



FACTORS RELATED TO THE IMPLEMENTATION OF PATIENT SAFETY

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ABSTRACT

Patient safety is a critical global health issue. Despite solutions from JCI and WHO, 70% of medication errors still occur in many countries, including Indonesia. Objective: To identify factors influencing patient safety implementation by nurses at Sulianti Saroso Infectious Diseases Hospital (SSIDH). Methods: This cross-sectional observational study was conducted at SSIDH in October-November 2024. The population included 150 nurses, midwives, and heads of inpatient wards, selected using purposive sampling. Data were analysed using Kolmogorov-Smirnov, chi-square, and multiple logistic regression ($p < 0.05$). Results: Most respondents were female and held a bachelor's degree in nursing. Knowledge, attitude, and motivation were not significantly associated with patient safety implementation. Factors significantly influencing patient safety were age, duty room, and tenure ($p < 0.05$). Nurses aged ≥ 40 years were four times less likely to implement patient safety standards compared to those < 40 years ($OR = 4.04$; $95\% CI = 1.68-9.72$). Those working in non-intensive wards were 0.11 times less likely to implement standards ($OR = 0.11$; $95\% CI = 0.05-0.27$). Conclusion: Nurses/midwives should enhance patient safety implementation based on the six patient safety goals. Healthcare providers are encouraged to create programs to support quality improvement and reduce adverse events.

Keywords: age; health; midwife; nurses; patient safety

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INTRODUCTION

One of the patient safety standards set by the Joint Commission International (JCI) is the National Patient Safety Goals for Hospitals, which includes proper patient identification, effective communication, safe medication use, assurance of correct location and procedures, reduction of infection risk, and identification of patient fall risk.(JCI, 2024; WHO, 2020) Although JCI and the World Health Organisation (WHO) have issued patient safety solutions that can save lives, there are still 70% of medication errors in some countries, including Indonesia.(Charles Vincent, 2010; JCI, 2024) Patient safety is a very serious global health issue that has been a concern of the world's countries. In 2002, WHO member states agreed on a resolution on patient safety. Many countries are endeavouring to improve the quality and safety of health services, as well as providing health workers with an understanding of the principles of patient safety.(WHO, 2020) A patient safety incident is an unintentional event that can cause injury to a patient, consisting of adverse events, near-injury events, no-injury events, potential injuries, and sentinel events.(Kemenkes RI, 2017) Globally, there are an estimated 421 million hospitalisations each year, during which approximately 42.7 million

adverse events affect patients. According to recent conservative estimates, patient harm ranks as the 14th leading cause of illness and death worldwide.(WHO, 2019)

One way to reduce these errors is to establish a Patient Safety Team tasked with analysing patient safety-related events. The implementation of patient safety management is essential to prevent or reduce incidents that harm patients. Patient safety is the responsibility of all parties involved in healthcare, who must ensure that no action jeopardises the patient.(MacGillivray, 2020; WHO, 2020) Factors that influence patient safety, according to Lombagia (2016), include nurses' behaviours and abilities. Unsafe behaviours, such as forgetfulness, inattention, or carelessness, can lead to errors that put patients at risk. Reducing errors can be achieved by modifying nurses' behaviour.(Lombogia et al., 2018)Yusuf's research (2017) on the implementation of patient safety at RSUD Dr Zainoel Abidin Banda Aceh showed that most nurses implemented patient safety well.(Muhammad, 2017) Another study by Pambudi, Sutriningsih, and Yasin (2018) also showed that several factors, such as the number of dependents and nurse motivation, influenced the implementation of patient safety goals in hospitals.(Pambudi et al., 2018) Reports on patient safety incidents in Indonesia reveal that near misses (KNCs) and adverse events (AEs) still occur frequently despite efforts to report and prevent them.(Dhamanti et al., 2019; Habibah & Dhamanti, 2021)

Based on a preliminary study conducted through interviews with several nurses, the head of the room, and members of the Patient Safety Committee, as well as a document study at RSPI Sulianti Saroso, it was found that hospital management support for nurses in terms of patient safety was less than optimal. Internal training on patient safety has been conducted but not routinely. Patient safety incident data only serves as data, although the process of investigation, analysis, and recommendations to the leadership has been carried out, but the results have not been maximised. So far, the hospital's patient safety standard operating procedures (SOPs) have only been implemented to fulfil accreditation requirements. Based on these problems, the authors wanted to explore the factors that influence the implementation of patient safety by nurses at Sulianti Saroso Infectious Disease Hospital (SSIDH). This study aims to determine the factors related to the application of patient safety by nurses.

METHOD

This type of research is quantitative with a cross-sectional design. The research was conducted from October to November 2024. The population in this study consisted of nurses or midwives who worked in the inpatient room (ICU, HCU, and inpatient) of SSIDH, totalling 150 people, with the purposive sampling technique. The research instrument used was Google Forms and questionnaires. Independent variables include demographics (gender, age, education level, marital status, employment status, and length of service). The other independent variables and the number of questions include knowledge (20), attitude (12), motivation (10), organisation/management (11), facilities (12), supervision (10), duty room (10), training (10) which were filled in by nurses/midwives through a questionnaire in the form of a google form. The dependent variable, namely the implementation of patient safety (28), was filled in by the head of the room through a written questionnaire. The validity and reliability of this questionnaire have been tested in the research by Eliwarti (2021) (Eliwarti, 2021) and Kurniadi (2023) (Kurniadi et al., 2023). Data analysis was univariate (frequency, proportion), bivariate Chi-Square (p-value), and multivariate (logistic regression) with SPSS 21.

RESULT

Most of the respondents were female, S1 Ners education level, married, 36-45 years old, civil servant status, and more than 5 years of work (Table 1).

Table 1.
Frequency Distribution of Demographic

Characteristics	f	%
Sex		
Male	40	26,7
Female	110	73,3
Education		
D3 Nursing	46	30,7
Ners	95	63,3
Magister of Nurse	9	6
Marital Status		
Unmarried	16	10,7
Widow/Widower	5	3,3
Married	129	86
Age (year)		
≤ Median (40)	77	51,3
> Median (40)	73	48,7
Employment status		
Civil Servant	146	97,3
Contractual Government Employee	3	2
Honorary Employee	1	7
Length of Employment (year)		
<5	24	16
>5	126	84

Table 2.
Frequency Distribution of Factors

Characteristics	f	%
Knowledge		
≥ median (15,5)	75	50,0
< median (15,5)	75	50,0
Attitude		
≥ median (35)	80	53,3
< median (35)	70	46,7
Motivation		
≥ median (27)	87	58,0
< median (27)	63	42,0
Organization		
≥ median (27)	79	52,7
< median (27)	71	47,3
Facility		
≥ median (7)	127	84,7
< median (7)	23	15,3
Supervision		
≥ median (30)	82	54,7
< median (30)	68	45,3
Room		
ICU room	47	31,3
Ward	103	68,7
Training		
Yes	142	94,7
No	8	5,3
Standard Implementation Patient Safety		
≥ median (29)	109	72,7
< median (29)	41	27,3

There was no difference in the number of respondents with good and poor knowledge. The number and proportion of respondents with good and poor attitudes, motivation, organisation, and supervision were not significantly different. The majority of respondents had a perception that RSPI facilities were good, nurses/midwives were assigned to inpatient rooms, had attended training, and implemented patient safety standards well (Table 2).

Age, duty room, and length of service of nurses/midwives were associated with the implementation of patient safety (p-value <0.05) (Table 3)

Table 3
Factors associated with patient safety

Variable	Implementation of Patient Safety						P	OR (95% CI)	
	Safety				Total				
	Good		Low		f	%			
Sex	Male	31	77,5	9	22,5	40	100	0,553	1,41 (0,61-3,30)
	Female	78	70,9	32	29,1	110	100		
	Total	109	72,7	41	27,3	150	100		
Age (years)	≤40	64	83,1	13	16,9	77	100	0,006	3,06 (1,43-6,55)
	>40	45	61,6	28	38,4	73	100		
	Total	109	72,7	41	27,3	150	100		
Attitude	Good	56	70	24	30	80	100	0,549	0,75 (0,36-1,54)
	Low	53	75,7	17	24,3	70	100		
	Total	109	72,7	41	27,3	150	100		
Organization	Good	59	74,7	20	25,3	79	100	0,688	1,24 (0,60-2,54)
	Low	50	70,4	21	29,6	71	100		
	Total	109	72,7	41	27,3	150	100		
Knowledge	Good	55	73,3	20	26,7	75	100	1,000	1,07 (0,52-2,19)
	Low	54	72	21	28	75	100		
	Total	109	72,7	41	27,3	150	100		
Supervision	Good	60	73,2	22	26,8	82	100	1,000	1,06 (0,51-2,17)
	Low	49	72,1	19	27,9	68	100		
	Total	109	72,7	41	27,3	150	100		
Motivation	Good	61	70,1	26	29,9	87	100	0,523	0,73 (0,35-1,53)
	Low	48	76,2	15	23,8	63	100		
	Total	109	72,7	41	27,3	150	100		
Facility	Good	90	70,9	37	29,1	127	100	0,364	0,51 (0,16-1,60)
	Low	19	82,6	4	17,4	23	100		
	Total	109	72,7	41	27,3	150	100		
Education	Master's Degree/Professional	74	71,2	30	28,8	104	100	0,670	0,78 (0,34-1,72)
	Diploma Program	35	76,1	11	23,9	46	100		
	Total	109	72,7	41	27,3	150	100		
Marital Status	Single	17	81	4	19	21	100	0,513	1,71 (0,53-5,42)
	Married	92	71,3	37	28,7	129	100		
	Total	109	72,7	41	27,3	150	100		
Room	ICU and Hemodialysis)	21	44,7	26	55,3	47	100	0,000	0,14 (0,06-0,30)
	Inpatient	88	85,4	15	14,6	103	100		
	Total	109	72,7	41	27,3	150	100		
Training	Yes	102	71,8	40	28,2	142	100	0,576	0,36 (0,04-3,05)
	No	7	87,5	1	12,5	8	100		
	Total	109	72,7	41	27,3	150	100		
Length of Work (year)	≤14	66	80,5	16	19,5	82	100	0,030	2,40 (1,14-5,00)
	>14	43	63,2	25	36,8	68	100		
	Total	109	72,7	41	27,3	150	100		

Respondents aged ≥ 40 years were four times less likely to implement patient safety standards than those aged < 40 years (p value=0.002; OR=4.04; 95% CI=1.68-9.72). Respondents who served in non-intensive inpatient rooms were 0.11 times less likely to implement patient safety standards (p value=0.000; OR=0.11; 95% CI=0.05-0.27) (Table 4).

Table 4.
Relationship between Age and Room to Implementation of Patient Safety Standars

Variable	P value	OR (95% CI)
Age	0,002	4,04 (1,68-9,72)
Room	0,000	0,11 (0,05-0,27)

DISCUSSION

Relationship between Age and Implementation of Patient Safety Goals

The results of this study prove that both respondents aged ≤ 40 years or > 40 years mostly apply patient safety well. The results of statistical tests using the Chi-square test and logistic regression that age has a significant effect on the implementation of patient safety goals in nurses/midwives p value $< \alpha$ (0.05), age ≤ 40 years is four times more likely to patient safety than age > 40 years. The results of this study are in line with studies in government hospitals (Milkhatun, 2019; Sukesu et al., 2021).

Age is related to the level of maturity, in the sense that the increasing age will increase maturity technically and psychologically, and is better able to carry out its tasks and age 25-44 years. The age at which a person is in the stabilisation stage (Pagala et al., 2017). Based on this, the researcher suggests that a nurse's age may reflect how they approach and perform procedures. Most respondents fall within the early adulthood age group, which is typically associated with critical thinking skills, ease in receiving information, and greater willingness to accept and follow instructions. It is recommended that younger and senior nurses receive patient safety training, particularly focused on fall prevention in ward units. Additionally, senior nurses, who are generally older, should play a role in mentoring younger nurses to enhance their skills in preventing falls. Older age brings a combination of experience, responsibility and maturity that encourages health workers to focus more on patient safety (Jiménez-Herrera et al., 2020; Tamminga et al., 2023). However, patient safety should be a priority for all healthcare workers, not limited to a certain age.

Relationship between Ward and Patient Safety Goal Implementation

The results of this study prove that respondents who served in the ICU rooms were mostly poor at implementing patient safety, in contrast to respondents who served in the inpatient room, who were mostly good at implementing patient safety. The results of statistical tests using the Chi-square test and logistic regression showed that age has a significant effect on the implementation of patient safety goals in nurses/midwives p value $< \alpha$ (0.05), respondents who served in ICU had a 0.1 times chance of patient safety compared to those who served in inpatient care. The results of another study explained that there was a significant relationship between work design and the implementation of patient safety by head nurses ($p = 0.000$). Nurses who have a perception of good ward were found to implement patient safety well. Critical Care Nurses Association of The Philippines (Martinez et al., 2021) defines critical care nursing as a specialisation in nursing that focuses on managing the human response to life-threatening problems, which can develop dynamically and threaten life, either actually or potentially.

Ensuring patient safety is a critical aspect of delivering high-quality healthcare. Each intensive care unit (ICU) has unique needs that vary based on local and cultural factors,

making it essential to build a safety culture tailored to these characteristics. Strategies such as regular training, the use of care bundles, and fostering an error-free environment can significantly enhance patient safety in the ICU. These approaches are practical and feasible, even in resource-limited settings, and can greatly contribute to improving patient outcomes within our country. Prioritizing patient safety in the ICU is fundamental to achieving excellence in intensive care (Patil et al., 2023). Health workers caring for patients in the ICU have confidence and feel they comprehensively understand their patients' conditions, as well as the use of standard medical equipment (monitor, syringe pump, and infusion pump).

Relationship between Length of Work and Implementation of Patient Safety Goals

The results of this study indicate that the majority of respondents possess good knowledge and practice regarding patient safety. Statistical analysis using the Chi-square test revealed a p-value greater than α (0.05), indicating no significant relationship between nurses' knowledge and the implementation of patient safety goals among nurses and midwives (p-value > 0.05). The results of this study are in line with the study in Makassar (Malaha & Datu, 2016) and Ambon (Sinaga et al., 2019). The results of this study are not in line with research at Undata Hospital (Wardani et al., 2023) that there is no relationship between nurses' knowledge and the implementation of patient safety in the ICU and ICCU rooms, and a study at Teluk Kuantan Hospital (2021) (Mayenti et al., 2021) there is no relationship between nurses' knowledge and the implementation of patient safety in the inpatient room/ward. Work experience becomes a competency for a staff member if they are able to learn from their work activities. The lack of correlation between length of service and the implementation of patient safety goals in this study indicates that there is no difference in the competency of both new and experienced nurses. This, when linked to the development of patient safety programs, which is one of the hospital accreditation standards, requires all nurses to take responsibility and implement it as part of improving patient quality and safety (Muliyadi & Yulia, 2022).

Relationship between Knowledge and Implementation of Patient Safety Goals

This study demonstrates that the majority of respondents have a good knowledge and application of patient safety. Statistical analysis using the Chi-square test produced a p-value greater than α (0.05), indicating no significant relationship between nurses' knowledge and the implementation of patient safety goals among nurses and midwives (p-value > 0.05). The results of this study are in line with the study in Makassar (Malaha & Datu, 2016) and Ambon (Sinaga et al., 2019). The findings of this study are not in line with research at Undata Hospital (2023)(Wardani et al., 2023) that there is no relationship between nurses' knowledge and the implementation of patient safety in the ICU & ICVCU rooms and studies at Teluk Kuantan Hospital (2021) (Mayenti et al., 2021) there is no relationship between nurses' knowledge and the implementation of patient safety in the inpatient room. Based on this finding, it can be concluded that the better nurses' knowledge of the patient safety programme, the higher their understanding of the importance of implementing the programme for patients (Amaral et al., 2023; Mistri et al., 2023). This will encourage better execution of actions, which in turn improves the implementation of patient safety. The researcher assumed that knowledge is an important factor that every nurse must possess. The results showed that nurses with good knowledge of patient safety tend to implement patient safety goals moderately, while nurses who have sufficient knowledge can implement patient safety goals well.

In the researcher's view, nurses' good knowledge is influenced by internal factors within the nurses themselves. Although all nurses have been socialised about patient safety goals, not all nurses can understand and implement them well. Nurses' education also plays an important role in improving their knowledge. Other factors that influence this include nurses' adherence

to Standard Operating Procedures (SOPs) (Suminar et al., 2023), the leadership role of the Hospital's head nurse, who continuously monitors and evaluates the actions of nurses (Lusianah et al., 2022; Rahmah & Sarwati, 2018), and good communication between the head of the room and the executive nurse, as well as between executive nurses in all inpatient rooms (Puspita Dewi, 2018; Wieke Noviyanti et al., 2021). Thus, it can be concluded that the higher a person's knowledge, the better the implementation of patient safety is carried out.

Relationship between Attitude and Implementation of Patient Safety Goals

The results of this study prove that most respondents have good attitudes toward patient safety and implementation. Statistical analysis using the Chi-square test yielded a p-value greater than α (0.05), indicating no significant relationship between nurses' attitudes and the implementation of patient safety goals among nurses and midwives (p-value > 0.05). The results of this study are in line with a mixed method study in South Tangerang (2021) (Dwi Anggraini & Ilyas, 2023), which is different from the results of Sholikhah's study (Sholikhah et al., 2022). Attitude is a key factor in shaping behavior, representing a mental readiness developed over time and shaped by experience. It influences how an individual reacts to others, objects, and situations relevant to them. Attitude is supported by three components, namely cognitive, affection and behaviour (Mirani & Ardilla, 2020). According to the researcher's assumption, the overall implementation of patient safety goals shows that nurses have not fully carried out in accordance with existing operational standards. At the same time, the implementation of patient safety goals is very important in realising the provision of safe nursing care. Based on the results of the researcher's observations, this occurred because of the workload that was not in accordance with the availability of staff and nurses. The results of the questionnaire with nurses showed that the hospital did not use a checklist sheet to verify the handover of nurses before surgery. Although accreditation has been prepared, it is currently no longer being implemented. At the time of postoperative patient handover, the patient is handed over by the staff together with the patient's les, but there is no explanation or clarification of the patient's identity.

Relationship between nurse education and implementation of patient safety goals

According to the study's findings, it is known that gender, education, and marriage have no relationship with the implementation of patient safety. Another study in Palembang City proved that gender was not associated with the implementation of patient safety (Agustira et al., 2024). The researcher's assumption is that nurses are mostly dominated by women because the nursing profession is more synonymous with maternal instincts that include emotional and psychological sensitivity to patients. Gender is fixed, so there is no notable distinction between women and men regarding individual roles and work productivity in implementing patient safety. A 2014 study also stated that marital status has no relationship with the implementation of patient safety (Anggraini, 2014). In this case, emotional maturity is a factor that affects nurses' errors in carrying out their duties (Lubis, 2024). Emotional maturity for married employees is certainly different from those who are married. This study is in line with research in private hospitals in Mataram city (2023), which states that the level of education is not related to patient safety (Muhsinin et al., 2023). A higher level of formal education leads to greater expectations for career advancement, job opportunities, and income. Education is the process of changing attitudes and behaviour through teaching and training, both formal and non-formal, which ultimately results in knowledge.

Nurses with higher education to improve the quality of nursing services. Education level is a key factor that can enhance nurses' knowledge in implementing patient safety (Yulia et al., 2012). The researcher assumed that most of the respondents had bachelor's and master's degrees, so they had a good understanding of patient safety standards. This is evident when

the researcher asked about the 6 goals of patient safety, most nurses could give good answers. However, when asked to practice the 6 steps of hand washing, there were still nurses who made mistakes. Based on the nurses' explanation, all SOPs regarding patient safety goals are available in their rooms, but due to limited time in caring for patients, there are still nurses who have not had time to read them.

Similarly, internal factors, namely knowledge, attitude, and motivation, have no relationship with the implementation of patient safety; this result is in line with a study on nurses at Makassar City Hospital (Ainun et al., 2020). The proportion of nurses with good and poor knowledge is balanced. Nurses have mastered the theories and skills they acquired during their education, and they implement patient safety well due to the influence of socio-cultural learning at Makassar City Hospital, such as the daily work patterns there. This encourages nurses to implement the patient safety system effectively. Attitude is a daily action or behaviour towards the surrounding environment. A nurse's positive attitude will make them more compliant in implementing patient safety, although there are still nurses with negative attitudes who can still carry out patient safety without causing risk. Nurses are highly motivated due to a sense of enjoyment at work, fuelled by a hospital management system that supports their performance. This makes nurses feel comfortable at work and have confidence when providing nursing care to patients. Nurses view their work as a form of devotion, as they help patients to get well soon. Therefore, there is no significant relationship between motivation and the performance of inpatient nurses (Ainun et al., 2020).

External factors, such as organisation, supervision, training, and facilities, were also not associated with the implementation of patient safety. External factors are considered to have less impact on nurses/midwives in implementing patient safety. RSPI Sulianti Saroso as a health facility that provides health services is equipped with a standardised organisational structure, system, and regulatory tools as a vertical hospital of the Ministry of Health. Supervision is a form of supervision that aims to improve officer performance through a systematic process that includes providing motivation, communication, and guidance. In the implementation of supervision in the inpatient room, the supervision function of the head of the room has a significant role in improving nurse compliance in implementing patient safety. Meanwhile, the majority of nurses and midwives of RSPI Sulianti Saroso have attended internal patient safety training so that they are considered competent in implementing patient safety measures. The implementation of patient safety is significantly impacted by the availability of facilities, which directly affect the workload of nurses in the hospital. Completeness of facilities infrastructure and documents is important to support the process towards better change. In the Hospital accreditation standard, it is said that several documents, facilities, and infrastructure must be completed by the Hospital in supporting the implementation of patient safety, one of which is patient safety incident reporting in order to improve the quality of patient safety in the Hospital.

CONCLUSION

Age and ward are factors influencing the implementation of patient safety. Policy-making and evaluation of healthcare service quality programs, particularly the implementation of patient safety in inpatient wards and ICUs, are essential. Policies related to the assignment of nurses/midwives should consider length of service, ward/room placement, and the age distribution of nurses/midwives. Nurses/midwives can further enhance the implementation of patient safety in line with nursing care patterns based on the six patient safety goals. Healthcare providers can develop programs to support and improve healthcare services to prevent the recurrence of unexpected events.

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