, especially at night, disrupts the body's circadian rhythm which is an important mechanism in regulating human sleep patterns (McDowall et al., 2017)(Vijaykumar et al., 2018) Circadian rhythm disturbances, which occur due to night shift work, can reduce the duration of effective sleep and lead to a decrease in sleep quality. A study in Hong Kong found that 70% of nurses who work in shifts experience poor sleep quality due to circadian rhythm disturbances and high levels of work stress (Chan, 2009) In the Indonesian context, these findings are even more relevant given the long shift work patterns and the lack of occupational health support systems in many hospitals (Drake et al., 2004)

Fatigue due to shift workload is also a significant factor in affecting the quality of sleep for nurses. Previous studies have shown that acute and chronic fatigue levels measured by Occupational Fatigue Exhaustion Recovery (OFER) contribute to poor sleep quality in nurses (Geiger-Brown et al., 2012) This fatigue also impacts work performance, where nurses who experience sleep disorders tend to have low concentration and slower responses to critical situations, which is a risk to patient safety (Di Muzio et al., 2020) In addition, the study found that most respondents had a sleep duration of 5–6 hours per night, which is well below the healthy sleep recommendation of 7–9 hours according to the National Sleep Foundation. This lack of sleep duration leads to a decrease in physical and mental recovery, which ultimately increases the risk of burnout and mental health disorders such as depression and anxiety (Giorgi et al., 2018;Feng et al., 2021). It's also important to note that gender and workplace have an additional impact on sleep quality. For example, female nurses who work more often in the inpatient room report higher levels of fatigue compared to male nurses who work in the ICU (Huth et al., 2013). This factor needs to be considered in shift work management to ensure the workload balance between different work units (Amidu et al., 2018)

Based on these findings, several intervention measures may be proposed to improve the sleep quality of nurses. First, setting a more flexible shift work schedule can help nurses get better rest time, such as avoiding consecutive night shifts or providing sufficient recovery time between shifts (McDowall et al., 2017) Second, the provision of stress management training and relaxation facilities in the workplace can help reduce the impact of occupational stress on sleep quality (Zhang et al., 2016). Third, regular assessment of nurses' sleep quality using PSQI can be an effective monitoring tool to identify nurses at risk of sleep disorders (Di Muzio et al., 2020).

CONCLUSION

With the correlation test, a significant and meaningful relationship was found. This result is expected to be conveyed to policy holders in agencies to consider adjusting shift working hours for nurses. The adjustment is expected to reduce the workload so that the welfare of nurses at the

Bekasi Regency Hospital can be better maintained and the best service to the community can be provided. Additionally, it is worth considering other factors that can help reduce the workload of nurses. These factors can be further researched in further research so that shift workload can be minimized.

Based on the results of the study, recommendations from this study can be implemented in hospital management policies related to nurses' work shift schedules in several ways Hospitals can implement more planned shift rotations, such as limiting the number of consecutive night shifts and providing adequate rest time between shifts. Avoiding too rapid shift changes, for example from night shifts directly to morning shifts, to reduce disruption of nurses' circadian rhythms.

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