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Factors Influencing Nurses' Behavior in the Prevention of Nosocomial Infections in the Intensive Care Unit of RSUD Dr. M.M. Dunda Limboto

Patricia O. Suleman[1]*, Pipin Yunus[2], Haslinda Damansyah[3]
[1–3]Nursing Study Program, Faculty of Health Sciences, Universitas Muhammadiyah Gorontalo, Indonesia
**Corresponding author: threesuleman@gmail.com*

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ABSTRACT

Background: Nurses are health professionals who interact directly with patients and therefore play an essential role in preventing healthcare-associated and nosocomial infections, particularly in intensive care settings. This study examined the factors associated with nurses' behavior in preventing nosocomial infections in the Intensive Care Unit (ICU) of RSUD Dr. M.M. Dunda Limboto. Methods: A quantitative correlational study with an observational approach was conducted in October–November 2025. The population comprised all 27 nurses working in the ICU, and total sampling was used. Data were collected using questionnaires and observation. The study assessed knowledge, compliance, workload, and nosocomial infection-prevention behavior. Univariate analysis was used to describe the variables, while bivariate analysis used the Pearson Chi-Square test with a 95% confidence level. Results: Most respondents had good knowledge (15; 55.6%), good compliance (18; 66.7%), good workload status (16; 59.3%), and good infection-prevention behavior (16; 59.3%). Knowledge was not significantly associated with infection-prevention behavior (p=0.096). In contrast, compliance was significantly associated with infection-prevention behavior (p=0.006), as was workload (p=0.045). Conclusion: Compliance showed the strongest statistical association among the three factors examined. Strengthening adherence to infection-prevention procedures, supported by continuing education, training, supervision, adequate facilities, and appropriate workload management, is recommended to improve the quality and safety of nursing care in the ICU.

INTRODUCTION

Healthcare-associated infections remain an important challenge for health systems in both developed and developing countries. Patients receiving hospital care may be vulnerable to infection and may also become a source of transmission to other patients. The World Health Organization's Global Report on Infection Prevention and Control 2024 reports that, among patients admitted to acute-care hospitals, healthcare-associated infections affect approximately 7% of patients in high-income countries and 15% in low- and middle-income countries. These infections can increase morbidity, mortality, length of stay, and healthcare costs.

The hospital environment creates multiple opportunities for transmission because it brings together patients with different diseases, healthcare workers, visitors, invasive procedures, and medical equipment. Patients in intensive care are particularly vulnerable because they often require complex procedures and prolonged monitoring. Nurses have a central role in reducing this risk because they provide continuous bedside care and frequently perform procedures involving direct contact with patients, body fluids, and medical equipment.

The prevention of nosocomial infection depends not only on the availability of infection-prevention policies but also on the behavior of healthcare workers. Knowledge is an important foundation because nurses need to understand infection transmission, hand hygiene, personal protective equipment (PPE), sterilization, environmental sanitation, and other preventive measures. However, knowledge does not necessarily translate into consistent practice. Previous studies cited in the source thesis indicate that knowledge, facilities, PPE use, workload, supervision, attitudes, and compliance may contribute to infection-prevention practices.

Compliance is particularly important in routine infection-prevention practices. Hand hygiene, PPE use, aseptic

technique, equipment sterilization, and appropriate waste management require repeated adherence to established procedures. A nurse may understand the importance of hand hygiene but still fail to perform it consistently because of habit, perceived low risk, time pressure, or workload. Similarly, excessive workload may reduce the opportunity to perform preventive procedures consistently.

The preliminary observations conducted in the ICU of RSUD Dr. M.M. Dunda Limboto identified variation in nurses' workload, with some nurses reporting heavy, moderate, and light workloads. The preliminary interviews also indicated that some nurses performed hand hygiene before and after nursing procedures, while others did not. Although nurses generally reported good knowledge of hand hygiene, some perceived their hands as clean or considered gloves and masks sufficient protection. These observations provided the basis for examining knowledge, compliance, and workload in relation to nurses' infection-prevention behavior.

Therefore, this study aimed to determine whether knowledge, compliance, and workload were associated with nurses' behavior in preventing nosocomial infections in the ICU of RSUD Dr. M.M. Dunda Limboto.

METHODS

Study Design and Setting

This study used a quantitative correlational design with an observational approach. The research was conducted at RSUD Dr. M.M. Dunda Limboto, Gorontalo, Indonesia, from October to November 2025. The study focused on nurses working in the hospital's ICU.

Population and Sample

The study population consisted of all 27 nurses working in the ICU. Because the population was fewer than 100 individuals, total sampling was applied and all 27 nurses were included as respondents. The inclusion criteria were nurses assigned to the ICU who were willing to participate. Nurses who were on leave or sick leave during data collection or who were temporarily continuing their studies were excluded.

Variables and Instruments

The independent variables were knowledge, compliance, and workload, while the dependent variable was nosocomial infection-prevention behavior. The questionnaire contained 45 statements covering the four study constructs. Knowledge included indicators of knowing, understanding, application, analysis, evaluation, and synthesis. Compliance included motivation, understanding, ability, perception, and social support. Workload covered physical and mental workload. Infection-prevention behavior covered PPE use, placement of patients at risk, medical equipment sterilization, environmental sanitation, and hand hygiene. Variables were categorized as good (>50%) or poor (<50%) and measured on an ordinal scale.

The thesis reports that the questionnaire had previously been tested among 18 nurses at Santa Elisabeth Hospital Medan, with wording revisions for items 11 and 12. Overall reliability was reported with a Cronbach's alpha of 0.755, indicating acceptable internal consistency.

2.4 Data Collection and Analysis

Primary data were collected directly from respondents using questionnaires and observation. Secondary information concerning the ICU and the number of nurses was obtained from the hospital. Data were processed using SPSS. Univariate analysis described respondent characteristics and the distribution of each study variable. Bivariate analysis examined the relationship between each independent variable and infection-prevention behavior using the Pearson Chi-Square test at a 95% confidence level. Statistical significance was set at $p<0.05$.

Ethical Considerations

The study incorporated informed consent, confidentiality, anonymity, and the principle of beneficence. Participation was voluntary, respondent identities were protected, and information collected was used for research purposes.

RESULTS

Table 1 Characteristics of Respondents

Characteristic	Category	n	%
Age	20–30 years	5	18.5
	31–40 years	18	66.7
	41–50 years	4	14.8
Work experience	<5 years	9	33.3
	6–10 years	3	11.1
	11–15 years	10	37.0
	16–20 years	5	18.5

Among the 27 respondents, the largest age group was 31–40 years (18; 66.7%), while the smallest was 41–50 years (4; 14.8%). Regarding work experience, the largest group had 11–15 years of experience (10; 37.0%), whereas the smallest group had 6–10 years of experience (3; 11.1%).

Table 2 Distribution of Study Variables

Variable	Category	n	%
Knowledge	Good	15	55.6
	Poor	12	44.4
Compliance	Good	18	66.7
	Poor	9	33.3
Workload	Good	16	59.3
	Poor	11	40.7
Nosocomial infection prevention	Good	16	59.3
	Poor	11	40.7

Most nurses had good knowledge of infection prevention (15; 55.6%). Good compliance was observed in 18 respondents (66.7%). Sixteen respondents (59.3%) were classified as having a good workload status, and 16 respondents (59.3%) demonstrated good nosocomial infection-prevention behavior.

Table 3 Bivariate Analysis

Independent variable	Good prevention n (%)	Poor prevention n (%)	Total	Pearson p
Knowledge: Good	11 (40.7%)	4 (14.8%)	15	0.096
Knowledge: Poor	5 (18.5%)	7 (25.9%)	12	
Compliance: Good	14 (51.9%)	4 (14.8%)	18	0.006
Compliance: Poor	2 (7.4%)	7 (25.9%)	9	
Workload: Good	12 (44.4%)	4 (14.8%)	16	0.045
Workload: Poor	4 (14.8%)	7 (25.9%)	11	

Knowledge was not significantly associated with nosocomial infection-prevention behavior (Pearson Chi-Square p=0.096). In contrast, compliance was significantly associated with prevention behavior (p=0.006). Workload was also significantly associated with prevention behavior (p=0.045). The source thesis identifies compliance as the factor with the strongest statistical association among the three variables examined.

DISCUSSION

Knowledge and Infection-Prevention Behavior

More than half of the nurses had good knowledge of nosocomial infection prevention. Nurses with good knowledge were described as understanding the importance of hand hygiene, PPE, sterilization, environmental cleanliness, and appropriate preventive procedures. Nevertheless, the statistical analysis did not demonstrate a significant association between knowledge and infection-prevention behavior (p=0.096).

This finding suggests that knowledge alone may not be sufficient to ensure consistent implementation of infection-prevention procedures. The thesis describes situations in which nurses understood the importance of hand hygiene but did not always perform it before or after procedures. Some nurses perceived their hands as clean or considered gloves adequate for protection. Thus, a gap may exist between what nurses know and what they consistently do in practice.

The finding is consistent with the broader discussion in the thesis, which cites studies showing that nurses can have adequate knowledge while their preventive practices remain variable. Infection prevention is a behavioral process that requires knowledge to be reinforced by motivation, supervision, organizational culture, facilities, and routine compliance. Continuing education should therefore be combined with practical demonstrations, monitoring, feedback, and reinforcement of standard precautions.

Compliance and Infection-Prevention Behavior

Compliance was significantly associated with infection-prevention behavior (p=0.006). The majority of respondents demonstrated good compliance, and 14 of the 18 nurses classified as having good compliance also demonstrated good infection-prevention behavior. Conversely, among nurses with poor compliance, seven of nine demonstrated poor prevention behavior.

This result highlights the importance of consistent adherence to infection-prevention procedures. The thesis reports that compliant nurses were motivated to use PPE during patient care and to perform preventive practices. Less

compliant nurses were described as sometimes being reluctant to perform hand hygiene because they perceived their hands as clean or believed that they had not had direct contact with the patient.
The study also emphasizes the Five Moments for Hand Hygiene: before touching a patient, before an aseptic procedure, after exposure to body fluids, after touching a patient, and after touching the patient's surroundings. Consistent implementation of these moments, together with the appropriate use of PPE and aseptic technique, is an important behavioral component of infection prevention. The observed association between compliance and prevention behavior indicates that hospitals should prioritize systems that make correct practice routine and observable.

Workload and Infection-Prevention Behavior

Workload was significantly associated with infection-prevention behavior (p=0.045). Sixteen nurses were classified as having good workload status, while 11 were classified as having poor workload status. The thesis explains that nurses who experienced manageable workloads benefited from clearer task distribution and teamwork, allowing sufficient opportunity to follow infection-prevention procedures. In contrast, nurses experiencing higher workload reported fatigue, limited time, and an imbalance between workload and staffing capacity.
In an ICU, workload can be affected by patient acuity, the number of patients, invasive procedures, continuous monitoring, documentation, and coordination with other health professionals. When workload becomes excessive, nurses may prioritize immediate clinical tasks and unintentionally omit preventive procedures such as hand hygiene or changing gloves between patients. Workload management therefore represents not only a staff-welfare issue but also a patient-safety issue.
The findings are consistent with the thesis literature review, which describes workload as an important factor related to nursing performance and infection-prevention practices. Adequate staffing, clear task allocation, teamwork, and a supportive work environment may help nurses maintain preventive practices even during periods of high clinical demand.

The Most Influential Factor

Among the three factors assessed, compliance had the lowest p-value (p=0.006), followed by workload (p=0.045) and knowledge (p=0.096). Based on the study's analytical framework, compliance was therefore identified as the factor most strongly associated with nurses' infection-prevention behavior.
This finding does not mean that knowledge is unimportant. Rather, it indicates that within this small ICU sample, knowledge did not reach statistical significance, whereas actual adherence to recommended procedures did. A nurse may possess adequate knowledge but fail to translate that knowledge into action. Conversely, consistent compliance can directly manifest as observable preventive behavior. The practical implication is that infection-prevention programs should move beyond information delivery toward repeated skills training, direct observation, feedback, supervision, reminders, and reinforcement.
The interpretation should nevertheless consider the study design and sample size. The research used a cross-sectional observational approach and included only 27 nurses from one ICU. Therefore, the results demonstrate statistical associations within the study population and should not be interpreted as definitive causal effects or generalized to all hospital settings without further research.

Implications for Nursing Practice

The findings support several practical priorities for RSUD Dr. M.M. Dunda Limboto. First, infection-prevention procedures should be reinforced as mandatory routine practices, particularly the Five Moments of Hand Hygiene, appropriate PPE use, aseptic technique, sterilization, environmental sanitation, and safe medical-waste handling. Second, nurses should receive continuing education and practical training that emphasizes translating knowledge into observable behavior. Third, supervisors and infection-prevention teams should conduct regular monitoring and provide constructive feedback. Fourth, staffing and workload distribution should be reviewed so that nurses have adequate time and capacity to complete infection-prevention procedures. Finally, adequate PPE, hand hygiene facilities, and other supporting infrastructure should be continuously available.

CONCLUSION

This study found that 15 of 27 ICU nurses (55.6%) had good knowledge, 18 (66.7%) had good compliance, 16 (59.3%) had good workload status, and 16 (59.3%) demonstrated good nosocomial infection-prevention behavior. Knowledge was not significantly associated with infection-prevention behavior (p=0.096), whereas compliance was significantly associated with prevention behavior (p=0.006) and workload was also significantly associated (p=0.045). Compliance showed the strongest statistical association among the factors examined. Infection-prevention improvement should therefore combine education with strong adherence systems, supervision, adequate facilities, teamwork, and appropriate workload management.

RECOMMENDATIONS

For the hospital, infection-prevention guidelines should be consistently implemented in every nursing procedure, supported by supervision, adequate facilities, and a comfortable working environment. For nurses, evidence-based information should be continuously updated through journals, seminars, training, and official health-organization resources. For educational institutions and continuing professional development programs, infection-prevention education should emphasize practical skills and behavioral reinforcement. Future researchers should examine larger and more diverse samples and consider additional factors such as attitudes, motivation, facilities, supervision, organizational culture, and leadership.

LIMITATIONS

The study assessed only knowledge, compliance, and workload, leaving other potentially relevant factors unexamined. Data were collected at one period, limiting the ability to establish temporal or causal relationships. In addition, questionnaire and observational data may be affected by respondent subjectivity and may not fully represent routine practice in all circumstances.

BIBLIOGRAPHY

Adhy Purnawan, Frida Kasumawati, Riris Andriati, & Gerry Handika Putra. (2021). Faktor-Faktor Yang Berhubungan Dengan Kinerja Perawat Dalam Melaksanakan Pencegahan Infeksi Nosokomial Di Ruang Rawat Inap RSIA Vitalaya Kota Tangerang Selatan. MAP Midwifery and Public Health Journal, 1(1), 14–36.

Aditya, R., Harahap, J., & Putra, C. (2020). Analisis implementasi hand hygiene dan perilaku tenaga kesehatan dalam pelaksanaannya di RSUD Dr. R.M. Djoelham Binjai. Journal Health & Science: Gorontalo Journal Health and Science Community, 4(2), 92–103. https://doi.org/10.35971/gojhes.v4i2.7835

Agnes Silvia Marubun. (2018). Faktor-faktor yang mempengaruhi pencegahan infeksi nosokomial di ruangan ICU & rawat inap RSU Sari Mutiara Medan. Jurnal Online Keperawatan Indonesia, 1(2), 1–7.

Ardina, R., Yusnita, Y., & Ariansyah, J. (2021). Faktor-faktor yang mempengaruhi perilaku perawat dalam pencegahan infeksi nosocomial oleh perawat di RSUD Kota Agung. Nursing News: Jurnal Ilmiah Keperawatan, 5(2), 86–101. https://doi.org/10.33366/nn.v5i2.2311

Astuti, Y., Yuliwar, R., & Dewi, N. (2018). Hubungan tingkat pengetahuan dan sikap perawat dengan tingkat kepatuhan penggunaan alat pelindung diri di ruang ICU, IGD dan IRNA Imam Bonjol RSUD Kanjuruhan Kepanjen Kabupaten Malang. Jurnal Ilmiah Keperawatan, 3(3), 663–669.

Chairani, R., Riza, S., & Putra, Y. (2022). Hubungan pengetahuan dan sikap pencegahan infeksi nosokomial dengan kepatuhan perawat dalam mencuci tangan di ruang rawat inap terpadu Rumah Sakit Umum Daerah Aceh Besar Tahun 2022. Journal of Healthcare Technology and Medicine, 8(2), 1293–1302.

Gilks, C. F. (1987). Prevention and control of nosocomial infections. Parasitology Today, 3(6), 194. https://doi.org/10.1016/0169-4758(87)90183-9

Global Report on Infection Prevention and Control 2024. (2024). Global report on infection prevention and control 2024. https://doi.org/10.2471/b09195

Indrayadi, I., Oktavia, N. A., & Agustini, M. (2022). Perawat dan keselamatan pasien: Studi tinjauan literatur. Jurnal Kepemimpinan dan Manajemen Keperawatan, 5(1), 62–75. https://doi.org/10.32584/jkmk.v5i1.1465

Lestari, S. A., & Nazaruddin. (2023). Faktor yang berpengaruh terhadap kejadian infeksi nosokomial pada petugas medis di RSUD Buton Utara. Miracle Journal of Public Health, 6(2), 172–183. https://doi.org/10.36566/mjph/Vol6.Iss2/329

Mahardika, L. B., & Fanny, N. (2024). Hubungan pengetahuan dengan perilaku perawat ruang rawat inap dalam pencegahan infeksi nosokomial di Rumah Sakit PKU Muhammadiyah Sukoharjo. 156–173.

Novelni, R., Sari, T. M., & Andila, F. (2023). Pola bakteri dan kepekaannya terhadap antibiotik pada hasil kultur pasien di intensive care unit RSUP Dr. M. Djamil Padang tahun 2018. Jurnal Penelitian Farmasi Indonesia, 12(1), 53–59. https://doi.org/10.51887/jpfi.v12i1.1758

Prihatni, R. S., et al. (2024). Hubungan persepsi perawat dengan kepatuhan manajemen pencegahan dan pengendalian infeksi nosokomial di instalasi rawat intensif RSUD Bagas Waras Klaten. Universitas Kusuma Husada Surakarta, 1(1), 1–7.

Puspita, E. H., Oktariani, M., & Rizqiea, N. S. (2020). Hubungan beban kerja perawat dengan pencegahan infeksi nosokomial di ruang rawat inap RSUD Simo Boyolali. Naskah Publikasi, 63, 1–15.

Putri, S. A., Izzah, R., Putri, S., Apriningsih, Simanjorang, C., & Wasir, R. (2023). Kesadaran tenaga kesehatan dalam pencegahan infeksi nosokomial dengan perilaku mencuci tangan. Motorik: Jurnal Ilmu Kesehatan, 18(2), 65–74.

Rahmasari, F. F., & Budiyani, K. (2024). Hubungan efikasi diri untuk melakukan hand hygiene dengan kepatuhan melakukan hand hygiene pada perawat di Yogyakarta. Prosiding Seminar Nasional Psikologi (SEMNAPSI). https://ejurnal.mercubuanayogya.ac.id/index.php/SEMNAPSI/article/view/4160

Serly Agustina, & Murtiningsih. (2024). Faktor-faktor yang mempengaruhi ketaatan petugas kesehatan melakukan hand hygiene dalam mencegah infeksi nasokomial. Jurnal Kesehatan dan Pembangunan, 14(27), 206–218. https://doi.org/10.52047/jkp.v14i27.310