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Determinants of Nurse Compliance in Fall Risk Screening: A Study At X Hospital Pekanbaru

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Abstract
Patient safety is a system that aims to make health services safer, preventing injuries due to errors in carrying out actions or not taking actions that should be taken, by using risk screening for patients. This research was conducted to see the effect of nurses' compliance in completing the complete patient fall risk screening at Hospital X Pekanbaru. This research was a descriptive analytical study with a cross-sectional approach carried out at Hospital X Pekanbaru, using a sample of 133 nurses at Hospital X Pekanbaru. Data was collected using questionnaires and interviews regarding nurses' compliance in filling out the patient fall screening sheet using a Likert scale questionnaire. Several variables were included in the analysis, including age, gender, highest level of education, length of service, work shifts, workload, rewards, knowledge, supervision, attitudes and compliance with the implementation of fall risk screening. All variables are converted into categorical data (nominal or ordinal). The analysis in this study was univariate analysis (frequency and percentage) and bivariate analysis was carried out using the Chi-Square Test statistical method with a p value <0.05. The results showed that length of service had an effect on nurses' compliance in completing the fall risk screening (p = 0.049). However, there is a tendency that those aged <31 years are more likely to be non-compliant, while those aged >31 years are more likely to be compliant in completing the screening requirements. Meanwhile, it was also found that nurses with a working period of <6 years were more likely to be non-compliant, while those with a working period of >6 years were more likely to be compliant in filling out the screening requirements, so it was found that compliance with completing the patient fall risk screening by nurses would increase by 2. 1 time.

Keywords: Risk Factors, Falls, Patient Safety, Compliance.

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1. INTRODUCTION

Patient safety is a system that aims to make health services safer, preventing injuries due to errors in carrying out actions or not taking actions that should be taken (Mulyana, 2013). Patient safety standards set by the Joint Commission International (JCI), include: patients identification accuracy, increased effective communication, increased precarious drug safety, intra-operative safety (appropriate location, procedure, and patient), reduced risk of healthcare-related infections, and reduced risk of patient falls (Niken, Kholid, & Wahyuningsih, 2021). The incidence of patients falling in hospitals is the highest incidence with 10 cases at RSU RS X Pekanbaru Padang with 54.54% in elderly patients over 58 years of age (Nurhayati, Rahmadiyanti, and Hapsari 2020).

Patient falls are one of the most troubling incidents and have a negative impact on hospitalized patients. Falls can result in injury, even death (Aziz & Safina, 2016). Patient falls can result in various types of injuries, both physical and psychological damage. The physical impacts include broken bones and soft tissue damage, meanwhile the psychological ones include anxiety, loss of self-confidence, and withdrawal (Sukesi, Kholid, & Wahyuningsih 2021). Patient fall risk screening performed by nurses is one of the recommended efforts. It is also an indicator of JCI in preventing patient falls (Chehab, Salim, and Kathamuthu, 2020).

The research found that there were several incidents at hospitals that were accredited by the Joint Commission International (JCI). A total of 52 incidents were found in 11 hospitals in 5 countries. The highest cases were in Hong Kong with a total of 31% of cases, followed by Australia (25%), India (23%), America (12%), and Canada (10%). The latest data in Indonesia from the Ministry of Health (2021) shows that there were 4,397 cases consisting of 1,508 near-injury incidents (KNC), 1,373 non-injury incidents (KTC), and 1,516 unexpected incidents (KTD). Various side effects were also reported as a result of the incident, including 91 deaths, 36 serious injuries, 296 moderate injuries, 677 minor injuries, and 3,296 no injuries (Nurhayati et al. 2020).

Hospitals should instruct risk of fall screening in an effort to prevent falls. Nurses were asked to complete the screening form when the patient first presented to the hospital and if there was a condition change by the nurse. One of the obstacles in completing the form was that the nurses' workloads were always increasing, which can affect the hospitals' value and quality. Nurses' workloads in hospitals consisted of physical and mental workload. The physical workload includes lifting and bathing patients, helping patients to the bathroom, giving medicine, et cetera (Harsul, Irwan, & Sjattar, 2020).

Mental workload can result from work shifts, work complexity, patient conditions, mental preparation of patients and their families in patients who underwent surgery or were critical, responsibility for patients' recovery, and establishing communication with patients and their families. A nurse will have difficulty aiding many patients, especially if there was an imbalance between the number of nurses and patients. Nurses must be able to provide services to all patients without exception, even though the number of nurses and patients is not equal (Harsul, Irwan & Sjattar, 2018).

The main problem with patient falls stems from the suboptimal implementation of standard operating procedures (SOP) for patient falls, particularly nurses' poor compliance in filling out the patient fall risk screening form (Wardanengsih et al. 2023). There were several types of screening used, such as Humpty-Dumpty for children, Morse Fall Scale for adults, and Ontario Modified Stratify-Sydney Scroing for geriatric patients (Rahmawati et al. 2021). Patients' fall risk screening must be carried out in a form of anticipation, therefore nurses' adherence in filling out the screening form as completely and clear as possible must be performed to establish patient safety (Daryani, Hamranani & Wijaya, 2023).

A preliminary study conducted at X hospital Pekanbaru revealed a problem in fulfilling patients' fall risk screening form, either at baseline or follow-up where only few nurses fulfill the form diligently. This has an impact on interventions for patients at risk of falling. The results of interviews conducted with several nurses showed lack of understanding, problems in assessing risks, and lack of understanding of the SOPs created by the hospital. All of these were obstacles in filling out the fall risk screening sheet.

The researchers were interested in analyzing the factors associated with nurses' compliance in completing the complete patient fall risk screening at Hospital X Pekanbaru.

2. RESEARCH METHOD

This was analytical descriptive research with a cross-sectional approach at X hospital Pekanbaru. Samples included in this research were 133 nurses, who were employees of X hospital Pekanbaru who filled the patients' risk of fall screening and willing to be respondents. This research has received permission from X hospital Pekanbaru. This research was conducted from July to October 2023, from when the researcher requested research permission until analyzing data.

Questionnaires in a Likert scale and interviews regarding nurses' compliance in filling out the patients fall screening sheet were used to collect data. Variables included in the analysis include age, gender, highest level of education, length of service, work shifts, workload, rewards, knowledge, supervision, attitudes and compliance with the implementation of fall risk screening. All variables were converted into categorical data (nominal or ordinal).

Univariate analysis was performed through tables (frequencies and percentages) on the distribution and percentages of the variables workload, rewards, knowledge, supervision and attitudes. Bivariate analysis was carried out using the Chi-Square Test statistical method. Multivariate analysis using logistic regression was conducted on variables with a statistically significant relationship with a p-value <0.05. Multivariate analysis was performed to discover which independent variables had the greatest influence on the dependent variable.

3. RESULTS AND DISCUSSION

The respondents in this study were nurses at the Syafira Pekanbaru Hospital, where the number of respondents was 133 respondents. The characteristics of the respondents were depicted in Table 1.

Table 1. Study respondents' characteristics

Characteristics	Number	
	f	**%**
Gender		
Male	23	17.3
Female	110	82.7
Age		
20 – 30-year-old	65	48.9
31 – 40-year-old	61	45.9
41 – 50-year-old	6	4.5
>50-year-old	1	0.8
Length of employment		
1 – 5 years	64	48.1
6 – 10 years	37	27.8
11 – 15 years	28	21.1
16 – 20 years	3	2.3
>20 years	1	0.8

Education		
Associate degree in nursing	72	54.1
Ners	44	33.1
Graduate degree in nursing	17	12.8
Work shift		
Night shift	28	21.1
Morning shift	61	45.9
Afternoon shift	44	33.1

The table above showed the respondents' characteristics in several variables, such as gender, age, length of service, education, and work shifts. The majority of respondents were female (82.7%) with an age range of 20 – 30-year-old (48.9%). Moreover, most respondents had worked for 1 – 5 years (48.1%) and had a final education of D3 in nursing (54.1%). Based on work shifts, most study respondents worked in the morning shift (45.9%).

Table 2. The distribution of respondents' responses on workload, reward, knowledge, supervision, attitude, and compliance

Characterics	Number	
	f	%
Workload		
Low	63	47.4
High	70	52.6
Reward		
Poor	45	33.8
Good	88	66.2
Knowledge		
Poor	64	48.1
Good	69	51.9
Supervision		
Poor	35	26.3
Good	98	73.7
Attitude		
Poor	53	39.8
Good	80	60.2
Compliance		
Poor	60	45.1
Good	73	54.9

Table 2 revealed that in general, respondents in this study indicated a high workload (52.6%), good rewards (66.2%), good knowledge (51.9%), good supervision (73 .7%), good attitude (60.2%) and good compliance (54.9%). The normality test using the Kolmogorov Smirnov showed a p-value <0.01, therefore the conclusion was the data was not normally distributed. Due to this, Chi-Square was used in bivariate analysis.

Table 3 demonstrated that length of service was associated with nurses' compliance in filling out fall risk screening (p = 0.049). However, there is a tendency that those aged <31 years were more likely to be non-compliant, while those aged >31 were more compliant in filling the screening forms. The percentage of male nurses who did not comply was higher compared to female, while the percentage of female nurses who adhere was higher. Those with

associate degree were commonly had poor compliance, while those with graduate degree/Nursing education had good adherence. Nurses with who worker <6 years were generally did not comply, however those with >6 years of work length were more likely to be compliant in filling out the screening requirements.

Table 3. The association between all variables to compliance of complete fulfilling fall patients screening

| Characteristics | Nurse compliance | | | | | | p-value |
| | Poor compliance | | Good compliance | | Total | | |
	n	%	n	%	n	%	
Age							
<31	34	51.5	32	48.5	66	100.0	0.141
≥31	26	38.8	41	61.2	67	100.0	
Gender							
Male	12	52.2	11	47.8	23	100.0	0.454
Female	48	43.6	62	56.4	110	100.0	
Education							
Associate degree in nursing	34	47.2	38	52.8	72	100.0	0.595
Graduate degree in Nursing/Ners	26	42.6	35	57.4	61	100.0	
Length of employment							
Recent (<6)	39	52.7	35	47.3	74	100.0	0.049
Long (≥6)	21	35.6	38	64.4	59	100.0	
Work shift							
Night shift	16	44.4	20	55.6	36	100.0	0.925
Morning – Afternoon shift	44	45.4	53	54.6	97	100.0	
Workload							
Low	23	51.1	40	48.9	63	100.0	0.059
High	37	42.0	33	58.0	70	100.0	
Reward							
Poor	23	51.1	22	48.9	45	100.0	0.320
Good	37	42.0	51	58.0	88	100.0	
Knowledge							
Poor	25	39.1	39	60.9	64	100.0	0.177
Good	35	50.7	34	49.3	60	100.0	
Supervision							
Poor	18	51.4	17	48.6	35	100.0	0.382
Good	42	42.9	56	57.1	98	100.0	
Attitude							
Poor	26	49.1	27	50.9	53	100.0	0.457
Good	34	42.5	46	57.5	80	100.0	

Nurses with higher workloads mostly had poor compliance compared to nurses with fewer workloads. Nurses with less appreciation generally did not adhere, while nurses with more rewards were likely to comply. Nurses with good knowledge were more likely to not adhere compared to those with lesser knowledge on assessing fall risks screening. Nurses that

were supervised mostly comply, and vice versa. A high percentage of non-compliance was found in nurses with poor attitudes compared to those with good ones.

Table 4. The association between length of work and workload with compliance to completeness of fulfilling fall patients screening by nurse

Independent variables	Significance	Exp (B)	Likelihood	Hosmer and Lemeshow Test (Sig)	Nagelkerke R Square
Work length	0.041	2.104	175.257	0.646	0.077
Workload	0.049	0.491			

The table above revealed the results of the multivariate test on the work period and workload variables simultaneously associated with compliance of completing fall risk screening by nurses by 7%. If the length of service variable was increased, adherence with filling in patient fall risk screening exhaustively by nurses will increase by 2.1 times.

This research showed that length of service had a significant effect on nurses' compliance in filling out patient fall risk screening sheets in hospitals. Age, gender, highest level of education, work shifts, workload, rewards, knowledge, supervision, and attitudes did not have a significant effect. These results were similar with several studies revealing a significant relationship between work experience and compliance with patient safety implementation (Putrina, 2019), (Priambodo, Rosa, & Sundari 2020), (Tunny & Tauran 2023), (Nur, Dharmana, & Santoso, 2017). Nurses with longer work period tend to have good work experience and more compliant in performing their duties (Lestari 2022).

Work period or length of work is an individual's experience that will determine their position increase. The longer a person worked, the higher his/her level of achievement where high achievement originated from good behavior. Someone with lengthier work period had broader insight and more experience in their role in shaping the health workers behavior (Zulkifli & Sureskiarti 2020).

The longer period a nurse spent performing their work, the better their work quality. This was related to adherence in fulfilling patient's fall risk screening. This research also proved that the long hours a nurse worked did not guarantee their compliance with the consistency of her work, for example completing patient fall risk screening. Nurses with more than 10 years of service did not always able to adhere with filling patient's fall risk screening (Pagala, Shaluhiyah & Widjasena, 2017).

According to the theory put forward by Notoatmodjo, the aspect of knowledge, which is very important in shaping human behavior, dominates attitudes of thinking and influences things that influence change. Therefore, having sufficient knowledge leads to compliant behavior towards standard operating procedures. This means less risk of injury from falls. This research has similarities with Jayanti's research which concluded that only a small percentage of nurses' knowledge about the risk of falls was rated as poor and the others were rated as good (Nurhayati et al. 2020).

Our research revealed that the older the nurse, the more obedient they were in nursing care, therefore the tendency of older nurses to had better compliance was acceptable (Manurung et al., 2023). However, Pagala concluded that there was no correlation between age and nurses' compliance behavior in implementing the SOP for the risk of falls in hospital patients (Faridha & Milkhatun 2020). Adherence in completing the fall risk screening depend on dedication and devotion in serving patients, because it was possible that younger nurses were more obedient than older nurses or vice versa (Seguh, Kolibu, & Kawatu, 2019).

This research exhibited no correlation between gender and compliance, even though the nurses who complied in this study were women (Manurung et al. 2023). Psychology theory stated that women were more obedient than men. This research also showed no relationship

between education and compliance with completing patient fall risk screening by nurses, even though nurses who were more compliant had a bachelor's degree in nursing and ners (Amahoru, Said, & Kadar 2022). Formal education alone was not enough for a nurse. They must also take part in training that supported their work (Septiantoro, Triana, & Haniyah 2022).

This research depicted that work shifts were not related to nurses' compliance in completing patient fall risk screening. The different work shifts for nurses, which were morning, afternoon, and night shifts, felt different for each nurse to perform their work. The difference in nurse performance in terms of work shifts meant that on average, nurses with morning and afternoon shifts had higher performance compared to night shift. Nurses with morning shift had enough time to rest in the evening, whereas during the night shift the nurses' physical condition were tired and work concentration was not optimal (Herlinda, 2022).

There was no significant relationship between workload and nurse compliance, although respondents who were non-compliant generally have higher workload. Excessive workloads caused various disadvantages, such as increased cases of patient falls (Nurhayati et al., 2020). Higher workloads also resulted in nurses rushing to do their work, thereby increasing errors due to reduced accuracy. Environmental factors, room quietness, and management also played a role for nurses in implementation of the six correct principles, one of which was the risk of patient falls (Lillah, 2022).

In this study, reward for nurses was not related to compliance in completing patient fall risk screening, although the tendency for those with better appreciation had higher adherence (Astuti et al., 2021). The implementation of a nurse's work should increase through giving awards which will have an impact on a nurse's compliance (Aeni, Virgiani, & Mulyana 2022). Moreover, in this study, knowledge was not related to nurses' adherence in completing the patient fall risk screening at X hospital Pekanbaru.

Knowledge is very crucial in forming a person's actions. Activities that were not based on good knowledge would not have good results. Factors affecting someone's level of adherence include compliance when someone only obeyed the rules due to sanctions, indetification when people embraced the rules only because of scared of damaging good relationships with other people, and internalization when someone felt that the rules must be obeyed and were appropriate with his value.

This research exhibited that good supervision was in line with increased compliance, however this relationship was not statistically significant. Supervision was one of the factors that affect compliance (Nurhayati et al. 2020). Optimal supervision gave optimal impacts such as optimizing prevention of the risk of patient falls. Salma, et al stated that supervision had no effect on nurse adherence. This showed that supervision did not cause someone to be compliant in completing the patient fall risk screening (Faridah, & Winarni, 2022).

The relationship between nurses' attitudes and compliance in completing the patient fall risk screening at X hospital Pekanbaru was not significant. Attitude was a behavior determinant due to its relationship with perception, personality, and motivation. A positive attitude was very important to support the implementation of patient safety in hospitals . Attitude was defined as a reaction or response that existed within a person who was still closed to a stimulus or object. The differences in nurses' attitudes were due to their behavior depended on their knowledge. Attitude was a component of cognition, affection, and conation which interact with each other resulting in understanding, feelings, and behavior towards an object (Faridah, & Winarni, 2022)

The research we conducted had several limitations. First, this study used a cross-sectional research design. Due to this, the researchers were unable to control external factors that can influence the results and interpretation of data. Moreover, the research instruments used can be further developed for further research so that each variable can be explored in more depth.

4. CONCLUSION

The work period had a significant influence on nurses' compliance with the completeness of patient fall risk screening. Age, gender, education, work shifts, workload, rewards, knowledge, supervision, and attitude did not have a statistically significant correlation with nurses' compliance in completing patient fall risk screening. The results showed that length of service had an effect on nurses' compliance in completing the fall risk screening ($p = 0.049$). However, there is a tendency that those aged <31 years are more likely to be non-compliant, while those aged >31 years are more likely to be compliant in completing the screening requirements. Meanwhile, it was also found that nurses with a working period of <6 years were more likely to be non-compliant, while those with a working period of >6 years were more likely to be compliant in filling out the screening requirements, so it was found that compliance with completing the patient fall risk screening by nurses would increase by 2. 1 time.

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