

The Level of Nurses' Knowledge Regarding Infection Prevention and Control (IPC) in Hospitals

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Abstract. Nosocomial infection is an infectious disease that is obtained by patients after receiving treatment at a health care facility. Nosocomial infections can be caused by pathogenic microorganisms such as bacteria, viruses, or fungi that spread from one patient to another through the air, walls, and furniture of the hospital. To determine how nurses' knowledge of infection prevention and control is at the Sunan Kudus Islamic Hospital. This type of research is quantitative research using descriptive studies. The population was 114 using the Slovin formula, a sample of 53 respondents was obtained. The research measuring instrument used a questionnaire. The data collection technique used purposive sampling. The research instrument was made in the form of a questionnaire about nurses' knowledge containing 15 questions. The study was conducted at the Sunan Kudus Islamic Hospital in June 2024. The results showed that out of 53 respondents, 48 respondents (90.6%) had good knowledge and 5 respondents (9.4%) had sufficient knowledge. The conclusion of this study is that most of the nurses' knowledge of infection prevention and control at the Sunan Kudus Islamic Hospital is good with 48 respondents (90.6%).

Keywords: Nurses' knowledge, infection prevention and control.

INTRODUCTION

Hospitals, as facilities providing health services, are also a source of risk for the spread of infections caused by various microorganisms. One of the infections that can affect patients during hospitalization, which may appear within 3 × 24 hours or 72 hours, is nosocomial infection—a disease that was not present at the time the patient was admitted to the hospital (Heriyati, H., . H., & Astuti, 2020). Nosocomial infections are transmitted mainly through direct contact with paramedics. Transmission in hospitals occurs through five pathways, namely direct contact, objects around patients or instruments used during care without ensuring sterility (common vehicles). Infection can also spread through airborne transmission, especially in patients with respiratory problems who are placed in the same room as non-infectious patients; through vectors such as animals; and through food or drinks with low hygiene levels. Microorganisms causing infection include bacteria, viruses, parasites, and fungi (Aliyupiudin, 2019).

In the United States, 1.7 million cases of Healthcare-Associated Infections (HAIs) occur every year. HAIs are a major health issue in many countries worldwide, including Indonesia, with the incidence rate reaching 4.8–15.5%. Indonesia's HAI rate is 15.74%, which is higher than that of developed countries (Sapardi, 2018). The Indonesian Ministry of Health Regulation No. 27 of 2017 states that the categories of HAIs include VAP (Ventilator-Associated Pneumonia), IAD (Intravascular Catheter-Associated Infection), UTI (Urinary Tract Infection), and SSI (Surgical Site Infection). VAP is pneumonia occurring after 48 hours of mechanical ventilation using either endotracheal tubes or tracheostomy.

Currently, the increasing trend of HAIs is considered one of the most significant global challenges in health care systems. (Aliakbar, X and Mahmood, 2019). Infection Prevention and Control (IPC) is a practical, evidence-based method to prevent avoidable infections in hospitals (World Health Organization, 2023) IPC practices include proper hand hygiene, use of personal protective equipment (PPE), safe handling and disposal of sharps and waste, decontamination of equipment and medical devices, and environmental

cleaning (Centers for Disease Control and Prevention, 2016). Poor implementation of IPC measures increases the burden of HAIs (World Health Organization., 2016)

Nurses are one of the main sources of HAI transmission in hospitals, as transmission can occur through direct contact with patients. Nurses play a crucial role in preventing HAIs because they have frequent and prolonged interaction with patients and their environment. Transmission mainly occurs through hands and other health workers. All hospital health staff should understand the importance of preventing cross-infection (nosocomial infection). Nurses are highly exposed to infection, spending approximately 7–8 hours a day with patients and around 4 hours in direct contact. Thus, they are the main group at risk of nosocomial infection. Nurses are required to have adequate education and knowledge, which is essential to support safe nursing care—especially in preventing infection (Situmorang, 2020). Nurses also have strategic roles in health service delivery (Priyanto et al., 2022; Ramdan & Rahman, 2017). They can implement actions related to patient safety, hospital environmental health, and waste management (solid, liquid, and gas) through the hospital occupational health and safety program (K3RS) (Hikmah, N., & Sukwika, 2021).

Knowledge is fundamental for health professionals in providing nursing care. Nurses are responsible for holistic and comprehensive healthcare (Pasaribu, 2018). Implementation of IPC in hospitals is essential to prevent and minimize infection among patients, nurses, visitors, and communities around health facilities. Medical environments carry high infection transmission risks; therefore, high-quality human resources are needed to ensure optimal patient care. This can be achieved through adequate cognitive and motor skills among health workers (Ministry of Health RI, 2017). Behavioral improvement in nosocomial infection prevention among nurses includes hand hygiene, PPE use, patient care equipment management, environmental control, medical equipment processing, and linen management. These are managerial policies established by the IPC Team (Ministry of Health, 2018).

Barriers in IPC program implementation may include lack of infrastructure (handwashing stations, soap and tissues, PPE, infectious and non-infectious waste containers, and sharps containers), low nurse compliance, lack of continuous infection case reporting, and other issues (Sapardi, 2018). Failure to address these issues may result in suboptimal nursing services and increased nosocomial infection rates. These infections cause additional hospital stay, increased physical and psychological burden on patients, higher healthcare costs, and increased morbidity and mortality. Infection-control responsibilities lie with the medical infection-control team supported by nurses around the clock, making nurses the frontline executors of IPC efforts (Darmadi, 2017).

A preliminary study conducted on January 13, 2024, at Sunan Kudus Islamic Hospital reported decubitus at 0.24% in December, SSI at 0.35% in October, and phlebitis at 0.02% in October. Observations also found some nurses not performing handwashing or using hand rub before entering inpatient areas, and not using PPE such as masks. Based on the above description, the researcher is interested in examining nurses' knowledge of infection prevention and control, and therefore conducted a study titled “Nurses’ Knowledge of Infection Prevention and Control (IPC) at Sunan Kudus Islamic Hospital.”

METHOD

This study employed a quantitative research method with a descriptive design. The study aimed only to describe an event or phenomenon without providing intervention. The research was conducted on June 11, 2024. The population in this study consisted of 114 inpatient nurses at Sunan Kudus Islamic Hospital. The sampling technique used was purposive sampling, and based on the Slovin formula, a total of 53 nurses

were selected as respondents. A questionnaire was used as the research instrument to measure nurses' knowledge. The instrument consisted of 15 questions. The questionnaire had undergone validity and reliability testing and was declared valid and reliable.

RESULT AND DISCUSSION

RESULT

The total number of respondents in this study was 53 inpatient nurses at Sunan Kudus Islamic Hospital. Data were collected using a questionnaire, and the results are presented below.

Table 1. Distribution of Nurses Based on Educational Background

Education Level	Frequency	Percentage (%)
Diploma	11	20.8
Bachelor of Nursing	5	9.4
Profesional Nurse	37	69.8
Total	53	100.0

Based on Table 1, most respondents had a professional nursing education (Ners), totaling 37 nurses (69.8%) out of 53 respondents. Meanwhile, 11 nurses (20.8%) held a Diploma degree, and 5 nurses (9.4%) held a Bachelor of Nursing degree.

Table 2. Distribution of Nurses Based on Age

Age	Frequency	Percentage (%)
<25 Years	11	20.8
26-30 Years	12	22.6
31-35 Years	11	20.8
36-40 Years	2	3.8
41-45 Years	7	13.2
>45 Years	10	18.9
Total	53	100.0

Based on Table 2, most respondents were between 26–30 years of age, with 12 nurses (22.6%). Meanwhile, nurses <25 years and 31–35 years were each 11 nurses (20.8%), >45 years were 10 nurses (18.9%), 41–45 years were 7 nurses (13.2%), and 36–40 years were 2 nurses (3.8%).

Table 3. Distribution of Nurses Based on Years of Service

Length of Service	Frequency	Percentage (%)
1-5 Years	25	47.2
6-10 Years	10	18.9
11-15 Years	2	3.8
>15 Years	16	30.2
Total	53	100.0

Based on Table 3, most respondents had worked for 1–5 years, totaling 25 nurses (47.2%). Meanwhile, 16 nurses (30.2%) had worked for more than 15 years, 10 nurses (18.9%) for 6–10 years, and 2 nurses (3.8%) for 11–15 years.

Table 4. Distribution of Nurses Based on Knowledge

Knowledge level	Frequency	Percentage (%)
Good	48	90.6
Fair	5	9.4
Total	53	100.0

Based on Table 4, most respondents demonstrated good knowledge of infection prevention and control, totaling 48 nurses (90.6%). Meanwhile, 5 nurses (9.4%) had fair knowledge.

DISCUSSION

Knowledge is the result of "knowing," a state achieved after an individual perceives a specific object (Notoatmodjo, 2003, cited in Lestari, 2015). A nurse demonstrates good knowledge when they have progressed beyond mere recall to a stage of understanding—recognizing, for instance, the utility of nosocomial infection prevention in curbing disease transmission (Puspasari, 2015). Among the 53 respondents, only five (9.4%) possessed adequate knowledge regarding infection prevention and control. This outcome may be influenced by the nurses' tenure and age, as these individuals may lack sufficient information regarding infection prevention and control practices. Work experience significantly shapes an individual's knowledge; the longer one works, the more experienced they become in their chosen field. This process involves revisiting past experiences to solve problems encountered previously. This aligns with the view that experience serves as a source of knowledge—a means of attaining truth and understanding (Jabarudin, 2016). In this study, the majority of nurses had a tenure of 1–5 years; such experience contributes to knowledge acquisition and the development of professional capabilities.

In addition to length of service, knowledge is also influenced by age; as a person ages, changes occur in physical and psychological aspects that lead to a more mature level of thinking, consistent with the theory proposed by Rahayu (2010). The researcher posits that as a person ages, their thought patterns become more mature, resulting in improved knowledge acquisition. Age influences an individual's comprehension and thought patterns; as age increases, these faculties develop further, leading to better knowledge. From a cognitive perspective, the development of thought patterns and intelligence occurs during early adulthood, a view supported by the theory of Kartika, Martha, and Rahmat (2018).

Forty-eight respondents (90.6%) demonstrated a good level of knowledge. The study results indicate that the nurses had moved beyond mere recall to a genuine understanding of the benefits of preventing nosocomial infections in terms of halting disease transmission. This finding may be attributed to the respondents' age, as the majority fell within the 26–30 age bracket. According to Kartika, Martha, and Rahmat (2018), age is a factor influencing an individual's knowledge; by early adulthood, cognitive development—including mindset and intelligence—has matured. Age also affects comprehension and thought processes, as increased age often correlates with improved grasping of information, thereby leading to a higher quality of acquired knowledge.

An individual's level of knowledge can be gauged by their level of education; this aligns with the theory proposed by Notoadmodjo (2021), which posits that a higher level of education influences an individual's understanding and knowledge level. Nurses who comprehend the objectives of infection prevention and control are more likely to readily accept and implement treatment protocols. Nurses must prioritize hand hygiene and adhere to strict infection control protocols to minimize pathogen transmission. They must also ensure appropriate oral care for patients on ventilators, as oral bacteria can migrate to the lungs and cause infections (Alreshidi et al., 2024).

CONCLUSION AND SUGESTION

CONCLUSION

The results of this study show that most nurses at Sunan Kudus Islamic Hospital have good knowledge of Infection Prevention and Control (IPC), with 48 nurses (90.6%) out of 53 respondents demonstrating good knowledge, while 5 nurses (9.4%) had fair knowledge.

SUGESTION

1. For Nurses

Nurses should not only possess knowledge of IPC but also consistently apply infection-prevention practices in daily nursing care.

2. For the Hospital

The hospital should improve supervision to ensure that infection-prevention protocols are consistently implemented by scheduling routine monitoring in all inpatient units.

3. For Higher Education

Nursing institutions are expected to provide more learning resources and enhance the curriculum related to infection-prevention and control to strengthen students' competencies.

4. For Future Researchers

Further studies are recommended to expand the scope not only toward knowledge but also to include actions, interventions, implementation, experimental studies, and the relationship with other variables that may influence infection-prevention practices.

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