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The Relationship Between Nurses' Knowledge and Needle Stick Injury Prevention Behavior

Yunisa Dwi Kurniawati[1], Suratmi[1], M. Bakri Priyodwi A.[1], Nurul Hikmatul Qowi[1*]
[1)] Nursing Study Program, Faculty of Health Sciences, Universitas Muhammadiyah Lamongan, Indonesia

Correspondent Author:
Nurul Hikmatul Qowi

Email:
Nurul_hikmatul_qowi@umla.ac.id

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Abstract

A frequent work accident in the hospitals is needle stick injury. Nurses always contact with blood, patient's body fluids, punctured needles used by patients and other dangers which can be a medium of disease transmission. The purpose of this study was to determine the relationship between knowledge and needle stick injury prevention behavior. This study used a correlational analytical design with a cross-sectional method, and used cluster sampling techniques to obtain 88 respondents. The data were gathered by using the Lubis questionnaire to measure knowledge and behavior in the prevention of needle stick injury. Then, the data were analyzed by a contingency coefficient test. It was found that 83 nurses (94.3%) had good knowledge and 85 nurses (96.6%) had good behavior. The data about nurses' knowledge was analyzed and obtained a value of p = 0.000 and a value of contingency coefficient = 0.444, meaning that there was a relationship between knowledge and needle stick injury prevention behavior. Prevention efforts can be carried out by providing guidance, training, direction, and supervision, so that nurses' awareness increase and they can work safely.

INTRODUCTION

A frequent work accident in the hospitals is needle stick injury. Needle stick injury is a serious case which must be faced by health workers (Ompusunggu. 2021). Needle stick injury is a work accident caused by a needle or sharp medical object contaminated by infectious fluid from the patient (Suliman et al. 2018). Contaminated syringes may carry blood pathogens such as hepatitis B virus (HBV), hepatitis C virus (HVC), human immunodeficiency virus (HIV), and more than twenty other pathogens (Meilawati et al. 2019). On the other hand, nurse is at risk of contact with blood, patient body fluids, punctured by used syringes, and other dangers of disease transmission (Mapanawang et al. 2017). Some actions which cause needle stick injury are injection, blood sampling, recapping, and syringe disposal (Jahangiri et al. 2016).

Research conducted by Kahayanti (2019) at the Surabaya Hajj General Hospital in 2010-2019 revealed that 40% of needle stick injury cases occurred in nurses. Nurses experienced more work accidents during blood sampling with recapping (closing the needle cap again), infusion needle pricking, and needle pricking during hecting (suturing wounds). In Malang, Ernawati (2016) found that 9 nurses experienced needle stick injury when doing nursing actions including 4 (44.4%) nurses sheath back needles which were used with a two-handed technique (recapping), 2 (22.2%) nurses were pierced by needles when collecting garbage to be disposed, 2 (22.2%) nurses did not immediately throw needles in the container provided, and 1 (11.1%) nurse left needles carelessly. The previous research indicates that the incidence of needle stick injury in Indonesia is still high due to low preventive behavior in nurses. Moreover, it is still found some nurses who perform recapping actions with two-handed techniques and improper disposal of syringes (Motulo et al., 2022).

Some factors affecting nurses behavior are knowledge and attitudes (Meilawati et al. 2019). Knowledge is very important as a foundation in carrying out medical procedures. Knowledge will affect one's behavior, and behavior will affect action (Pinem, 2013). Attitude is a mental mechanism which evaluates and forms views which will determine tendencies and become an individual behavior. A positive attitude will affect the behavior of officers in carrying out work accident prevention actions. Officers who have positive traits will follow the provisions applied in the hospital about the steps or procedures which must be performed (Lubis, 2018). In light of the background above, this research aimed to investigate the relationship between nurses' knowledge and needle stick injury prevention behavior.

RESEARCH METHODS

The study used analytical correlation with a cross-sectional approach. The population was all nurses of 114 respondents. The samples were obtained by cluster sampling techniques of 88 respondents with inclusion criteria: 1) nurses who worked at X Hospital in Lamongan, and 2) nurses who agreed to be the respondents, while the exclusion criteria were nurses who were on leave when the study was held. The study was conducted at X Hospital in Lamongan in May 2023 with number letter of permit [070/76/413.216/2023]. The research data was taken by using Lubis questionnaire (2018) to measure knowledge and behavior in the prevention of needle stick injury. Then, the data were analyzed using SPSS 26.0 and a contingency coefficient test.

RESULT

Table 1 below shows the respondents' characteristics including their gender, educational background, age, length of working, and workplace.

Table 1. Respondents' Characteristics

No	Gender	Frequency	Percentage (%)
1	Male	32	36.4%
	Female	56	63.6%
	Educational Background		
2	Diploma III	16	18.2%
	Bachelor/ Nurse Profession	72	81.8%
	Age		
3	20-25 Years	3	3.4%
	26-30 Years	41	46.6%
	30-40 Years	38	43.2%
	>40 Years	6	6.8%
	Length of Working		
4	<3 Years	26	29.5%
	>3 Years	62	70.5%
5	**Workplace**		
	Flamboyan Room	16	18.2%
	Anggrek Room	17	19.3%
	Graha Room	12	13.6%
	Central Surgery Installation	10	11.4%
	Intensive Care Unit	9	10.2%
	Emergency Unit	15	17.0%
	Polyclinics	9	10.2%

Data on Table 1 indicate that respondents in this study for gender are mostly women (63.6%), almost all nurses are bachelor/ nurse profession program graduates (81.8%), almost nurses aged 26-30 (46.6%), most of the nurses with a working length of >3 years (70.5%), and most of them worked in the Orchid Room, which was 17 nurses (19.3%).

Table 2. Frequency Distribution

No.	Knowledge	Frequency	Precentage (%)
1	Good	83	94.3%
2	Sufficient	5	5.7%
3	Poor	0	0%
No.	**Behavior**	**Frequency**	**Percentage (%)**
1	Good	85	96.6%
2	Bad	3	3.4%
	Total	**88**	**100.0 %**

Data on Table 2 indicated that almost all nurses had good knowledge (94.3%), a small number of nurses had sufficient knowledge (5.7%), and no nurses had poor knowledge (0%). Moreover, almost all nurses had good behavior (96.6%), and a small number of nurses had bad behavior 3 nurses (3.4%).

Table 3. Crosstab and P-value

No	Knowledge	Behavior				Total	
		Good		Bad			
		N	%	N	%	N	%
1	Good Knowledge	82	93.2%	1	1.1%	83	94.3%
2	Enough Knowledge	3	3.4%	2	2.3%	5	5.7%
3	Lack of Knowledge	0	0%	0	0%	0	0%
	Total	**85**	**96.6%**	**3**	**3.4%**	**88**	**100%**
Contingency Coefficient Test :0.444 p:0.000							

Data on table 3 showed that almost all of the 88 nurses have a good knowledge. Based on that data, 83 out of 88 nurses had a good knowledge (94.3%). With the explanation that 82 out of 83 nurses who had good knowledge also have good behavior (93.2%) and 1 out of 83 nurses have bad behavior (1,1%). On the other hand, 5 out of 88 nurses had an enough knowledge (5.7%). 3 out of 5 nurses who had enough knowledge have a good behavior (3.4%) and 2 out of 5 nurses have a bad behavior (2,3%).

The calculation results using the contingency coefficient test and analysis using the SPSS program version 22.0 with a significant value of 0.000 ($p < 0.05$) and obtained a value of CC= 0.444, meaning that H1 was accepted. In other words, there is a significant relationship between knowledge and needle stick injury prevention behavior.

DISCUSSION

1. Nurses' Knowledge of Needle Stick Injury Prevention

The findings in Table 2 indicated that almost all nurses have good knowledge and a small number have sufficient knowledge. The highest indicator is waste management. Nurses know that the needle storage container or the safety box must be replaced after 3/4 is filled and

closed so that the waste contents do not spill. The lowest indicator is shown by the actions taken to prevent needle stick injury. Some nurses still do recap with a two-handed technique, in which it should not be recommended. Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 27 of 2017, it recommends that sharps waste before being taken to landfills must have a temporary storage container (safety box). The safety box must be closed and replaced after 3/4 of the part is filled with waste, and it may not be reopened so that the contents do not spill (PERMENKES, 2017). According to some studies, recapping is not allowed, but for certain purposes, it can be carried out by using the one hand-scoop technique (Berman et al. 2012).

It is important to note that the accidents occur when nurses trying to reinsert used needles into the lid (recapping) so it is not recommended to close the syringe again. However, it must be immediately thrown into a temporary shelter (safety box) without touching or manipulating the sharp parts such as bending, breaking, or closing again (Qosim, 2017). Nurses knowledge about good needle stick injury prevention will make nurses always maintain the health and safety of themselves and other nurses at work. Nurses who understand the management of sharp objects will reduce the risk of needle stick injury because needles that have been used in nursing actions are stored in a safety box so as not to endanger nurses and other medical personnel when performing actions. Similarly, nurses who have sufficient knowledge about needle recapping. Nurses should comply with SOP standards set by the hospital by applying recapping with a one-hand-scoop technique so as to minimize accidents at work, one of which is needle stick injury.

2. Nurses Behavior in the Prevention of Needle Stick Injury

The findings on Table 2, it was found that almost all nurses had good behavior and a small number had bad behavior. The highest indicator was the use of personal protective equipment (PPE) when carrying out nursing actions. The use of gloves in carrying out nursing action procedures can prevent needle stick injury. The lowest indicator is shown by sharps waste management. Some nurses still separate needles from syringes.

Wearing PPE is one strategy to minimize the incidence of needle stick injury (June et al. 2015). PPE is equipment which must be used when taking actions. PPE serves to protect the skin and mucous membranes from the risk of blood exposure and all body fluids from patients. According to the National Health Service (2015), although needles or sharp objects can easily penetrate gloves, gloves can reduce the risk of transmission of infection significantly by up to 86%. Sharps waste management is by not bending or breaking sharp objects but directly disposed of in a temporary disposal container or safety box which must be leak-proof and puncture-resistant. Sharps waste is waste that can puncture or cause wounds and has been in contact with the causative agent of infection so it is necessary to immediately dispose into containers which are puncture-proof, waterproof, and cannot be reopened (Ernawati, 2016).

A person who feels himself vulnerable to serious illness will take preventive measures that include preventing or protecting themselves from disease and other health problems. Good needle stick injury prevention behavior in nurses such as in the use of PPE in carrying out actions. Respondents realize that preventive behavior is very important to avoid accidents while working, one of which is needle stick injury. In addition, in terms of sharps waste management, nurses should pay more attention to the SOPs for sharps waste set by the hospital and can increase awareness about the dangers of needle stick injury.

3. The Relationship between Nurses' Knowledge and Needle Stick Injury Prevention Behavior

The results of data analysis indicate that nurses' knowledge with needle stick injury prevention behavior has a significant relationship with moderate correlation strength, which means that the higher the nurse's knowledge about needle stick injury prevention, the better the

nurse's behavior in needle stick injury prevention. The results of this study are in line with research conducted by Ernawati (2016), which states that nurses who have good knowledge have a tendency to have good needle stick injury prevention behavior 21 times greater than nurses who have poor knowledge.

The quality of health services, especially in providing nursing actions, is influenced by the nurses' knowledge. Knowledge is an operational form of human behavior that can influence a person's attitude. Good nurse knowledge can influence her actions at work. Knowledge will form beliefs that are further in perceiving reality, providing a basis for decision making and determining behavior towards certain objects, so that it will affect a person in behaving (Sunaryo, 2015). Knowledge is one of the important roles in reducing the incidence of injury. Alifariki, Rangki, and Rahmawati (2018) also stated that good knowledge can influence actions by paying attention to self-vigilance so that the risk of needle puncture wounds can be prevented and being able to control the incidence of nosocomial infections in hospitals.

Furthermore, it can be perceived that nurses who are well-informed will carry out their duties well and provide nursing services professionally based on science. For this reason, it is very important for nurses to be able to increase the knowledge they have about needle stick injury prevention through seminars and workshops related to improving the competence and professionalism of nurses in carrying out safe injection techniques and guided by Infection Prevention and Control. Thus, nurses' knowledge about needle stick injury increases, and the greater prevention can be performed to avoid accidents at work.

The results of this study showed that there is a relationship between nurses knowledge and the behavior of preventing needle stick injury. The results of this study are in line with the research conducted by Ernawati (2016). This study has a difference with the results of Motulo (2022) which showed that there was no significant relationship between nurses knowledge and the behavior of preventing needle stick injury. Differences may occur due to differences in the data analysis methods used.

CONCLUSION

Based on the results of research, it can be concluded that almost all nurses have good knowledge, and almost all nurses have good needle stick injury prevention behavior. The contingency coefficient test states that there is a relationship between nurses' knowledge and the behavior of preventing needle stick injury. Efforts to prevent needle stick injury by hospitals include increasing the knowledge of health workers in universal vigilance including training on safe injection procedures and the proper use and disposal of sharp objects, as well as the importance of using personal protective equipment when performing nursing care. Also, the hospital can conduct guidance, training, briefing, supervision, seeking information, discussions, and various experiences to increase the awareness of each individual to work safely.

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