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The Determinants of Safety Behavior in Hospital

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ABSTRACT

Nosocomial infection poses a serious threat if the health care workers (HCWs) did not perform safety behavior. The complete implementation of universal precautions indicates that the HCWs perform good safety behavior. The objective of this research was to analyze the determinants of HCWs' safety behavior in hospital. The research was conducted in two hospitals involving 120 nurses as sample. The dependent variable was safety behavior in the implementation of universal precautions while the external variables were: management commitment, management communication, employee involvement, risk response appreciation, work pressures, rules and procedures, work environment and supervision environment. Data analysis was performed using logistic regression. The result showed Internal variable influence safety behavior was sex (p-value=0.039) while the external variables were: management communication (p-value=0.003), employee involvement (p-value=0,041), work pressures (p-value=0,047). In conclusion, safety behavior in hospital was influenced by sex, management communication, employee involvement, and work pressures

Keywords: *safety behavior, hospital, universal precautions*

INTRODUCTION

Safety behavior is an issue in hospital. The risks of injuries and infectious disease transmissions in hospital can be prevented if all HCWs in hospital perform good safety behavior. HCWs are at risk of work-related injuries and illnesses.¹ Hospital is one of hazardous workplaces that can cause work-related injuries and illnesses.² The number of work related injury and illness cases in hospitals was at the first place among other workplaces (construction, manufacturing, and other private sectors).³ More than 18 million health care worker are at high risk to experience workplace violence and 80% of them are a women.⁴ Between 2011 and 2013 workplace assault occurred ranged from 23.540 and 25.630 annually with 70 to 74% occurring in healthcare and social caring.³

The number of serious workplace violence of health care workers was four times higher than of private industry workers.⁵ The result of a research conducted by the National Safety Council stated that 88% of occupational injuries in hospital were caused by unsafe behavior and 10% of them were caused by unsafe action. The research was in line with the research conducted by Cooper⁶ stating that the main cause of occupational injuries was unsafe behavior.

Hazards in hospital are complex. They can be biological, psychological, and ergonomic, or chemical hazards.^{7 8 9} The main hazard in hospital is biological factor in the form of germs that can spread from patient to health care worker. Disease transmissions from patient to HCWs possible happen through work activities and tools used in hospitals.¹⁰ The infectious pollutant can be blood, serum, pus, sputum, and droplet infection. Safety behavior of nurses implemented through Universal SOP in hospital can prevent the transmission of occupational diseases from patients.¹¹ Thus, work-related injuries and diseases can be prevented.

Some components to form safety behavior as self-protection effort to prevent infectious disease

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transmissions are (1) Regulation of the Minister of Health of the Republic of Indonesia 2013 on Universal Precautions in Hospitals (2) Regulation of the Minister of Health of the Republic of Indonesia No:1087 (2010)¹² on Occupational Health and Safety(3)Accreditation guide for hospitals by the Indonesian Commission for Hospital Accreditation (2012). The three components were expected to build safety climate in hospitals and encourage HCWs to perform good safety behavior. Universal precaution guidelines in hospital provide SOP that should be implemented by HCWs in hospital.^{13 32} The universal precautions cover hand washing behavior before and after any treatments, the use of personal protective equipment (PPE), medical equipment management, sharps management, and room sanitation.

Studies on safety behavior are better conducted by analyzing both internal and external factor of HCWs.¹⁴ Analysis of internal factor covers age, sex, education, and knowledge level. According to Green¹⁵ this internal variable is the proceeding factor. On the other hand, external factor is developed from the existence of organizational safety climate in hospitals. External factor is assessed according to the perception of safety climate in hospitals.¹⁶safety climate influences safety work procedure and workplace.¹⁷ Olsson, et al¹⁸ also emphasized the importance of safety climate to develop good organizational climate and teamwork to improve workplace risk awareness. Safety climate components assessed were management commitment, management communication, employee involvement, risk response appreciation, work pressures, rules and procedures, work environment and supervision environment.¹⁹ Safety behavior is influenced by workers' knowledge. Workers with sufficient knowledge will do their jobs according to SOP, use personal protective equipment (PPE), and do their jobs carefully. The condition will form good working climate and result in safety behavior. Thus, the number of work-related injuries and diseases can decrease.²⁰

MATERIAL AND METHOD

The research was conducted with cross sectional analysis in two hospitals in all care units of the hospitals with different managements. The number of sample was 120 nurses. The sample was selected using simple random sampling. The sample criteria were nurses with bachelor of nursing degree and register nurses (Ners) degree. The Independent variable examined was internal

variable and external variable. Internal variable covered age, sex, education, and perceive risk. External variable covered management commitment, management communication, employee involvement, risk response appreciation, work pressures, rules and procedures, work environment and supervision environment.

The dependent variable was safety behavior in the implementation of universal precautions in the hospitals. The implementation of universal precautions is realized in the form SOP (standard operating procedure) by each hospital. SOP for universal precaution implementation is usually formed according to activities that should be done by nurses, so that it should be obeyed by nurses. Respondents were rated as Good if they performed universal precautions completely and Poor if they performed universal precautions partly. Analysis was conducted by giving score to each respondent's answer, and then the score was categorized as good or poor.

Table 1: Universal Precautions

Universal Precaution	SOP (Standard Operational Procedure)
Hand Hygiene	Wash hand after contact with blood, body fluids, secretion, and contaminated objects whether or not gloves are worn
Gloves	Wear clean gloves when touching blood, body fluids, secretions, excretions and contaminated item
Facial protection	Wear a mask, eye protection, or a face shield if splashed or spray of blood, body fluids, secretions, excretions can be expected
Gown	Wear a clean, non-sterile gown if client case is likely to result in splashes or sprays of blood, body fluids, secretions, excretions
Patient care equipment	Handle client care equipment that is soiled with blood , body fluids, secretions, excretions carefully to prevent transfer of microorganisms to others and environment
Linen	Handle, transport, and process linen that is soiled with blood , body fluids, secretions, excretions to prevent contaminations of clothing and transfer of microorganisms to others and environment

Contd...

Prevention of needle stick and injuries from sharp instruments	Prevent injuries from used equipment i.e scalpels or needles and place in puncture-resistant container
Environmental cleaning	Use adequate procedure for routine cleaning and disinfections of environmental and other frequently touched surfaces
Waste disposal	Treat waste contaminated with blood , body fluids, secretions, excretion as clinical waste in accordance with local regulations

The Data was collected through interview and observation. Interview was conducted to assess internal variable of respondents and external variable in the two hospitals, while observation was conducted to assess safety behavior of respondents. Interview was conducted by enumerators who were trained and given explanation about the research. The training was conducted to develop a common perception between main researchers and enumerators so that any bias can

be minimized. Observation was conducted for 6 months. Each respondent was observed by one numerator using observation guide. In each room and unit observed, there were enumerators in the same number as respondents working that day.

Data analysis was performed using logistic regression test. Data analysis was performed using SPSS version 21. Independent sample T-test was conducted before regression test to ensure that safety behavior in the two hospitals was different.

FINDINGS

The result was divided into two analyses. They were determinant analysis of internal variable and that of external variable.

a. Determinants of internal variable: The result of internal variable analysis showed that 62.5% of the respondents were bachelor of nursing and 37.5% of the respondents were registered nurse (Ners), 80.8% of the respondents were female, 49.16% of the respondents were 26-35 years old and 62.5% of the respondents had low perceive risk.

Table 2: The result of internal variable

No.	Variable		Safety Behavior		p-value
			Poor	Good	
			n (%)	n (%)	
1.	Educations	S1	44 (58,7)	31 (41,3)	0,696*
		Ners	26 (57,8)	19 (42,2)	
2.	Age	<26 years old	4 (44,4)	5 (55,6)	0,940*
		26-35 years old	35 (59,3)	24 (40,7)	
		36-45 years old	28 (58,3)	20 (41,7)	
		>45 years old	3 (75)	1 (25)	
3.	Sex	male	10 (43,5)	13 (56,5)	0,039*
		female	60 (61,9)	37 (38,1)	
4.	Knowledge	poor	47 (62,7)	28 (37,3)	0,770*
		good	23 (51,1)	22 (48,9)	

*p < 0.05

1. The influence of sex on safety behavior: Sex factor influenced nurses’ safety behavior (p-value=0.039; OR=2.940; 95%CI=1,504-8,202). The result was in line with a research by Jiang et al²³ stated that gender influenced safety behavior.²² The result showed that males

tended to implement safety behavior better. The condition would not influence safety behavior if the respondents could accept gender equality²³. Unfortunately, social environment often differentiated the roles, functions, tasks, and needs of male and female. Sex was internal

variable that became the determinant of safety behavior because of the influence of psychology, gender-specific forms of behavior, acceptance and perception of and coping with disease, lifestyle and health awareness, communication.²⁴

b. The determinants of external variable: The determinants of external variable were the part of organizational safety climate in the hospitals. To assess the effect of external variable, the research was conducted in two different hospitals

Table 3: The result of external variable

No.	Variable		Safety Behavior		p-value
			Poor	Good	
			n (%)	n (%)	
1.	Management Communication	Poor	45 (68,2)	21 (31,8)	0,003*
		good	25 (46,3)	29 (53,7)	
2.	Management Commitment	Poor	41 (64,1)	23 (35,9)	0,606*
		good	29 (51,8)	27 (48,2)	
3.	Employee involvement	Poor	41 (53,9)	35 (46,1)	0,041*
		good	29 (65,9)	15 (34,1)	
4.	Personal risk appreciation	Poor	40 (65,6)	21 (34,4)	0,242*
		good	30 (50,8)	29 (49,2)	
5.	Work pressure	high	46 (66,7)	23 (33,3)	0,047*
		low	24 (47,1)	27 (52,9)	
6.	Safety rules and procedure	Poor	45 (57,70)	33 (42,3)	0,901*
		good	27 (59,5)	17 (40,5)	
7.	Supportive environment	Poor	36 (60)	24 (40)	0,899*
		good	34 (40)	36 (60)	
8.	Supervisory environment	Poor	49 (58,3)	35 (41,7)	0,672*
		good	21 (58,3)	15 (41,7)	

*p < 0.05

1. The influence of management communication on safety behavior: Communication holds an important role (*p-value*=0.003; *OR*=0.277; *95%CI*=0.119-0.642). A leader has to deliver policies with good management communication. Good management communication influence nurses' behavior in the implementation of SOP in hospital. This research was in line with William²⁵ stated that communication strategies are needed to form safety culture. Good communication will improve perceive risk and intention and it will influence safety behavior.¹⁶ Someone will have good behavior if he has perceived risk and intention and it is influenced by external variable forming safety climate .²¹ Good communication between hospital management and nurses is one of some ways to improve safety climate, thus occupational injuries can be prevented.²⁶

2. The influence of employee involvement on safety behavior: The result of this research showed that employee involvement influenced safety behavior (*p-value*=0.041;*OR*=2.495; *95%CI*=1.037-6.002). Employee involvement was important to form safety culture in hospital. Nurses who were given less involvement tended to be more careful and implemented universal precautions better than those who were given more involvement. Employee involvement in the disease transmission prevention planning and active participation in reporting potential occupational risks is the best way to protect nurses.²⁶ Involving nurses in safety planning and all activities is beneficial for hospital.²⁷ When nurses feel safe and are on safety protocol, they will work more productively and risks of occupational injuries and the number of accidents will get lower. Employee involvement will increase

nurses' awareness of hazards in hospital, sources and importance of safety culture in hospital. This will increase safety culture in workplace. Kimmel stated that when workers are given opportunity to contribute to safety planning in hospital, they will prevent occupational accidents better and control hazards in hospital better.²⁸

3. The influence of work pressures on safety behavior: Work pressures have negative correlation with safety behavior (p -value=0.047; OR=0.499; 95%CI=0.203-0.991). This research was in line with the research conducted by Tawaih and Adu²⁹ where high work pressures will make nurses less obedient to safety behavior.

Decreasing work pressures can be done by combining organizational change intervention and stress management.³⁰ Organizational change is done to decrease stressor in workplace by redesigning jobs and organization. Some actions that can be done are: to ensure that nurses work based on capacity and skill, to clarify rights and responsibilities of nurses, to involve nurses in the planning and development of hospital, to improve communication, and to improve mutual interaction among nurses. Good management communication would reduce stress on workers. The lower the stress, the lower work pressures resulted so that safety behavior could be implemented. Kallberg³¹ also stated that high workload, lack of control and communication influenced safety behavior of nurses. High workload will increase work pressures and result in the absence of safety behavior.

CONCLUSION

Safety behavior among nurses in hospital was influenced by sex, management communication, employee involvement, and work pressures. It is suggested that there should be gender equality awareness improvement, organizational climate improvement to improve management communication, employee involvement, and work pressure reduction.

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Ethical Clearance: This research has passed ethics test based on faculty of Public Health Universitas Airlangga ethical committee No 52 KEPK 2017 issued on 23 February 2017

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