

# Work Organization and Management as the Strongest Predictors of Patient Safety Implementation at a Type D Hospital

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**Keywords:** Hospital Management, Nursing Care, Patient Safety.

**Abstract:** Patient safety is a system that prioritize safe patient care. Implementing patient safety can generate solutions to minimize risks and prevent injuries caused by patient care errors. This study aimed to analyze determinant factors of patient safety at a type D hospital in Lombok, Indonesia by looking at nurse behavior. A cross-sectional study was conducted in June 2022. A sample of 106 nurses from inpatient wards were selected to be respondents. Ethical clearance was granted by ITEKES Bali Research Ethics Committee. Data were collected using a valid and reliable questionnaire based on six patient safety criteria. Using SPSS 20.0, chi-square analyses were conducted for bivariate analyses and continued with multiple logistic regression for variables with a p-value of < 0.25. Bivariate analyses showed that the characteristics of nurses (age, gender, education level, years of service, and training) and work environment did not affect nurse behavior towards patient safety implementation. Logistic regression indicated that organization and management were the strongest predictors of patient safety at the hospital (OR = 3.438, 95% CI = 1.53-7.75). Type D hospitals need to develop organizational and managerial capacities to maintain and promote patient safety.

## 1 INTRODUCTION

Patient safety is fundamental to establish high quality health care. A well-qualified hospital should meet six standards, i.e., patient safety, effective, efficient, fair, and timely services (Whitehead et al., 2010). It is globally estimated that 64 million disabilities happen annually due to unsafe hospital care. Unsafe care in developing countries lead to 134 million adverse events each year and 2.6 million deaths. In high-income countries, it is estimated that about 1 in 10 patients is mistreated while receiving treatment at a hospital (WHO, 2018).

A hospital, a place for modern health services, is an organization with complexity of capital, technology, work, profession, system, quality, and risk. Patient safety incidents are relatively frequent in hospital care (Whitehead et al., 2010).

Patient safety incidents in Indonesia from 2006 to

2011 reached 877 incidents. Based on the Report of the Indonesian Patient Safety Committee of Hospitals from January 2010 to April 2011, the adverse events were recorded. About 8.76% of them resulted in death; 2.19% caused permanent injuries; 21.17% led to severe injuries, and 19.71% caused minor injuries (Harsul et al., 2020). The same report also mentions that 11,558 patient accidents were found at hospitals from 2015 to 2019. Patient safety has become a community demand; hence, patient safety programs needs to be done by healthcare providers (Lamboglia et al., 2016).

Based on a preliminary study, two to three adverse events were found at the investigated hospital each year from 2019 to 2020. The data from Nursing Management Department show that nurses tend to make mistakes in patient identification.

Improvement strategies for patient safety are regulated by the Indonesian Ministry of Health

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(Kemenkes RI, 2017) by giving six goals and seven steps toward patient safety. These strategies help the hospital plan and measure work performance. The goals are focused on problematic areas in health care by collecting suggestions from experts before reaching agreed solutions. The six goals of hospital patient safety are carried out by (1) identifying patients correctly; (2) improving effective communication; (3) improving the drug's safety; (4) ensuring the correct surgical site, correct procedure, correct patient surgery; (5) reducing the risk of infection; and (6) reducing the risk of injury to patients from falls.

Nurse behavior towards patient safety is influenced by internal and external factors. Internal factors are factors that come from within a person and are innate characteristics. External factors are often the dominant factors that influence one's behavior (Notoatmodjo, 2014). Nurses' characteristics are inherent aspects that can affect one's learning process and behavior. These characteristics include age, gender, tenure, education level, and training (Robbins & Judge, 2015). Other factors related to patient safety are the nature of work, the physical environment, the organizational, social, and management environment, and the external environment (Hughes, 2014).

The work environment, i.e the hospital environment, can determine the quality and safety of services provided by nurses to patients. A previous study found that a good working environment such as adequate lighting and low noise in the work area affects the implementation of patient safety (Agus, 2017). Attitude and behavior are the main reinforcing factors in patient safety culture. In addition to these factors, organizational behavior factors include leadership, alertness, communication, teamwork, stress, fatigue, satisfaction, team leadership, and decision-making. According to Griffin (2016), organization and management units are a group of people aimed at providing quality and safe services through various assets including professional management, commitment and leadership, organizational culture, and existing information systems.

A hospital in Central Lombok, West Nusa Tenggara, Indonesia became the focus of this study. It has an important role for the community, especially the people in Central Lombok, which live quite far from the city. The hospital continues to strive to improve the quality of hospital services by improving patient safety and preventing healthcare incidents. Having the recommended patient safety goals and steps, this study seeks to examine determinant factors associated with nurse behavior towards patient safety

at a type D hospital of Central Lombok, West Nusa Tenggara, Indonesia.

## 2 METHODS

A quantitative study with a cross-sectional design was carried out at a type D hospital in Central Lombok, West Nusa Tenggara, Indonesia, from March to May 2022. The dependent variable was nurse behavior towards patient safety at the hospital. The independent variables were nurse characteristics (i.e age, gender, education, tenure, and training), work environment (i.e lighting and noise in the workplace), and work organization and management (supervision, organizational culture, and effective communication).

A sample of 106 nurses at a type D hospital were selected through non-probability sampling. The inclusion criteria for sample selection were that nurses worked in an inpatient ward and had worked for at least 3 months. The study instrument was a set of valid and reliable questionnaires. The data were collected using a self-completed questionnaire that the respondents filled out. The data were then examined using the chi-square test and logistic regression.

## 3 RESULTS

Table 1: In-ward nurse behavior towards the implementation of patient safety at a type D hospital based on six goals of patient safety (n = 106).

Category	n	%
Poor	47	44.3
Good	59	55.7

Table 1 shows that most nurses (59 people, 55.7%) have good behavior towards the implementation of six patient safety goals.

Table 2: Nurse characteristics (n = 106).

Characteristics	n	%
Age		
≤ 27.24 years	58	54.7
> 27.24 years	48	45.3
Gender		
Male	39	36.8
Female	67	63.2
Education level		
Diploma-3	50	47.2
Diploma-4	6	5.7
Nursing graduate school	50	47.2
Tenure		

≤ 1.77 years	66	62.3
> 1.77 years	40	37.7
Training		
Never had	98	92.5
Ever had	8	7.5

This study found that 58 (54.7%) nurses were ≤27.24 years old, and two-thirds of the participants were female (67, 63.2%). The number of respondents who had a Diploma-3 (47.2%) and nursing education (47.2%) was equal. As many as 62.3% of nurses had worked for ≤ 1.77 years. The majority or 98 (92.5%) nurses never took any training on patient safety at the hospital (Table 2).

Table 3: Workplace variable category (n = 106).

Category	n	%
High risk	57	53.8
Low risk	49	46.2

Table 3 shows that 57 (53.8%) nurses perceive their workplace has a high-risk work environment with poor lighting and high noise.

Table 4: Work organization and management category (n = 106).

Category	n	%
Poor	57	53.8
Good	49	46.2

Table 4 shows that 57 nurses (53.8%) have poor perceptions of work organization and management.

Table 5: Relationship between nurse characteristics and nurse behavior towards the implementation of patient safety at a type D hospital.

Independent Variables	Nurse behavior				p	OR
	Poor		Good			
	n	%	n	%		
Age						
≤27.24 years	28	59.6	30	50.8	0.484	1.425
>27.24 years	19	40.4	29	49.2		
Gender						
Male	19	40.4	20	33.9	0.624	1.323
Female	28	59.6	39	66.1		
Education						
Diploma 3	21	44.7	29	49.2	0.516	-
Diploma 4	4	8.5	2	3.4		
Nursing graduate school	22	46.8	28	47.5		
Tenure status						
Recent	33	70.2	33	55.9	0.192	1.857
Longer	14	29.8	26	44.1		
Training						
Never had	44	93.6	54	91.5	1.000	1.358
Ever had	3	6.4	5	8.5		

Table 5 informs that the relationship between nurse characteristics and nurse behavior towards the implementation of six patient safety goals at the hospital. This study found that there was no significant relationship between age (OR= 0.48; p= 1.425) and gender (OR= 0.62; p= 1.323) with nurse behavior.

In Diploma-3 education category, the number of nurses who have good behavior (49.2%) is higher than that of nurses who have poor behavior (44.7%). This study found no significant relationship between education level and nurse behavior towards the implementation of patient safety.

Nurses with the average of tenure period of ≤1.77 years have poor behavior (70.2%); this number is higher than nurses with poor behavior in the same category (55.9%). This study indicated that there was no significant relationship between tenure status and nurse behavior (p = 1.857).

Untrained nurses mostly posed poor behavior towards patient safety (93.6%). This study indicated that there was no significant relationship between the training experience and nurse behavior (p= 1.358).

Table 6: Relationship between workplace environment and nurse behavior towards the implementation of patient safety at a type D hospital.

Category	Nurse behavior				p	OR
	Poor		Good			
	n	%	n	%		
High risk	30	63.8	27	45.8	0.097	2.092
Low risk	17	36.2	32	54.2		

Table 6 presents the relationships between workplace environment and nurse behavior towards the implementation of patient safety. The analysis results indicated that there was no significant relationship between workplace environment and nurse behavior (OR = 2.092; p = 0.097).

Table 7: Relationship between work organization and management and nurse behavior towards the implementation of patient safety at a type D hospital.

Category	Nurse behavior				p	OR
	Poor		Good			
	n	%	n	%		
Poor	33	70.2	24	40.7	0.005	3.438
Good	14	29.8	35	59.3		

Table 7 showed relationships between organization and management and nurse behavior in implementing six targets of patient safety in type D hospitals. The results of the study analysis indicated that organization and management had a strong relationship with nurse behavior in implementing six

targets of patient safety in a type D hospital (OR= 3.438;  $p= 0.005$ ).

## 4 DISCUSSIONS

The results of this study found that female nurses had better behavior towards patient safety than male ones. This study is in line with research conducted by Pambudi et al. (2018) who found no significant relationship between gender and nurse behavior towards patient safety at the inpatient room of Panti Waluya Hospital, Malang. A study by Nurhanifah et al. (2021) also shows a similar result in the inpatient ward of the Aceh Government Hospital, Indonesia. In general, gender is used to distinguish an individual's sexual identity. Some differences between men and women are problem-solving skills, analytical skills, competitive drive, motivation, social skills, and learning abilities. Women are more likely to conform to authority, while men are more aggressive and more likely to have expectations of success. However, the differences are slight between men and women (Robbins & Judge, 2015). With no guarantee, men will perform better than women, considering obedience which is mostly posed by women (Prima et al., 2020). Although nursing positions are occupied by women, there is no significant difference in productivity between men and women (Robbins & Judge, 2015).

The results of this study showed that nurses with a Diploma-3 education level had good behavior towards patient safety. However, no significant relationship was found between education level and nurse behavior. Agus (2017) stated that education levels are not associated with the implementation of patient safety at hospitals. Contrastly, Nurhanifah et al. (2021) and (Prima et al., 2020) concluded that nurses' education levels are associated with the implementation of patient safety. This indicates that education levels cannot always be associated with nurse competence and job. Nurses, therefore, have to develop intellectual, interpersonal, technical, and moral abilities (Nursalam, 2014).

This study found that nurses who had shorter work experience had poor behavior towards patient safety goals. It further showed that there was no significant relationship between work period and nurse behavior. Longer tenure and work experience do not guarantee that someone will take safe actions to avoid accidents. Safety at work might be established once one is familiar with their workplace. They have adapted to their environment because they are very familiar with the environment, and they become less careful.

Mulyatiningsih (2013) similarly stated that length of work does not have a significant relationship with nurse behavior towards patient safety. Different results obtained by Agus (2017) show that tenure affects the implementation of patient safety. A longer working period might be a influencing factor of patient safety, but it does not ensure one's productivity (Robbins & Judge, 2015).

Moreover, the results of this study showed that there was no significant relationship between training and nurse behavior towards patient safety. Mulyatiningsih (2013) reports that training is significantly not associated with the implementation of patient safety. However, Agus (2017) mentioned that training likely increases patient safety at dr. Slamet General Hospital, Garut West Java. Training is a short-term educational process that uses systematic and organized procedures. It provides non-managerial workers with technical knowledge and skills for a specific purpose (Lee et al., 2018).

This study found that in risky work environment category, nurses had poor behavior towards patient safety. It demonstrated that there was no significant relationship between the work environment and nurse behavior. However, Mulyatiningsih (2013) argued that work environment is positively associated with nurse behavior towards patient safety. For example, good lighting in the workplace is essential to improve performance, convenience, and safety. Various environmental factors in the operating room might affect surgical performance including lighting. Thus, improving the physical facilities likely has a significant impact on employee and patient outcomes (Dianat et al., 2013). A previous study by Nugrahanto (2015) found that the physical workplace environment affects patient safety incidents. Increased work accidents occur due to inadequacy of quick situational detection, eye staining, headaches, and fatigue caused by a poor lighting system (Ghana Health Service, 2010).

A good and low-risk working environment can provide safe care, thus reducing errors and improving patient safety (Flynn et al., 2012) in healthcare services such as preparation and administration of prescription to patients. Distractions and interruptions must be minimized to establish a conducive working environment which affect nurses' concentration, especially on safe drug administration (Hyde et al., 2016).

Besides, nurses who thought that work organization and management variables were poorly performed posed poor behavior towards patient safety goals. The results showed that there was a significant relationship between work organization and

management and nurse behavior towards patient safety. With that said, Agus (2017) confirmed that training is associated with organization and management of patient safety. Since patient safety is a variable to measure and evaluate the quality of nursing services, it is important to pay attention to these two variables (Nursalam, 2014). According to Potter & Perry (2017), several actions related to work organization and management that may prevent patient safety incidents are supervision and guidance (i.e., socialization, training, and monitoring). Having well-trained leadership capacities, nurses can optimize their role in hospital management.

## 5 CONCLUSIONS

Based on the results of this study, it can be concluded that nurse behavior towards patient safety at the investigated hospital was in a good category (55.7%). Nurse characteristics (i.e. age, gender, education, tenure, and training) and workplace environment were not associated with nurse behavior towards patient safety. Work organization and management were instead associated with nurse behavior towards the implementation of patient safety. The findings suggest the importance of monitoring and evaluating on how nurses and patients work together to achieve safety goals.

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