



Original Article

The Effect of Nurse Hand Hygiene Education on Nosocomial Infection Prevention Knowledge in the Inpatient Room, Dahlia Room, Sayang Regional General Hospital, Cianjur

Mayasyanti Dewi Amir^{1✉}, Ucu Hikmayati², Ida³

^{1,2,3}Sukabumi College of Health Sciences, Indonesia.

Correspondence Author: mayasyanti@gmail.com[✉]

Abstract:

Prevention of HAIs can be done if health facilities consistently implement infection prevention and control programs. The purpose of the study was to determine the Effect of Nurse Hand Hygiene Education on the Knowledge of Nosocomial Infection Prevention. Knowledge is the ability of an individual to recall names, words, inspirations, formulas, and so on. Health education is a way to influence others, whether individuals, groups, or communities, so that they do what the education or health promotion actors expect. The type of research uses a quasi experiment with a prepost test design. The population in this study is 461 people and the sample itself is 18 people with the Cluster Sampling technique. The instrument used in this study is a questionnaire. Data collection technique by observation. The analysis used was univariate and bivariate using the Wilcoxon test. The results of the study showed that most of the respondents had a sufficient level of knowledge with a total of 9 respondents (50%) before being given the intervention, Most of the respondents had a good level of knowledge after being given the intervention with a total of 13 respondents (72.2%) after being given the intervention and there was an effect of hand hygiene education on the knowledge of nosocomial infection prevention with PValue = 0.000 < 0.05. There is a need to improve human resources, especially nurses through education or trainings to improve skills, especially in the prevention of nasocomial infections.

Keywords: Hand Hygiene, Nosocomial Infections, Nurses.



<https://jurnal.usk.ac.id/riwayat>

Introduction

As a health service facility, hospitals have a crucial role in improving the degree of public health. Therefore, hospitals must provide quality, effective, and efficient healthcare services that ensure patient safety in accordance with established standards. One of the indicators of patient safety is the reduction of the risk of healthcare-related infections. If infection prevention is not done properly, this can lead to nosocomial infections.

Received: June 1, 2024 – Revised: July 17, 2024- Accepted: September 18, 2024 - Published online: October 7, 2024

Nosocomial infections or healthcare-associated infections (HAIs) are a serious problem for all health care facilities around the world, including in Indonesia (PERSI, 2021).

Infections in health services or Healthcare Associated Infections (HAIs) are infections that are obtained in health facilities and not diseases that are suffered today, can occur in health workers, patients, visitors and everyone in the hospital ([Özcelik & Sirin, 2021](#)).

Prevention of healthcare-associated infections (HAIs) can be achieved if healthcare facilities consistently implement infection prevention and control programs. This policy has been regulated in the Decree of the Minister of Health Number 270/MENKES/SK/III/2007 concerning Managerial Guidelines for Infection Prevention and Control in Hospitals and Health Service Facilities. One of the steps that can be taken to prevent nosocomial infections is to apply universal precaution. Universal precaution includes measures such as washing hands, using personal protective equipment (PPE) such as masks, gloves, aprons, and protective goggles; management of sharp tools; sterilization of medical devices; linen management; and waste management ([Nursalam, 2016](#); [Puspitasari, 2019](#)).

Healthcare-associated Infection (HCAi) Affects 15.5% of patients in developing countries, this infection contributes to antimicrobial resistance and causes about 700,000 deaths each year. In addition, nosocomial infections or HCAi can lead to additional infections, long-term disability, and even death. To overcome nosocomial infections or HCAi, adherence to hand hygiene among health workers by following the principle of five moments of handwashing is urgently needed (Global Handwashing Partnership, 2017).

The prevalence of nosocomial infections in hospitals globally reaches more than 1.4 million cases or at least 9% of inpatients worldwide experience nosocomial infections. A study from the World Health Organization (WHO) of 55 hospitals in 14 countries representing four regions (Europe, the Middle East, Southeast Asia, and the Western Pacific) showed an 8.7% rate for nosocomial infections. In Indonesia, the Minister of Health's policy regarding infection prevention in hospitals and other health facilities sets the standard incidence of nosocomial infections in hospitals at less than 1.5% (Ministry of Health of the Republic of Indonesia, 2019). However, the percentage of incidence of nosocomial infections in Indonesia reached 15.74%, much higher than the set standard.

According to data from Basic Health Research (RISKESDAS) in 2018, the national prevalence of correct handwashing behavior is still concerning, with only 49.8% doing it right. As many as 50.2% still do not carry out correct handwashing behavior, including health workers. In fact, washing hands is an easy and very important step in infection control, especially in hospitals. In DKI Jakarta province, only 54.79% of the population aged >10 years old wash their hands properly. According to RISKESDAS, proper handwashing behavior includes washing hands with soap before preparing food, whenever hands get dirty (such as after handling money, animals, or gardening), as well as after defecating and urinating.

According to the Regulation of the Minister of Health No.11 of 2017 concerning Patient Safety, one way to reduce the risk of infections arising from health care is to wash your hands or maintain hand hygiene. Studies show that prevention and control of infection can be done through simple measures such as washing hands properly and correctly ([Zakaria & Sofiana, 2018](#)). Hand hygiene is very important for nurses in health services because it can prevent the spread of germs and diseases. This process involves removing dirt from the skin of the hands using water, soap, or hand rub ([Hastuti & Nurmayunita, 2018](#)).

In Indonesia, compliance with the implementation of standard or universal vigilance, such as maintaining hand hygiene by implementing 5 moments of hand hygiene, is still low due to limited infection control facilities. For example, the available handwashing facilities sometimes don't have enough soap, tissues, running water, or handrubs. In addition, the lack of gloves and the unavailability of hazmat are also problems ([Arifianto et al., 2017](#)). Standard precautions such as hand hygiene by implementing the 5 moments of hand washing in health services aim to prevent infection

and transmission between health workers and patients. Studies show that adherence to the implementation of infection prevention and control (PPI) among health workers is still low, with only about 16.7% - 32% having a good level of compliance. Healthcare workers' attitudes towards handwashing compliance are greatly influenced by the home environment, management commitments, and hospital facilities that support these activities ([Octaviani & Fauzi, 2020](#)).

Based on Basic Health Research Data, the national prevalence of correct handwashing behavior is still very concerning. Around 76.8% of health workers have not washed their hands regularly. In fact, hand washing is a simple but very important step for infection control in hospitals. In addition, the 2011 hospital accreditation standard has stipulated that each hospital must adopt or adjust widely published and accepted handwashing guidelines, as well as implement an effective handwashing program ([Arrazy et al., 2020](#)).

In the journal Dona Ariandi (2018), said 6-step handwashing compliance for emergency room nurses at Dr. H. Moch Hospital. Ansari Saleh Banjarmasin has a good level of alertness of 19 people (73.1%) while there are enough 7 people (26.9%) out of 26 nurses in the emergency room, which is caused by the density of patients in the emergency room and prompt treatment must be given ([Ariandi, 2018](#)).

Based on the results of a preliminary study that has been conducted by researchers at Dr. H. Moch Hospital. Ansari Saleh Banjarmasin on Monday, January 13, 2022, obtained the results of an interview with the PPI team and 5 nurses at the emergency room of Dr. H. Moch Hospital. Ansari Saleh Banjarmasin obtained a handwashing compliance rate of 81.25% for emergency room nurses and the results of interviews with 4 nurses found that they were less obedient in washing their hands before and after performing nursing actions because they did not remember and 1 nurse was obedient in washing their hands after performing nursing actions.

According to Caesarino's research (2019), the level of nurses' compliance with handwashing by applying 5 moments is relatively low, which is 37.7%. This happens because the application of the five moments of hand washing is only done before and after touching the patient. This condition is caused by the high number of patients, so nurses are often busy performing actions without washing their hands between patients, as well as not changing the gloves used. As a result, the practice continues until the nurse completes the action on all patients and returns to the nurse station ([Caesario et al., 2019](#)).

The level of nurses' adherence to the implementation of the 5-moment handwashing varies between 59% to 78.3% in various studies. Most nurses adhere to only two moments, namely after contact with the patient and after exposure to fluids. Meanwhile, for the other three moments before contact with the patient, before aseptic procedures, and after contact with the patient's environment, the nurse did not apply the practice of the 5 moments. Factors such as low risk assumptions, the belief that the use of handsoons is sufficiently protective, high workload, and time that is considered too valuable to wash hands compared to quick treatment of patients are the main reasons. In addition, nurses also often feel that there are no harmful pathogens around the patient ([Agustin et al., 2021](#)).

Research conducted by Ayu, Dewi, and Juhana (2022) in the emergency room of Sayang Hospital, Cianjur Regency in November 2021 showed that of the 12 nurses, seven of them did not wash their hands after touching medical devices around the patient, three did not do hand hygiene before the patient's treatment, and two did not follow the five moments of hand hygiene at all ([Ayu et al., 2020](#)). This finding is corroborated by data from initial observations by (Pratiwi & Yarmaliza, 2022) at the BLUD of Cut Nyak Dhien Hospital, which shows an incidence of nosocomial infections in surgical wounds of 2.3%, ventilator-associated pneumonia (VAP) of 1.5%, primary bloodstream infections (IADP) of 1.7%, and urinary tract infections (UTIs) of 1.9%.

Methods

This research is a research on the quasi-experimental method (Quasi Experiment). The research method is a way of solving research problems that is carried out in a planned and careful manner with the intention of obtaining facts and conclusions in order to be able to understand, explain, predict and control the situation.

In experimental research, there are several types of designs that can be used, such as pre-experimental design, true experimental design, factorial design, and quasi-experimental design. The researcher chose a quasi-experimental design. Based on ([Sugiyono, 2018](#)), this design has a control group, but it cannot fully control external variables that affect the implementation of the experiment. This quasi-experimental research aims to evaluate the difference in ability between the treated class and the class that does not receive the treatment. The experimental design applied in this study is a nonequivalent control group design. This study uses a true experiment method with a type of one group pretest design. In this design, the experimental group is observed before the intervention, then observed again after the intervention ([Nursalam, 2016](#)). This design is used in accordance with the goal to be achieved, which is to find out the influence of hand hygiene education on nurses' knowledge about the prevention of nosocomial infections ([Sugiyono, 2019](#)).

To obtain a valid instrument, the researcher breaks down the variables into sub-sub-variables and new indicators satisfy the new items of the question. Then the researcher conducts a content test or logical validity of the instrument to measure what should be measured, both the content and the way to achieve the desired level of validity through the assessment of experts. In addition, the researcher also conducts an empirical test or empirical validity based on experience, to test this level of validity, the researcher tries the instrument on the target in the study. If the data obtained is in accordance with what it should be, it means that the instrument is good or valid (Arikunto, 2022). In this study, the researcher conducted a validity test of 20 questions asked to the respondents, and the results of the validity were valid for all (all results > tables).

Results

Level of Knowledge Before Intervention

The results of the study showed that of the 18 respondents before the intervention, some respondents (50%) had a sufficient level of knowledge and a small number of respondents (11.1%) had a good level of knowledge.

It is in accordance with (Notoatmodjo, 2012) Factors that affect knowledge, namely Of course, the following is a paraphrasing of the sentence: 1) Internal factors: a) Education, is the process that directs individuals in development to achieve certain goals; b) Employment, is the area where individuals gain experience and knowledge either directly or indirectly; c) Age, indicating the level of maturity and capacity of the individual in thinking and working; 2) External factors: a) Environment, including the conditions surrounding the individual that affect their growth and behavior; b) Socio-cultural, involving societal norms that affect attitudes in obtaining information. The results of this study are in line with the theory ([Notoatmodjo, 2012](#)) which states that high knowledge will cause a person to behave better towards an object, on the contrary, less knowledge will cause a person to behave negatively towards the object.

Based on a study conducted by ([Priskila et al., 2025](#)) entitled The Influence of Health Education on Patients' Family Knowledge and Attitudes about the Prevention of

Healthcare Associated Infections (HAIs), 37 respondents (100%) have less knowledge about HAIs.

The researcher assumes that education related to the prevention of nosocomial infections needs to be socialized again on a regular basis. In addition, the lack of awareness from officers is very evident from the behavior carried out daily while providing care and nursing actions during service. Education about the prevention of nosocomial infections is very important. The PPI team as a supervisor for officers, as educators also has the task of developing knowledge and providing direction to officers to always provide care and carry out nursing actions according to the standard operating procedures (SOP) that have been determined so that they can reduce the incidence of nosocomial infections at Sayang Cianjur Hospital.

Level of Knowledge After Intervention

The results of the study showed that of the 18 respondents after being given health education interventions, most of the respondents (72.2%) had a good level of knowledge and a small number of respondents (27.8%) had a sufficient level of knowledge.

According to [\(Notoatmodjo, 2012\)](#), it is said that a person's knowledge can be obtained from experience derived from various sources such as mass media, electronic media, books, poster media, close relatives and so on. There are 3 aspects of misguided knowledge, namely the cognitive aspect. Blum (in [\(Notoatmodjo, 2012\)](#)) argues that the cognitive realm can be measured from knowledge, knowledge is the result of human senses, or the result of a person's knowledge of objects through his senses (eyes, nose, ears, tongue and so on).

Based on a study conducted by [\(Priskila et al., 2025\)](#) entitled The Influence of Health Education on Patients' Family Knowledge and Attitudes Regarding the Prevention of Healthcare Associated Infections (HAIs), respondents had a sufficient level of knowledge as many as 8 people (21.62%) and very good knowledge as many as 29 people (78.38%).

Researchers assume that health education can influence knowledge. Judging from the high average post test performance. When given Health Education, there were several respondents who asked, showing that there was more curiosity after Health Education was carried out. The researcher gave a presentation on the prevention and control of nosocomial infections by providing audio visuals using Flip Chart media which has many colors, images and animations that are very interesting so that the respondents are not bored and very enthusiastic to know what the researcher conveys, so that many of the respondents can finally fill in correctly every question in the questionnaire that the researcher shares.

The Effect of Hand Hygiene Education on Knowledge of Nosocomial Infection Prevention

The results of this study found that there was a significant influence between the provision of hand hygiene education on knowledge of nosocomial infection prevention with a value of $p = 0.000$ ($0.001 < \alpha = 0.05$). So H_0 was rejected, meaning that there was an influence between the provision of hand hygiene education on knowledge of the prevention of nosocomial infections.

According to [\(Susanti et al., 2018\)](#), health education is an effort and activity carried out by health workers to provide implementation to individuals, families, and

communities in order to improve the client's ability to achieve optimal health. Health education can also influence a person's behavior to fit health values. The advantage of using audiovisual media is its ability to reach large groups. Factors that affect before and after include the information received and the respondent's ability to receive information.

According to Notoatmodjo (2012), health education, in the context of education in general, is an effort that is planned to influence individuals, groups, or communities so that they take the actions desired by those who carry out health education or promotion (Notoatmodjo, 2012). This definition includes the elements of input (goals and educators), process (planned efforts to influence others), and outputs (expected actions). The ultimate goal of health promotion or education is the achievement of healthy behaviors, namely behaviors that support and improve health in accordance with the expectations of health promotion goals.

Based on research conducted by Eva Priskila (2025) entitled The Influence of Health Education on Patients' Family Knowledge and Attitudes about the Prevention of Healthcare Associated Infections (HAIs) (Priskila et al., 2025). Statistical tests were carried out using the wilcoxon test, the findings of the Wilcoxon Rank Test statistical test showed that the Z count was $-5,323 > Z \text{ table } -1,645$ (alpha 5%/0.05), in accordance with the results of the research statistical test. Asymp.Sig. (2_tailed) of 0.000 ($p < \alpha$), showed that health education had an impact on the knowledge and attitude of patients' families about the prevention of HAIs in the isolation room of Dr. Murjani Sampit Hospital.

Conclusion

Based on the results of the study, education about hand hygiene for nurses in the Dahlia Inpatient Room, Sayang Cianjur Hospital showed an increase in knowledge about the prevention of nosocomial infections. Before being given education, about half of the respondents had sufficient knowledge about infection prevention. However, after conducting health education for 15-20 minutes, most (72.2%) of respondents showed an improvement in good knowledge. The results of the hypothesis test also showed that there was a significant influence between hand hygiene education and knowledge of nosocomial infection prevention with a P-value of 0.000, which indicated that this education was effective in improving nurses' understanding.

References

- Agustin, F., Restuni, F. R., Detty, A. U., Hutasuhut, A. F., Artini, I., & Dalfian, D. (2021). Penyuluhan tentang Pentingnya Mematuhi Protokol Kesehatan di Era Pandemi COVID-19 di UPT Puskesmas Kampung Sawah Bandar Lampung. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*, 4(1), 207–212.
- Ariandi, D. (2018). *Gambaran Kewaspadaan Universal Perawat di Instalasi Gawadaruat di RSUD. Dr. H. Moch Ansari Saleh Banjarmasin*. Tesis Program D3 Keperawatan D3 Keperawatan Akademik Keperawatan Kesehatan
- Arifianto, A., Arifin, M. T., & Widyastuti, R. H. (2017). *Kepatuhan Perawat dalam Menerapkan Sasaran Keselamatan Pasien pada Pengurangan Resiko Infeksi dengan Penggunaan Alat Pelindung Diri di Rumah*. Diponegoro University.
- Arikunto, S. (2022). *Prosedur penelitian suatu pendekatan praktek*. Jakarta: Rineka Cipta.
- Arrazy, S., Susilawati, S., & Agustina, D. (2020). *Analisi Higiene Dan Sanitasi*

- Pengolahan Makanan Pada Pedagang Makanan Di Pasar Tradisional Kota Medan*. Fakultas Kesehatan Masyarakat UINSU Medan.
- Ayu, S. D., Dewi, T. K., & Juhana, C. (2020). Hubungan pengetahuan dan motivasi perawat terhadap kepatuhan melakukan five moment hand hygiene di RSUD Sayang Kab. Cianjur. *Malahayati Nurs J*, 4(3), 537–555.
- Azis, A., & Kusnafizal, T. (2024). Information and Communication Technology in the Learning Process. *JTP-Jurnal Teknologi Pendidikan*, 26(1), 158-170.
- Caesario, R. I., Wahjono, H., & Lestari, E. S. (2019). Tingkat kepatuhan perawat rumah sakit x di Semarang Terhadap Pelaksanaan Cuci Tangan. *Jurnal Kedokteran Diponegoro (Diponegoro Medical Journal)*, 8(2), 852–859.
- Global handwashing Partnership. (2017). *Global Handwashing Partnership's 2017 Annual Report*. <https://globalhandwashing.org/resources/global-handwashing-partnerships-2017-annual-report/>
- Hastuti, A. P., & Nurmayunita, H. (2018). Penerapan Model Perilaku Perawat Tentang Hand Hygiene Berbasis Teory Of Planned Behaviour Dan Kepatuhan Perawat Melakukan Hand Hygiene 5 Moment 6 Langkah. *Jurnal Kesehatan Hesti Wira Sakti*, 6(2), 9–19.
- Kementrian Kesehatan RI. (2019). *Perilaku Mencuci Tangan Pakai Sabun Di Indonesia*. Pusat Data dan Informasi.
- Notoatmodjo, S. (2012). *Metodologi penelitian kesehatan*. PT. Rineka Cipta.
- Nursalam, J. (2016). *Metodologi Penelitian Ilmu Keperawatan*. Jakarta: Salembang Medika.
- Octaviani, E., & Fauzi, R. (2020). Analisis faktor yang berhubungan dengan kepatuhan mencuci tangan pada tenaga kesehatan di RS Hermina Galaxy Bekasi. *Jurnal Kedokteran Dan Kesehatan*, 16(1), 12–20.
- Özçelik, F., & Şirin, D. A. (2021). Impact of COVID-19 on oral and dental health delivery and recommendations for continuation of oral and dental health services. In *Science-Based Approaches to Respond to COVID and Other Public Health Threats*. IntechOpen.
- PERSI. (2021). *Survei Nasional tentang Cedera Kerja di Rumah Sakit*. Jakarta: Persatuan Rumah Sakit Indonesia.
- Pratiwi, V., & Yarmaliza, Y. (2022). Identifikasi perilaku perawat dalam pencegahan infeksi nosokomial di ruang rawat inap RSUD Cut Nyak Dhien Kabupaten Aceh Barat. *Jurnal Mahasiswa Kesehatan Masyarakat (Jurmakemas)*, 2(2), 364–374.
- Priskila, E., Carolina, M., & Anggraini, F. (2025). Pengaruh Pendidikan Kesehatan terhadap Pengetahuan dan Sikap Keluarga Pasien tentang Pencegahan Healthcare Associated Infections (HAIs). *Jurnal Keperawatan*, 17(1), 79–88.
- Puspitasari, P. L. W. (2019). *Determinan Kepatuhan dalam Penerapan Universal Precaution Determinants of Compliance in Universal Precaution Application*.
- Romulo, C. S., & Dalimunthe, Z. (2024). Effect of related party transaction and tax haven utilization on tax avoidance moderated by Country-by-Country reporting. *Riwayat: Educational Journal of History and Humanities*, 7(1), 26-40.
- Sugiyono. (2018). *Metode Penelitian kuantitatif, Kualitatif, dan R&D*. Alfabeta.
- Sugiyono. (2019). *Metode Penelitian*. CV Alfabeta.
- Susanti, D., Rustam, Y., & Doni, A. W. (2018). Pengaruh Pendidikan Kesehatan Pranikah Terhadap Pengetahuan dan Sikap Calon Pengantin di Lubuh Begalung Padang Tahun 2017. *Jurnal Sehat Mandiri*, 13(2), 18–25.
- Wulandari, D. (2024). The Effectiveness of Youtube Channel as Learning Media at

Conversation Class. *Riwayat: Educational Journal of History and Humanities*, 7(1), 67-69.

Zakaria, A. A., & Sofiana, L. (2018). Correlation between nurse knowledge and attitude with hand hygiene compliance. *JKKI: Jurnal Kedokteran Dan Kesehatan Indonesia*, 74–81.