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Level of knowledge and workload are associated with nurse's adherence in implementing fall prevention procedures at Tabanan District Hospital, Bali

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ABSTRACT

Background and purpose: Fall prevention is an essential part of patient safety system. At Tabanan District Hospital (BRSUD Tabanan), incidence of falling among patients is still happening. This study aims to determine the relationship between level of knowledge and workload of nurses with compliance in implementing standard operational procedures (SOP) to prevent the risk of falling in the inpatient rooms at Tabanan District Hospital.

Methods: This study was a cross-sectional survey. The sample size was 75 nurses in the inpatient room at BRSUD Tabanan. Data collection was carried out in the period of December 2, 2019 - January 2, 2020 which included 1). direct interviews to obtain data on characteristics, the level of knowledge and workload of nurses, 2). observations of nurses' adherence in the implementation of standard operational procedures to prevent the risk of falling patients. Data analysis was performed by univariate, bivariate with chi-square test and multivariate analysis with logistic regression.

Results: Most of the respondents were ≤40 years old (86.7%), female (72%), length of working ≤10 years (81.4%), education level of bachelor in nursing (65.4%). Two third of the respondents have a good level of knowledge (66.7%), with medium workload (26.7%) and heavy workload (73.3%). Most of the respondents (70.7%) adhere to the implementation of standard operating procedures to prevent the risk of falling patients. Variables associated with the compliance to SOP are age (AOR=5.35; 95%CI: 1.230-23.259; p=0.025), level of knowledge (AOR=6.409; 95%CI: 1.720-23.873; p=0.006), and workload (AOR=0.076; 95%CI: 0.17-0.339; p=0.001), where the workload variable has a negative relationship with nurse compliance (AOR<1).

Conclusion: The conclusion of this study is that there is a relationship between the level of knowledge and workload on nurses' compliance in implementing standard operational procedures to prevent the risk of falling patients.

Keywords: Knowledge, workload, compliance, fall prevention, hospital

INTRODUCTION

The Indonesian government acknowledged the importance of patient safety in hospitals with the issuance of the Minister of Health Regulation (PMK) Number 1691 Year 2011 concerning patient safety in hospitals.[1] A patient safety system is a system that assure safe patient care, including risk assessment, identification and management of patient risks, incident reporting and analysis, the ability to learn from incidents and their follow-up, and implementation of solutions to minimize risks and prevent injuries caused by errors resulting from taking an action or not taking the action that should have been taken.[1]

Patient safety includes six patient safety goals *(Sasaran Keselamatan Pasien/SKP)* which every hospital should implement including: (1) Correct patient identification; (2) Improved effective communication; (3) Increased safety of high alert drugs; (4) Precise location assurance, precise procedure, precise patient operation; (5) Reduction of the risk of infection related to health services; (6) Reduction of the patient's risk of falling. *SKPs* are prepared with the aim of encouraging hospitals to make specific improvements in patient safety.

Reducing the risk of falling is one of the SKPs that need attention by the hospital. Based on data from 12 provinces in Indonesia in 2007, the number of incidents that occurred was as many as 65 almost injured incidents *(kejadian nyaris cedera/KNC)*, and 89 unintended incidents *(kejadian tidak diharapkan/KTD)* and sentinel incidents as many as 6 incidents, while in 2010 *KTD* cases increased by 63% incidents.[2] In Bali Province, based on data collected by hospital patient safety committee *(Komite Keselamatan Pasien Rumah Sakit/KKPRS)* in December 2010 there was an increase of the incidence of unexpected events, including 17

incidents of falling patients, 54 incidents of errors in medication administration, 73 incidents of procedural errors and 16 incidents of medical diagnosis errors. The implementation of a proper strategy to reduce the risk of falling is an essential component in achieving patient safety goals, one of which is by complying with Standard Operational Procedures (SOP) on patients' fall risk. A crucial aspect in reducing the risk of falling is the role of nurses who provide nursing care to patients. In documenting nursing care, nurse compliance is measured based on the standard criteria of each stage of nursing care, namely the assessment, planning, implementation and evaluation stages.[3]

Nurses' knowledge regarding the patients' risk of falling is one of several factors that affect adherence to implement the SOP. A previous study found the relationship between nurses' knowledge and nurses' compliance in implementing SOP, where nurses who did not comply to SOP were higher in nurses who had lower level of knowledge at 78.6% than nurses who had good knowledge levels at 56.1%.[4] In addition, Natasia et al.[5] concluded that the nurses' motivation and perceptions were related to the compliance of nurses in completing the SOP of ICU at Gambiran Hospital, Kediri, East Java.

Another factor that also affects the compliance of nurses in implementing SOP of falls prevention is workload. The workload of nurses in the hospital includes physical and mental workloads. The physical workload includes lifting the patient, bathing the patient, helping the patient to the bathroom, pushing medical equipment, making the patient's bed, and pushing the patient's bed. Workloads of a mental nature can be in the form of working shifts, the complexity of the work, including mentally preparing patients and families for example those who will require surgery or in a critical condition, working with special skills in caring for patients, responsibility for recovery and having to establish communication with patients.[6]

The Tabanan District Hospital (BRSU Tabanan) is a government hospital in Tabanan District, Bali where there are reports of incidents of fall every year. There were 5 incidents in 2016; 2 incidents in 2017 and 3 incidents in 2018. The incidents of falling patients still occurred in 2019 with 1 incident in the inpatient room. This figure is not according to the target expected by the hospital, namely 0% incidence of fall.[3]

Several attempts to prevent fall have been made included increasing the number of nursing staff so that the workload of nurses can be reduced. However, until now, nurses have never received fall prevention training, it is only available in the form of information regarding the risk of falling in each inpatient ward.

Based on the description above, this study aims to determine the relationship between level of knowledge and workload with nurses' compliance in implementing falls prevention SOP in the inpatient room at Tabanan District Hospital.

METHODS

This study used a cross-sectional design, conducted at Tabanan District Hospital, Bali, Indonesia from December 2, 2019 to January 2, 2020. The sample was selected with total sampling, involving 75 nurses in the inpatient wards of Tabanan District Hospital namely Dahlia Garing Room, Cempaka Room, Orchid Room and Bougenville Room. The inclusion criteria was nurses who identified the patient's risk of falling, while the exclusion criteria were those who were on study leave, served as head of the room or deputy head of the room, nurses on leave and in a state of illness. The workloads between these inpatient rooms differ due to the different type of patient's illness and patients' dependence to nursing care (BRSU Tabanan Nursing Committee).

Prior to data collection, a meeting was held to equate perceptions between researchers and data collectors in order to ensure data quality. In collecting data, the researcher was assisted by three supervisory nurses as enumerators who were in charge of conducting observations. Interviews were conducted after the observation, so it did not change the opinion of the observed nurses.

The independent variables in this study are the level of knowledge and workload, while the dependent variable is the compliance of nurses in implementing falls' prevention SOP. The instrument used to collect data in this study was a questionnaire about the level of knowledge of nurses and the workload of nurses and for compliance data using the observation sheet on implementation of the SOP.

Data regarding the level of knowledge and workload of nurses were obtained by direct interviews using a pre-tested structured questionnaire. There were seven statements in the questionnaire which were used to measure the level of knowledge including: 1. Each patient who came to the hospital should be assessed to prevent the patient's risk of falling; 2. The risk assessment of fall prevention is carried out from the time the patient registers at the counter until admission to the hospital; 3. Conducting a risk assessment of fall prevention based on predetermined scoring; 4. It is said to prevent the patient from having a serious risk of falling if the patient is >60 years old; 5. The patient with risk of falling should be using yellow bracelet; 6. The nurse performs an assessment of the patient's risk of falling by using the assessment sheet for the risk of falling on a medical record form; and 7. The placement of a yellow band and a fall risk symbol for high and very high risk categories (score >7) in adult patients and high risk categories (score >12) in children. When filling out the questionnaire, the researcher reads the questions and records respondents' choices: true or false, total score if all correct was 7. Then, the knowledge level was grouped into: 1) good category, if 50% -100% correct answers of the total score; and 2) insufficient category, if answering correctly <50% of the total score.

Regarding workload, there are 2 categories of questions, namely physical workload (14 questions) and mental workload (16 questions) where the researcher fills in the answer options column based on the respondent's answer using a Likert scale: strongly agree, agree, disagree and strongly disagree; with the total score of workload statement is 120. The workload score was then grouped into heavy workload if the value was between 50-100% of the total score and moderate workload if the value was less than 50% of the total score. Data on nurse compliance was obtained by directly observing nurses in the implementation of falls prevention SOP using observation

sheet. The statement in the observation sheet includes policy aspect (4 statements) and procedural aspect (5 steps). In filling out the questionnaire, the researcher recorded yes and no. It then categorized as "comply" if all SOPs are carried out correctly, and "not-comply" if one of the SOPs is not implemented properly.

In addition to the dependent and independent variables, the researcher also collected data on demographic characteristics including age, gender, working period and level of education. The age variable is categorized into ≤40 years and >40 years based on the consideration of the age of the nurse retirement, where the retirement age is at the age of 60 while starting work at the age of 20 so that there is an active work period of 40 years divided by two so that 20 years are added to the starting age. The working period is categorized into ≤10 years and >10 years based on the consideration of the work period of the nurse in accordance with the nurse's retirement period.

The data were analyzed descriptively, followed by bivariable analysis using the chi square test, and multivariable analysis using logistic regression with 95% confidence intervals (CI).

This research has been approved by the Research Ethics Committee of the Faculty of Medicine, Udayana University/Sanglah General Hospital, Denpasar on January 2, 2020, Number: 15/UN14.2.2.VII.14/LP/2020.

RESULTS

Of the 75 respondents who were nurses in the inpatient room of Tabanan District Hospital, most of the respondents were ≤40 years old (86.7%), female (72%), working period ≤10 years (81.4%) and 65.4% had Bachelor of Nursing degree (Table 1).

Table 2 presents an overview of the level of knowledge, workload and level of nurses' adherence to the falls' prevention SOP. A total of 62.7% of all nurses in the inpatient ward were classified as "comply" in implementing the SOP and 66.7% of them were having good knowledge, while 73.3% were categorized into the heavy workload group.

Based on the level of knowledge, nurses with a good level of knowledge tended to be more comply to the SOPs than those with sufficient knowledge (80% vs 28%). Nurses with a heavy workload, the proportion who adhere to the SOP is greater than in the moderate workload group (78.2% vs 20%). Then, nurses who were in the group of age ≤40 years, the proportion of adherence to SOP was higher than those in the age group >40 years (66.1% vs 50.0%).

Table 1. Characteristics of Nurses in the Inpatient Room of Tabanan District Hospital

Variable	f (n=75)	%
Age		
Age >40 years	10	13.3
Age ≤40 years	65	86.7
Gender		
Female	54	72
Male	21	28
Years of service		
>10 years	14	18.6
≤10 years	61	81.4
Education		
Diploma of Nursing	26	34.6
Bachelor of Nursing	49	65.4

Table 2. Distribution of Nurses' Knowledge, Workload and Compliance to SOP

Variable	f (n=75)	%
Knowledge level		
Sufficient	25	33.3
Good	50	66.7
Workload		
Moderate	20	26.7
Heavy	55	73.3
Compliance		
Comply	47	62.7
Not comply	28	37.3

Table 3. The relationship between the level of knowledge, workload and nurses' compliance to SOP

Variable	Compliance		OR	95%CI	p
	Not Comply f (%)	Comply f (%)			
Knowledge level					
Sufficient	18 (72.0)	7 (28.0)			
Good	10 (20.0)	40 (80.0)	10.29	3.37-31.35	<0.001*
Workload					
Heavy	12 (21.83)	43 (78.2)			
Moderate	16 (80.0)	4(20.0)	0.07	0.02-0.25	<0.001*
Age					
>40 years	8 (50.0)	8 (50.0)			
≤40 years	20 (33.9)	39 66.1)	1.95	0.64-5.97	0.238
Gender					
Female	22 (40.7)	32 (59.3)	1.72	0.58-5.12	0.328
Male	6 (28.6)	15 (71.4)			
Years of service					
>10 years	5 (35.7)	9 (64.3)			
≤10 years	23 (37.7)	38 (62.3)	0.92	0.27-3.08	0.89
Education					
Diploma of Nursing	8 (30.8)	18 (69.2)			
Bachelor of Nursing	20 (40.8)	29 (59.2)	0.64	0.24-1.79	0.392

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Table 4. Adjusted odds ratio of independent variables on nurse compliance

Variables	AOR	95%CI	p
Age			
>40 years			
≤40 years	5.35	1.23-23.26	0.025
Knowledge level			
Sufficient			
Good	6.41	1.72-23.87	0.003
Workload			
Heavy			
Moderate	0.08	0.02-0.34	0.001

Based on gender, the proportion of female nurses who adhered to the SOP was lower than that of male nurses (42.7% vs 20.0%). Nurses who have a shorter working period, namely ≤10 years, the proportion of adhering to the risk of falling SOP almost similar to the nurses who have a working period of >10 years (62.3% vs 64.3%); and among nurses with education of Bachelor in Nursing, the proportion of adherence to the risk of falling SPO is lower than nurses with education of Diploma in Nursing (59.2% vs 69.2%).

From the results of the chi square test as shown in Table 3, there is a significant relationshipbetweenthelevelofknowledge and nurse compliance (OR=10.29; 95%CI: 3.37-31.35; p<0.001), workload and nurse compliance (OR=0.07; 95%CI: 0.02-0.25; p<0.001).

In Table 4, the logistic regression test result is presented. It was found that of the 6 variables included in the multivariate analysis, only 3 variables were significantly associated to nurse compliance to the SOP, namely age (AOR=15.35; 95%CI: 1.23-23.26; p=0.025), knowledge level (AOR=6.41; 95%CI: 1.72-23.87; p=0.003) and workload (AOR=0.08; 95%CI: 0.02-0.34; p=0.001).

DISCUSSION

This study aims to determine the relationship between the level of knowledge and workload with nurses' compliance in implementing standard operational procedures to prevent the risk of falling in the inpatient room at Tabanan District Hospital. This research is essential to encourage hospitals to make specific improvements in patient safety, especially in falls prevention. We found a significant relationship between age, level of knowledge, level of workload and nurses' compliance with the implementation of the risk of falling SOP.

Nurses with good level of knowledge has a better compliance in implementing falls' prevention SOP than those with sufficient knowledge. This result was in line with the research of Mappanganro et al.[7] which involved 31 nurses and found a relationship between nurses' knowledge and efforts to prevent the risk of falling by nurses in the children care room of Bhayangkara Hospital Makassar with p value of 0.008. It was also similar to a study by Oktaviani,[8] that found the relationship between knowledge and compliance of nurses in implementing standard operational procedures for preventing the risk of falling at Panti Waluyo Hospital, Surakarta.

The results of the multivariate analysis show that age was associated with nurses' compliance in implementing standard operational procedures for preventing the risk of falling patients. Most of the nurses in the study were 40 years or below. Age, as mentioned in Zulkifli & Sureskiarti,[9] has a close relationship with the aspect of work, the relationship between age and psychological maturity level shows maturity in the sense that individuals become wiser in making decisions and the more experience gained can also guide and direct younger nurses accordingly with the abilities they have.

Workload is a variable which has a significant relationship with nurse compliance but has an inverse effect on compliance (medium workload group will be less obedient to SOP than heavy workloads group). It is in line with Munandar's theory,[6] where mentioned that the workloads of nurses in the hospital include physical and mental workloads. The physical workloads include lifting the patient, bathing the patient, helping the patient to the bathroom, pushing medical equipment, making the patient's bed, pushing the patient's bed. Workloads which are mental in nature can be in the form of working shifts or taking turns, the complexity of the work (preparing mentally and spiritually for patients and families, especially those who will need surgery or are in critical condition), working with special skills in caring for patients, responsibility for healing and having to communicate with patients.

The results of this study are supported by a cross-sectional study of Retnaningsih & Fatmawati,[10] involving 155 nurse respondents and showing that there is a significant relationship between the workload of nurses and the implementation of patient safety in the inpatient room of Tugurejo Hospital Semarang, where the direction and strength of the relationship is also similar with the result of this study. This study, however, is different from the research of Haryanto et al.[11] which involved 66 respondents and stated that there was no significant effect of nurses' workload on patients' falling risk.

The inverse relationship between nurses' workload and compliance with SOP can be due to the large proportion of nurses whose workload is heavy. The nurses involved in this study were ward's nurses whose patients mostly require monitoring of the risk of falls. The responsibility for monitoring the risk of falling may cause a large burden on nurses but must be followed by compliance with SOP implementation. This can explain why groups with moderate workloads tend to be less compliant with SOP implementation. This is in accordance with the theory where the factors that affect compliance in completing nurse documentation are responsibility which in this case can also be seen as a workload, location status, legitimacy, and closeness of authority figures.[12]

According to McLeod,[13] compliance is a form of social influence in which individual activities or actions are a response to direct orders from other

individuals as authority figures. Compliance occurs when someone in authority orders something to do. Nurse's compliance is a nurse's behavior as a professional towards a recommendation, procedure or regulation that must be done or obeyed. In documenting nursing care, nurse's compliance is measured based on the standard criteria of each stage of nursing care, namely the assessment, planning, implementation and evaluation stages.

If viewed from the behavior of nurses' compliance in implementing the SOP, as many as 47 nurses (62.6%) were obedient in implementing the SOP for falls prevention, and 28 other nurses (37.3%) were not obedient in implementing the SOP. The lack of compliance was stated in the research of Pagala et al.[4] due to the lack of information provided by nurses regarding falls' prevention SOP or the absence of SOP in each inpatient unit, causing a lack of knowledge of nurses about the SOP. Besides that, nurses are less obedient in implementing SOP to prevent the risk of falling due to the lack of supervision by the nursing department.

This study has several limitations, which one of them is the researcher only examines the relationship between the level of knowledge and workload with nurse compliance without examining other factors that influence adherence, such as: location, personal responsibility, legitimacy of authority figures, status of authority figures due to time constraints and the ability of researchers. The instrument used was a questionnaire which statement assesses themselves and the interviewer is a hospital employee who is familiar with the respondents so that the possibility of the answer given could be subjective and biased.

CONCLUSION

There is a relationship between the level of knowledge and the compliance of nurses in implementing standard operational procedures to prevent the risk of falling patients. There is an inverse relationship between the workload of nurses and the compliance of nurses in implementing standard operational procedures to prevent the risk of falling, which should be explored further.

To Tabanan District Hospital, especially the education and training section to create a training program in patient safety, especially the falls' prevention to increase the knowledge of nurses about patient safety in order to improve compliance. To ensure implementation in accordance with the SOP, periodic monitoring and evaluation steps are needed.

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AUTHOR CONTRIBUTION

IKS designed and compiled studies, collected and analyzed data, prepared the first draft and edited the manuscript; IMAW and NWCSP were involved in the study design and conception, provided feedback and edited the manuscript.

CONFLICT OF INTEREST STATEMENT

Declared as "nothing was declared"

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