



## THE RELATIONSHIP BETWEEN TRAINING AND SUPERVISION FACTORS AND NOSOCOMIAL INFECTION PREVENTION AND CONTROL PRACTICES BY NURSES IN THE EMERGENCY DEPARTMENT

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### ABSTRACT

Nosocomial infections are the type of infections associated with health services in hospitals. Nosocomial infection termination should be done with prevention efforts starting from the Emergency Department (ED). Nurses are health personnel providing the initial treatments for the patients, making them obliged to implement infection prevention and control in accordance with the predetermined standard. Analyze the relationship between training and supervision and the nosocomial infection prevention and control practices by nurses in the emergency departments. Analytic observational design with cross-sectional approach was utilized. The samples were 74 nurses in the Emergency Department selected by total sampling technique. The statistical tests used Spearman rank test with significant level ( $\alpha$ ) = 0.05 and logistic regression test. The study was conducted in 5 hospitals type C in Malang, Indonesia. Spearman correlation test showed that there was a significant relationship between training ( $p=0.296$ ) and supervision ( $p=0.366$ ) and the nosocomial infection prevention and control practices by nurses in the Emergency Department. Logistic regression test showed that supervision was the factor with the most dominant relationship ( $\text{Exp}(B)=8.342$ ). There was a significant relationship between training and supervision factors and the nosocomial infection prevention and control, but supervision was the most dominant factor compared to training factor.

**KEYWORDS:** Training, Supervision, Nosocomial Infection, Nurse in ED.

### INTRODUCTION

Nosocomial infections are the type of infections from health services in hospitals, either from patients or medical personnel. In modern times, these nosocomial infections are called the Healthcare-Associated Infections (HAIs) which becomes an important issue in Indonesia and in the world and needs immediate concerns and solutions (Lantu, Abeng, & Kandou, 2015).

Nosocomial infections in hospitals affect more than 2,000,000 or around 5-10% of hospitalized patients and cause around 90,000 deaths annually. A study by WHO (World Health Organization) involving 55 hospitals in 14 countries found that 8.7% of hospitalized patients experienced nosocomial infections (Soekiman, 2016). In Indonesia, the incidence of nosocomial infections is still quite high, i.e. between 6 - 16% cases with an average of 9.8% in 2010. This figure was obtained from 10 studies in 10 public hospitals in Indonesia (Jeyamohan, 2011).

Emergency nursing is a nursing specialty with the high risk of exposing or spreading the infections from patients, nurses, and the environment (Aacharya, Gastmans, & Denier, 2011). Nurses in the Emergency Department have a high potential to be exposed to blood or fluids when providing health services, causing infections with pathogenic diseases such as HIV, hepatitis C virus, hepatitis B virus, etc. is very likely to happen (Wansuzusino, 2012).

Reducing the risk of infection by applying the precautionary principle is very important to note since nurses are the health personnel providing the initial treatments for the patients and giving a 24-hour service from the patient arrival until the patient return. Nurses are the key members of the nosocomial infection prevention and control practices in hospitals (Kalantarzadeh & Mohammadnejad, 2014).

From the preliminary study conducted by the researchers at some hospitals type C in Malang, the average

incidence of nosocomial phlebitis infection surveillance was 10.56%. This figure is fairly high because the standard value of hospital minimum service for nosocomial infection incidence should be  $\leq 1.5\%$ . Results of the brief interview with the Committee on Infection Prevention and Control (*Komite Pencegahan dan Pengendalian Infeksi, Komite PPI*) showed that training on nosocomial infection prevention for nurses in the Emergency Department was not prevalent. Besides, 7 out of 10 nurses the researchers interviewed stated that the supervision on the standard application of nosocomial infection prevention by IPC team has not been done optimally.

Based on these phenomena, the researchers are interested to conduct a research and analyze the relationship between training and supervision and nosocomial infection prevention and control by nurses in the Emergency Department in the Hospitals Type C.

## RESULTS

**Table 1: Characteristics of Respondents by Age, Gender, Education, Working Period, Training, Supervision, and prevention of nosocomial infection practices.**

Characteristics of Respondents	Frequency (n)	Percentage (%)
Age		
≤20 Years	1	1.4
21-30 Years	57	77.0
31-40 Years	14	18.9
≥ 41	2	2.7
Total	74	100.0
Gender		
Female	40	54.1
Male	34	45.9
Total	74	100.0
Education		
Nursing School	1	1.4
Diploma III	60	81.1
Bachelor in Nursing + Ners	13	17.6
Total	74	100.0
Working Period		
≤5 Years	48	64.8
6-10 Years	17	23.0
11-15 Years	6	8.1
16-20 Years	2	2.7
≥21 Years	1	1.4
Total	74	100.0
Training		
Never	21	21.6
Ever	53	71.6
Total	74	100.0
Supervision		
Good	58	78.4
Poor	16	21.6
Total	74	100.0
Nosocomial Infection Prevention and Control Practices		
Good	35	47.3
Poor	39	52.7
Total	74	100.0

Source: Primary Data (2018)

## MATERIALS AND METHODS

This research used observational analytic design with cross-sectional approach. The research locations were 5 hospitals type C in Malang, Indonesia. The research was held from February 01<sup>st</sup> to March 01<sup>st</sup>, 2018. The samples were 74 nurses in the Emergency Department selected by total sampling technique. The research instruments were observation sheets and modified questionnaires from the Ministry of Health Republic of Indonesia (2008), regulations of the Ministry of Health (2011), and Darmadi (2008). This research performed three types of analysis: univariate, bivariate, and multivariate analysis. The univariate analysis aimed to describe the characteristic of the research respondents, the bivariate analysis used Spearman rank correlation test with significant level ( $\alpha$ ) = 0.05, and the multivariate analysis used logistic regression test to examine the independent variable having the most dominant relationship with the dependent variable.

Table 1 shows that most (77.0%) of the respondents had age range 21-30 years, 40 respondents (54.1%) were female, 60 respondents (81.1%) had Diploma III in nursing, 48 respondents (64.8%) had ≤5-year working period, 21 respondents (28.4%) never received training on nosocomial infections, 16 respondents (21.6%)

considered the supervision was inadequate, and 39 respondents (52.7%) attended disaster training not sourced from the government program considered the nosocomial infection prevention and control practices by nurses in the Emergency Department was inadequate.

**Table 2: Spearman rank correlation test results between training and supervision variables and nosocomial infection prevention and control practices by nurses in the ED.**

Independent variable	Nosocomial infection prevention and control practices by nurses	
	correlation coefficient (r)	p-value
Training	0.296	0.010
Supervision	0.366	0.001

Source: Primary Data (2018)

Table 2 shows that training and supervision had  $p = 0.010$  and  $p = 0.001 < \alpha (0.05)$  respectively, which indicated a significant relationship between training and supervision and nosocomial infection prevention and control practices by nurses in the ED. Training and supervision had a strong relationship with positive direction toward the nosocomial infection prevention and control practices, which was marked with the value of r of 0.296 and 0.366 respectively.

ability in the nosocomial infection prevention and control practices (Notoadmodjo, 2012). This is in contrast with research conducted by Pancaningrum (2011) and Herpan (2012) that there was no significant relationship between training and the performance of nurses in the nosocomial infection prevention and control.

**Table 3: Logistic regression test results between training and supervision variables and nosocomial infection prevention and control practices by nurses in the ED.**

Variables	The value of p	Exp(B)	R Square
Training	0.033	3.703	0.259
Supervision	0.009	8.342	

Source: Primary Data (2018)

A study by Kusworo (2014) conducted in Yogyakarta found that there was a significant relationship between training obtained by nurses and the implementation of Universal Precautions containing the standard precautions on the nosocomial infection prevention and control practices. With training, a person will gain competence. In the implementation of the job and the duty, an individual must have sufficient capability and be supported by a skilled attitude categorized as competence. Competence refers to certain knowledge, attitudes, and skills of a profession as the characteristic of a professional (Wibowo, 2012). Competence is a physical, intellectual, and interpersonal skill which underlies nurses in performing the nosocomial infection prevention and control in the department. Therefore, nurses are required to attend the training to achieve the competence.

Table 3 shows that supervision was the most dominant factor on the nosocomial infection prevention and control practices by nurses in the ED, as shown by Exp(B) of 8,342 higher than Exp(B) of training factor of 3,703.

**The relationship between supervision and the nosocomial infection prevention and control practices by nurses in the ED**

**DISCUSSION**

**The Relationship between training and the nosocomial infection prevention and control practices by nurses in the ED**

The result of the bivariate analysis showed that there was a significant relationship between training and the nosocomial infection prevention and control practices by nurses in the ED. Research in the field found that a few nurses never participated in training on nosocomial infections, either from the hospital or outside the hospital.

The result of the bivariate analysis on supervision and the nosocomial infection prevention and control practices by nurses indicated that there was a significant relationship between supervision according to nurse perception and the infection prevention and control practices. Moreover, the results of logistic regression test showed that supervision was the most significant factor related to the infection prevention and control practices with Exp(B) value of 8,342. It proved that supervision had the most dominant relationship when compared to training factor. Research in the field also found that supervision according to nurse perception on the nosocomial infection prevention and control practices in the Emergency Department was mostly good. Only a few were still lacking especially in the evaluation aspect, investigation of the extraordinary incidence of

The results of this study are in line with one theory stated that training is an activity to increase knowledge and expertise of individuals guided by competent persons in a particular field to increase skills and responsibility in a particular area based on a specified and fixed procedure. Training is one effort to improve the competence of an individual. Competent individuals have the adequate

nosocomial infections, and assessment of nurse training needs regarding nosocomial infections.

The results of this study are in accordance with Ponco's (2016) research that there was a significant relationship between supervision, whether the supervision was done by the head of the departments or related parties, and the attitude of the nurses to the compliance of the infection prevention and control practices on infusion installation based on the predetermined procedure. Setyowati (2016) also stated that the motivation factor, in this case supervision, had a significant relationship on the nurse compliance in the infusion installation in accordance with the fixed procedure in the Emergency Department which was one of infection prevention and control practices.

According to the Ministry of Health of the Republic of Indonesia (2016), a committee in organizing the nosocomial infection prevention and control was established in achieving the visions, missions, and objectives of the Infection Prevention and Control practices. The establishment was based on organizational provisions with minimal work systems and many functions and could perform tasks, responsibility, and authority efficiently and effectively. Effective meant all competent individuals could be engaged in supporting maximal health services, especially in infection prevention and control (MOH, 2008).

Aditya et al. (2016) stated that supervision had an important influence on nurse compliance in applying standard precautions. Supervision could be in the form of performance monitoring on supervised subjects aimed to help improving the desired results by giving suggestions, criticism, and assistance at the right time, specifically in the nosocomial infection prevention and control practices to comply with predetermined standards to reduce adverse effects which might appear at any time (Suarli & Bahtiar, 2007).

The infection prevention and control team has the responsibility to explain the policy on infection control to all hospital staffs, coordinate and supervise the departments regarding the implementation of standard precautions, analyze and manage the surveillance data obtained in the department and submit the data to the IPC committee periodically, and manage group discussions with nurses in the department about the incidence of infection (Darmadi, 2008).

IPCN (infection prevention and control nurse) should monitor the nosocomial infection prevention and control regularly to collect the data on the incidences using available checklists and input the data in the computer. IPC Team in Hospital should conduct the evaluations at least once a month, while IPC committee should evaluate at least once in 3 months. IPC Committee should make regular written reports of infection incidences and report them to the hospital director (MOH, 2011).

Supervision in the research locations showed a positive result of 78.4%. Purpose of supervision was to encourage the organization member, in this case nurses in the ED, to contribute actively to organizational goals. Effective and routine supervision by IPC team was hoped to motivate nurses in the emergency department to ensure better nosocomial infection prevention and control practices. As the results, organizational goals such as improving patient safety quality and minimizing the incidence of nosocomial infections in the hospital could be achieved.

Optimal effort from IPC committee and IPC team in hospitals regarding the monitoring activity such as supervision and evaluation on each incident of nosocomial infection in the departments became an important motivation for nurses in the infection prevention and control practices. Therefore, it can be concluded that there was a significant relationship between supervision and nosocomial infection prevention and control practices by nurses in the ED.

## CONCLUSION

There was a significant relationship between training and supervision factors and the nosocomial infection prevention and control. In addition, supervision was the most dominant factor in nosocomial infection prevention and control practices by nurses in the Emergency Department.

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