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Factors associated with the level of compliance of nurses in universal precaution application

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17

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ABSTRACT

Background: The highest prevalence of surgical wound infections in NurHidayah Hospital occurred in 2014 which is at 2.80%. This was because nurses' compliance in using PPE and hand washing was still low and the culture for reporting needle puncture events had not been implemented so that the number of nurses who were punctured was still unknown. Meanwhile, the lowest prevalence of surgical wound infections occurred in 2016 amounting to 0.76%, this happened because the compliance of nurses in using PPE was quite high and the incidence of needle puncture reached 0 (zero) but compliance in hand washing was still low.

Methods: This study was a quantitative study with an observational analytic method with a cross sectional design. The variables in this study were knowledge, attitudes, working period, training and nurse compliance in the application of universal precaution with the number of respondents 46 nurses. The research instruments used were questionnaires and observation sheets. The data analysis was conducted using chi square test and fisher test.

Results: Factor associated with the level of nurse compliance in universal university application was attitudes (0.000), while factors not related to the level of nurse compliance in the application of universal precaution include knowledge (0.124), years of service (0.657) and training (0.098).

Conclusions: There is a relationship between attitudes and levels of nurse compliance in implementing universal precaution in NurHidayah Hospital. There is no relationship between knowledge, work and training with the level of nurse compliance in the application of universal precaution at NurHidayah Hospital.

Keywords: Knowledge, Attitudes, Working period, Training, Level of nurse compliance, Universal precaution

INTRODUCTION

Hospital is one of the health facilities that provide health services. It has a very important role in improving public health. Therefore, hospitals are required to be able to provide quality services in accordance with predetermined standards. One hospital standard is listed in PerMenKes No. 27 of 2017 concerning guidelines for infection prevention and control in health care facilities.¹ The prevalence of nosocomial infections ranges from 8.7% in 55 hospitals in 14 countries representing 4

regions (Europe, Eastern Mediterranean, Western Pacific and Southeast Asia). The occurrence of nosocomial infections can result in long healing so that it can add to the cost of care that must be spent by the patient's family.²

Nosocomial infection control to improve the ability of health workers can be done by applying the Universal Precaution (UP) method, compliance with universal precautions can be seen from three levels, namely individuals / workers, tasks and work dynamics, and

organizational context. The first level describes the health of the workers with his personal characteristics and work experience. At the second level it describes the work assignments and health dynamics of work, where the demands of health personnel to treat patients compete with their personal safety. The third level describes the organizational context, where the organization may have a value of safety culture and leadership support to support the application of universal precautions.³

There are several factors influencing the low compliance applying universal precaution to nurses, namely due to lack of knowledge, lack of time, lack of skills, discomfort, skin irritation, and lack of training.⁴ Based on previous research, it is stated that the factors associated with the application of universal precaution in the inpatient room are, nurse knowledge, discipline, supervision and availability of supporting facilities in the hospital.⁵ Knowledge and attitudes of nurses influence the prevention of nosocomial infections. The level of one's knowledge can influence individual practices, where the better the knowledge, the better the practice of a person to prevent nosocomial infections. Attitudes can be formed through personal experience, the influence of others that are considered important, cultural influences, mass media, educational institutions and emotional influences. Positive nurse attitudes in the form of beliefs, abilities, and tendencies to carry out universal precaution in all patients do not look at the disease or diagnosis to prevent transmission of infection through blood and body fluids.⁶

Based on the results of a preliminary study conducted on March 19, 2018, researchers obtained data on infection prevention and control in the last four years in NurHidayah Hospital. From these data, it was known that the prevalence of surgical wound infections decreased and increased every year. The highest prevalence of surgical wound infections occurred in 2014 at 2.80%, this was because nurses' adherence to using PPE and hand washing were still low and the culture for reporting needle puncture events had not been applied so that the number of nurses who were punctured was unknown. While the lowest prevalence of surgical wound infections occurred in 2016 amounting to 0.76%, this happened because the compliance of nurses in using PPE was quite high and the incidence of needle puncture reached 0 (zero) but the compliance in hand washing was still low. The purpose of this study was to determine the factors associated with nurse compliance in the application of universal precaution.

METHODS

This study used an observational analytic method with cross sectional design. This study was conducted at the Nur Hidayah Hospital in Yogyakarta, Indonesia and data collection was carried out in June 2018. The population and sample in this study amounted to 46 nurses because it uses total sampling techniques so that all populations are

The inclusion criteria in this study were permanent nurses who carried out nursing care at Nur Hidayah Hospital, while the exclusion criteria were nurses who were on leave at the time of the study. Univariate analysis is to present the frequency distribution of the variables studied. This analysis was carried out to obtain an overview of each variable studied presented using frequency distribution tables. Bivariate analysis with the statistical test used is the chi square test with a significance level of $\alpha=0.05$. The attitude variable uses the chi square test because it fulfills the requirements of no cell whose expected count <5 , a maximum of 20% of the number of cells that exist while the knowledge variable, work period and training use the fisher test because it does not meet the chi square test requirements.

RESULTS

From the characteristics of respondents based on Table 1, it is known that nurses at NurHidayah Hospital in the final adolescent age group (<25 years) were 20 respondents (43.5%), while adult age groups (ok 25 years) were 26 respondents (56.5%). The distribution of respondents by gender, namely female gender, there were 30 respondents (65%) and male gender amounted to 16 respondents (35%). Besides the distribution of respondents based on the highest level of education, namely Diploma consist of 43 respondents (93.5%) and at the under graduate program level amounted to 3 respondents (6.5%).

Table 1: Distribution of respondents by age group, gender and education at NurHidayah hospital in 2018.

No.	Respondents' characteristics	Total (n)	Percentage (%)
1	Age		
	Late teenager (<25 years)	20	43.5
	Adults (≥ 25 years)	26	56.5
2	Gender		
	Male	16	34.8
	Female	30	65.2
3.	Education		
	Diploma	43	93.5
	Bachelor degree	3	6.5
	Total	46	100.0

Table 2 explains that based on fisher test results on the knowledge variable statistically the value of $p (0.124) > \alpha (0.05)$ can be concluded that there is no relationship between knowledge and nurse compliance in the application of universal precaution. However, biologically, it was found that the value of risk prevalence=2.273 and the value of CI passed one, which means that knowledge is not necessarily a risk factor for nurses' adherence to the application of universal precaution. Chi square test results on attitude variables

obtained statistically p (0.000) α value (0.05) can be concluded that there is a relationship between attitudes and nurse compliance in the implementation of universal precaution, but the biological significance found that the value of risk prevalence=14.3 and CI values are not past

the number one which means that attitude is a risk factor. Nurses with bad attitudes have a risk of 14.3 times to not comply with the application of universal precautions compared to nurses who have a good attitude.

Table 2: The relationship between knowledge and compliance of nurses in universal precaution application at NurHidayah hospital.

Variable	Compliance		Total	P value	RP (CI 95%)
	No	Yes			
Education					
Poor	5	6	11	0.124	2.273 (0.900–5.739)
Good	7	28	35		
Attitude					
Poor	11	9	20	0.000	14.3 (2.01–101.76)
Good	1	25	26		
Period of working					
Short	11	28	39	0.657	1.974 (0.301–12.970)
Long	1	6	7		
Training					
No	7	29	36	0.098	0.389 (0.157–0.965)
Yes	5	5	10		
Total	12	34	46		

Table 2 also explains the fisher test results on work period variables obtained statistically p (0.657) $>$ α (0.05). It can be concluded that there is no relationship between years of service and nurse compliance in the application of universal precaution, but biologically it is found that the value of risk prevalence=1.974 and the CI value passed one, which means that the tenure is not necessarily a risk factor for nurse compliance in the implementation of universal precaution. The fisher test results on the training variable were statistically p (0.098) $>$ α (0.05). It can be concluded that there is no relationship between training and nurse compliance in the implementation of universal precaution. However, in terms of biological significance it was found that the risk prevalence value=0.389 and the CI value did not exceed the number one, which means that training is not really a risk factor for nurses' adherence to the implementation of universal precaution.

DISCUSSION

The relationship between knowledge and the level of nurse compliance in the application of universal precaution at NurHidayah Hospital

Based on statistical analysis, there is no relationship between knowledge and nurse compliance in the application of universal precaution. Educational factors do not directly influence the level of knowledge of nurses because there are 93.5% nurses who have diploma level education so that it can be said that the level of knowledge possessed by nurses is the same. This research is in line with previous research that there is no relationship between nurses' compliance with the

implementation of universal precautions because even though they have good knowledge, there are other factors that influence compliance such as workload, and there are respondents with SPK final education level so they have not complete information on general awareness.³

The absence of a relationship between knowledge and the level of compliance of nurses in implementing universal precaution is also caused by a factor in the lack of supervision of the established Standard Operational Procedure (SOP). Although these nurses have good knowledge about the risks of the work done, the nurses do not apply the universal precaution principle in providing nursing care when handling patients. One effort to maintain patient safety is by implementing a Standard Operational Procedure (SOP) in every nursing care action. However, due to lack of supervision all 65 nurses not to apply what is in the SOP. Supervision carried out by the person in charge of the inpatient ward is a factor that influences the prevention of nosocomial infections in Sari Mutiara Hospital Medan.⁷ Supervision is very influential in the success ²¹ the implementation of universal precaution to reduce the incidence of nosocomial infections because the supervision given to nurses not only changes the behavior of nurses who carry out universal precaution but also can cause awareness.⁸

Based on PRECED theory, it is stated that knowledge is dominant which is very important for the formation of one's actions (overt behavior). Behavior that is based on knowledge is generally lasting. According to the PRECED theory, knowledge is a part of predisposing factors that can influence a person's behavior to implement prescribed rules or procedures.⁹

The relationship between attitude and level of nurse compliance in the application of universal precaution in NurHidayah hospital

Attitude is a person's reaction or emotional response to a stimulus that is personal evaluation or evaluation, and finally continues with a tendency to do or not do something. The relationship between attitudes and levels of nurse compliance in implementing universal precaution can be caused by motivation from coworkers. Motivation can be obtained from yourself or other people who encourage the emergence of an attitude or intention to do something. Nurses have known the impact of not implementing universal precaution but they are still reluctant to implement it. The existence of motivation from coworkers allows the nurse to be obedient in implementing universal precaution. Previous research states that there is a relationship between motivation and the application of universal precaution. Good motivation from nurses in applying universal precaution is because respondents know about the impact if they do not implement universal precaution. The incidence of infection as a result of this increasingly raises respondents' awareness of the importance of applying universal precaution.⁸

There are several factors that influence these nurses having a bad attitude towards the application of universal precaution, namely nurses feel that applying universal precaution such as using PPE (masks and gloves) can limit interactions with patients. Previous research stated that respondents felt limited interaction with patients when using personal protective equipment. Some respondents stated when using gloves and masks there was a feeling of discomfort and difficulty in taking action to patients. Therefore the discipline of nurse work needs to be improved.¹⁰

Most nurses at NurHidayah Hospital feel happy and comfortable to implement universal precaution while working. Someone who has a good attitude will encourage the person to behave according to what is set. They realize that the importance of knowing and implementing universal precaution as an effort to prevent transmission of diseases that occur in hospitals and to support occupational safety and health programs for health workers, especially nurses. Based on PRECED theory, attitudes are part of predisposing factors that can influence a person's behavior and will also support strengthening behavior formation.⁹ Attitudes can be formed through personal experience, the influence of other people who are considered important such as close colleagues or in the same environment as the peer group, usually the nurse will do what is done also by his colleagues, whether obedient or not, influence culture, mass media, educational and religious institutions and emotional influences.⁶

Someone chooses a job based on their abilities and skills. Motivation will be a problem, if the ability possessed is

not utilized and developed in carrying out its duties. In this situation motivation can affect a person's attitude before carrying out his work. Motivation is an impulse from within a person that causes the person to carry out certain activities in order to achieve a goal.¹¹

Relationship of tenure with the level of nurse compliance in the application of universal precaution in NurHidayah hospitals

The working period shows the duration of experience of individuals who can determine the increase in skills and abilities of workers in the work. The absence of a relationship between years of service and the level of compliance of nurses can be due to the experience of nurses at work. The work experience developed provides knowledge and skills. The longer a person works, the higher the productivity because the more cases they handle. Most nurses who work at NurHidayah Hospital have never had a work accident during work or do not feel the impact that occurs while not implementing universal precaution so that when they do not apply universal precaution it will feel normal. Different working periods between nurses generally only affect their experience in taking action.

Theoretically, the working period is part of individual factors contained in the factors that influence the level of compliance in implementing universal precaution.¹² The work period becomes synonymous with work experience which also determines a person's behavior. The longer the working period, the better it will be in implementing universal precaution actions. The longer the working period of a person, the more experience and cases/events handled in caring for patients are expected to make someone nurse will be proficient and professional in completing their work in the care of patients.

Someone who has a long working experience will have more diligence / skills because he has handled a lot of various cases and has been able to adjust to his work and work environment. So that experienced nurses with a longer working period will be more obedient and will carry out their duties properly. The longer the working period of a person, the more experience and cases/events handled in caring for the patient so that a nurse will be proficient and professional in completing the task.¹³

The relationship between training and the level of nurse compliance in the application of universal precaution in NurHidayah hospital

Training is a part of the development of staff or organization that aims to improve employee performance, resulting in the process of updating employee expertise in line with the technological progress. Based on the results of the research obtained, it means that nurses who have never attended training and who have attended training mostly remain obedient in carrying out their duties so that training does not have an influence on nurses' compliance

in implementing universal precaution. The absence of a relationship between training and the level of nurse compliance in applying universal precaution can be caused by several factors, namely the influence of coworkers, facilities and information. Colleagues can influence the nurse to obey in applying universal precaution. Colleagues are considered easier to provide understanding, shelter, and support for nurses to avoid workplace accidents that might occur that could endanger their health and for patients. Someone who has high motivation will be able to improve their performance, high motivated nurses have a close relationship with nurse compliance.¹⁴

On the other hand, the facility also supports nurses to always implement universal precaution. Availability of facilities such as washbasins and hand washing equipment, temporary waste disposal sites, PPE can support the activities of nurses to adhere to implementing universal precaution as an effort to prevent the occurrence of disease transmission. At NurHidayah Hospital facilities to support nurses are obedient in implementing universal precaution is sufficient so that most nurses adhere to implementing universal precaution even though they have never attended universal precaution training specifically. The existence of facilities that are supported by complete information is likely to affect nurses' compliance in implementing the established SOPs. In NurHidayah Hospital, there is an information board that contains instructions for implementing SOPs such as steps for washing hands that are stuck on the wall near the sink, code or labels in each temporary waste shelter to separate between infectious, non-infectious and safety boxes. The information can enable the nurse to obey the university practice even though they have never attended training.

The cause of the absence of a relationship between training and compliance is with regard to the availability of resources. Without the support of adequate resources, it will prevent someone from doing something good. In the context of compliance with universal precaution, the availability of resources is the presence of facilities that support work to carry out universal / standard precautions, for example hand washing facilities, personal protective equipment (PPE), baban / equipment for disinfectants and sterilizers, and equipment for handling sharp objects and medical waste management.¹⁵

Universal precaution training was never done specifically at NurHidayah Hospital. Generally, they knew about universal precaution when they were still studying. The hospital requires nurses to comply with the regulations that have been set by providing facilities as a support to always implement universal precaution. Even though the hospital has made regulations and provided facilities to support universal precaution, if the nurse does not understand the benefits and risks that might occur, the nurse will be reluctant to do so. Training on the application of universal precaution when providing

nursing care to patients aims to improve nurse competency which includes determinants of abilities and skills in order to prevent transmission of infection.

Training is part of management organization factors contained in the factors that influence the level of compliance in implementing universal precaution. Training on the application of universal precautions when providing nursing care to patients aims to improve nurses' competencies which include determinants of abilities and skills in order to prevent infection transmission.¹² Training is a very important effort to be implemented in health services. With training, nurses can get the latest knowledge and information regarding their work so that they know how to practice safe behavior.

CONCLUSION

There is a relationship between attitudes and levels of nurse compliance in implementing universal precaution in NurHidayah Hospital. There is no relationship between knowledge, work and training with the level of nurse compliance ⁸ the application of universal precaution at NurHidayah Hospital.

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