



## ANALYSIS OF THE RELATIONSHIP BETWEEN KNOWLEDGE, PERCEPTION, AND WORKLOAD OF NURSES ON PATIENT SAFETY CULTURE

Norsehan<sup>1\*</sup>, Ratno Adrianto<sup>1</sup>, Rahmat Bakhtiar<sup>1</sup>, Irfansyah Baharuddin Pakki<sup>1</sup>, Hilda<sup>2</sup>

<sup>1</sup>Master of Public Health, Universitas Mulawarman, Jl. Kuaru, Gn. Kelua, Samarinda Ulu, Samarinda, Kalimantan Timur 75119, Indonesia

<sup>2</sup>Poltekkes Kemenkes Kalimantan Timur, Jl. W. Monginsidi No.38, Sidodadi, Samarinda Ulu, Samarinda, Kalimantan Timur 75243, Indonesia

\*[norsehanbpp@gmail.com](mailto:norsehanbpp@gmail.com)

### ABSTRACT

Patient safety culture refers to a pattern of behavior of both individuals and organizations that consistently seek to reduce the risk of harm or injury to patients due to the services provided, based on shared beliefs and values. This study aims to analyze the relationship between knowledge, perceptions, and workload of nurses on patient safety culture at Beriman Hospital, Balikpapan City. The method used in this study is a quantitative approach with a cross-sectional design, involving all nurses working in the service unit of Beriman Hospital, Balikpapan City, totaling 129 respondents (total sampling). This study was conducted from February to March 2025, with data collection using a questionnaire that had been tested for validity and reliability. Univariate data analysis, chi-square test, and logistic regression. The results showed good knowledge 81.4%, good perception 51.2%, high workload 50.4% and patient safety culture value 58.9%. The results of the chi-square test sig value of knowledge: 0.600 and perception: 0.302, both ( $p > 0.05$ ) indicating no relationship between knowledge and perception of nurses towards patient safety culture. However, the sig value for workload is 0.006 ( $p < 0.05$ ) indicating a relationship between workload and patient safety culture. The results of the logistic regression test show that nurses' workload has a significant effect on patient safety culture with a significance value (Sig) of 0.009. The Odds Ratio (OR) value of 2.712 indicates that nurses with a higher workload are 2.7 times more likely to influence patient safety culture compared to those with a low workload. The conclusion is that workload is the factor most related to patient safety culture.

Keywords: knowledge; patient safety culture; perception; workload

### How to cite (in APA style)

Norsehan, N., Adrianto, R., Bakhtiar, R., Pakki, I. B., & Hilda, H. (2025). Analysis of the Relationship Between Knowledge, Perception, and Workload of Nurses on Patient Safety Culture. *Indonesian Journal of Global Health Research*, 7(4), 767-776. <https://doi.org/10.37287/ijghr.v7i4.6442>.

## INTRODUCTION

In 2019, the World Health Organization (WHO) launched a patient safety campaign emphasizing that no individual should be put at risk while receiving health services. However, data shows that around 134 million hospital patients in low- and middle-income countries are at risk due to unsafe services, contributing to the deaths of around 2.6 million people each year (WHO, 2023). In this context, Law Number 17 of 2023 emphasizes the obligation of health facilities to provide high-quality services and prioritize patient safety (President of the Republic of Indonesia, 2023). This shows that even though there are supporting regulations, the challenges in implementing patient safety are still very large and require more attention from all related parties. Patient safety involves a system that includes risk assessment, risk identification and management, and incident reporting and analysis. Patient safety culture is a pattern of behavior that focuses on reducing patient harm (KepDirJenYanKes No Hk.02.02/D/43463/2024, nd). Although the health sector has a higher risk of patient harm compared to other sectors such as aviation, efforts to improve patient safety still need to be improved (Kaplan & Stokes, 2017). In this regard, it is important to create an environment that supports open

communication and fearless reporting of incidents, so that practices can be improved and errors can be reduced.

Analysis of adverse events (AEs) in New York hospitals showed that 3.7% of patients experienced AEs, with 27.6% caused by negligence, and 70.5% of AEs resulting in temporary disability (Arjaty Daud, nd). In Indonesia, the patient safety incident report in 2019 recorded 7465 incidents, with 2.3% being sentinel events (Kemenkes, 2019). At RSUD Beriman, the incident report showed that of the 209 incidents reported between 2022-2024, 30% were potential injury events. These data show that despite efforts to improve safety, there are still many incidents that need to be handled effectively. The importance of the role of nurses in patient safety at Beriman Hospital is highly emphasized, considering that this hospital has been fully accredited since 2017. Research shows that nurses' knowledge and compliance with patient safety culture have a significant relationship (p-value 0.001) with the implementation of safety practices (Inas Syabanasyah & Solehudin Solehudin, 2023). In addition, personal factors of nurses, such as knowledge and attitudes, also influence the implementation of patient safety culture (Wianti et al., 2021). Thus, training and professional development for nurses are essential to ensure that they have the knowledge and skills needed to implement effective safety practices.

Statistical analysis using chi-square showed that nurses' knowledge had a positive effect on the quality of nursing services, with a p-value of 0.001 (Kustini, nd). In addition, the effect of physical workload on patient safety through Organizational Citizenship Behavior (OCB) showed a negative coefficient value (-0.111) and a p-value of 0.025, indicating a significant effect (Risqiandri et al., nd). This study shows that high workload can be a barrier to implementing a patient safety culture, which can ultimately affect the overall quality of health services. Based on this phenomenon, this study aims to analyze the relationship between knowledge, perception, and workload of nurses towards patient safety culture at RSUD Beriman, Balikpapan City. This study is expected to provide deeper insight into the factors that influence patient safety and assist in the development of better policies and practices in the health sector. By understanding this relationship, it is expected that more effective strategies can be found to improve patient safety and reduce unexpected incidents in hospitals.

## **METHOD**

The method used in this study is a quantitative approach with a cross-sectional design, involving all nurses on duty at the RSUD Beriman service unit in Balikpapan City, totaling 129 respondents (total sampling). This study was conducted from February to March 2025, with data collection using a questionnaire. Data analysis was carried out through univariate, chi-square tests, and logistic regression to identify the relationship between the variables studied.

## **RESULT**

### **Respondent Characteristics**

Table 1 presents the demographic analysis and professional characteristics of nursing staff at Beriman Hospital. The main findings show that the majority of respondents were female, with a proportion of 79.8% compared to 20.2% male. This is consistent with the national trend which shows that around 80% of nursing staff in Indonesia are female (Ministry of Health of the Republic of Indonesia, 2021). In terms of age, the majority of respondents were under 35 years old, reaching 64.3%, which shows that the nursing staff in this hospital is dominated by the younger generation. In terms of education, most respondents have a D III Nursing

educational background (73.6%), while 25.6% are Nurses and only 0.8% have a MARS S2 degree. This finding reflects that although there are nurses with higher education, most nurses still come from diploma education.

Table 1.  
Distribution of Respondent Characteristics

Variables	f	%
Gender		
Man	26	20.2
Woman	103	79.8
Education		
D III Nursing	95	73.6
Nurse	33	25.6
S2 MARS	1	0.8
Work unit		
IBS	9	7
ICU	16	12.4
Emergency Room	18	14
Coordinator	3	2.3
Perinatology	12	9.3
Outpatient	11	8.5
Inpatient	60	46.5
Position		
Head of Room	9	7
Nurse Practitioner	94	72.9
PPJA / Team Leader / Coordinator	26	20.2
SKP Training		
Never	29	22.5
Already	100	77.5
Length of work		
≤ 1 year	49	38
> 2 Years	80	62
Age		
≤ 35 Years	83	64.3
> 35 Years	46	35.7

### Description of Research Variables Knowledge

Table 2.  
Distribution of Knowledge Variable

Variables	f	%
Knowledge		
Good	105	81.4
Not enough	24	18.6

Based on research conducted at RSUD Beriman, Balikpapan City, the survey results showed that 81.4% of respondents, consisting of nurses, had good knowledge of patient safety culture. Conversely, 18.6% of respondents showed inadequate levels of knowledge. This finding indicates that the majority of nurses in the hospital have understood the importance of patient safety, which is a positive first step in building an effective safety culture in the hospital environment.

## Perception

Table 3.  
Distribution of Perception Variables

Variables	f	%
Perception		
Good	66	51.2
Not enough	63	48.8

Based on the analysis of the data presented, the majority of respondents showed a positive perception of patient safety culture, with 51.2% of them considering the perception to be good. This positive perception has significant implications for nurses' motivation in implementing patient safety practices. Research by McGowan et al. (2019) indicated that positive perceptions of patient safety correlate with increased compliance with established safety protocols. Thus, it is important to continue to promote a culture of patient safety in healthcare settings to increase awareness and adherence to safety practices. This will not only improve the quality of care but also provide better protection for patients.

## Workload

Table 4.  
Distribution of Workload Variables

Variables	f	%
Workload		
Tall	65	50.4
Low	64	49.6

Based on the research conducted, the data shows that 50.4% of respondents experienced a high workload, while 49.6% were at a low workload level. High workload is often a barrier to delivering quality care. Research conducted by Aiken et al. (2017) indicated a significant relationship between high workload and increased incidence of medical errors and decreased patient satisfaction levels. These findings demonstrate the importance of workload management in efforts to improve the quality of health care.

## Patient Safety Culture

Table 5.  
Distribution of Patient Safety Culture Variables

Variables	f	%
Patient safety culture		
Good	76	58.9
Not enough	53	41.1
Total	129	100

Based on the research results presented, it was found that 58.9% of respondents rated patient safety culture in the good category. A positive patient safety culture is a crucial element in creating a safe work environment. Research by Singer et al. (2018) confirms that a good safety culture can reduce the incidence of medical errors and improve overall patient safety.

The majority of respondents gave positive assessments on various dimensions related to patient safety culture. The teamwork dimension received the highest score, with 111 respondents (86%) giving a positive assessment. In addition, 110 respondents (85.3%) also gave a positive assessment of the patient safety incident reporting dimension, indicating high awareness in reporting safety incidents. This reflects the ability of nurses to categorize incidents, identify, and correct incidents before they impact patients and prevent errors that can harm patients. Response to errors was also positively assessed by 106 respondents (82.2%), indicating that the majority of health workers responded well to errors. They demonstrated fair treatment of nurses after errors occurred, with a focus on reviewing and learning from the error. Support from health care facility management was also positively

assessed by 106 respondents (82.2%). This indicates that hospital management has made patient safety a top priority and provided adequate resources to support patient safety. Organizational learning and continuous improvement were also positively assessed by 105 respondents (81.4%), indicating that there are regular work processes and evaluations to avoid repeating errors.

Table 6.  
Distribution of Patient Safety Culture Variables with 10 Dimensions

Variables	f	%
1. Teamwork		
Positive	111	86
Negative	18	14
2. Support from Supervisor, Management, or Medical Director for Patient Safety		
Positive	98	76
Negative	31	24
3. Staff Arrangement and Work Pace		
Positive	92	71.3
Negative	37	28.7
4. Response to error		
Positive	106	82.2
Negative	23	17.8
5. Patient Safety Incident Reporting		
Positive	110	85.3
Negative	19	14.7
6. Organizational Learning, Continuous Improvement		
Positive	105	81.4
Negative	24	18.6
7. Healthcare Facility Management Support for Patient Safety		
Positive	106	82.2
Negative	23	17.8
8. Handover of work during shift changes and exchange of information		
Positive	102	79.1
Negative	27	20.9
9. Openness of communication		
Positive	92	71.3
Negative	37	28.7
10. Communication about errors		
Positive	105	81.4
Negative	24	18.6

Communication aspects in the work environment were also rated positively by the majority of respondents. Communication related to errors received the highest score, with 105 respondents (81.4%) rating it positive, indicating the comfort of health workers in discussing errors for improvement. Handover of work during shift changes and exchange of information were also rated positively by 102 respondents (79.1%), indicating good coordination in task transitions and dissemination of information related to patient safety between units. The dimension of support from supervisors, management, or medical leaders for patient safety was positively rated by 98 respondents (76%), indicating that superiors took nurses' input into consideration in development and did not encourage actions that were not in accordance with procedures. Openness of communication was also positively rated by 92 respondents (71.3%), indicating that the majority of health workers felt that communication within the team was transparent. Finally, the dimension of staffing and work pace was also positively rated by 92 respondents (71.3%), indicating that the number of nurses in the unit was adequate to manage the workload well.

**Bivariate Analysis**  
**Relationship between Knowledge and Patient Safety Culture**

Table. 7  
 Relationship between Knowledge and Patient Safety Culture

Knowledge	Patient safety culture						P-value
	Good		Not good		Total		
	f	%	f	%	f	%	
Not enough	13	54.2	11	45.8	24	100	0.600
Good	63	60	42	40	105	100	
Total	76	58.9	53	41.1	129	100	

Based on the results of the Chi-square test, the significance value of knowledge of 0.600 ( $p > 0.05$ ) indicates that there is no relationship between knowledge and patient safety culture. This shows that although nurses' knowledge of patient safety is good, it does not necessarily contribute to a good safety culture. Previous studies have also shown similar results, where knowledge is not always directly proportional to the implementation of effective safety practices (Sholikhah et al., 2022).

**Relationship between Perception and Patient Safety Culture**

Table 8.  
 Relationship between Perception and Patient Safety Culture

Perception	Patient safety culture						P-value
	Good		Not good		Total		
	f	%	f	%	f	%	
Not enough	40	63.5	23	36.5	63	100	0.302
Good	36	54.5	30	45.5	66	100	
Total	76	58.9	53	41.1	129	100	

The Chi-square test results showed a significance value of 0.302 ( $p > 0.05$ ), indicating no significant relationship between perception and safety culture. Other studies have shown that nurses' perceptions can affect the frequency of adverse events, with better understanding reducing the risk of incidents (Kakemam et al., 2021). However, research by Lestari et al. (2024) showed that work experience does not always affect nurses' perceptions.

**Relationship between Workload and Patient Safety Culture**

Table 9.  
 Relationship between Workload and Patient Safety Culture

Workload	Patient safety culture						P-value
	Good		Not good		Total		
	f	%	f	%	f	%	
Low	30	46.9	34	53.1	64	100	0.006
Tall	46	70.8	19	29.2	65	100	
Total	76	58.9	53	41.1	129	100	

Table 4.9 shows the results of the study on the relationship between workload variables and patient safety culture. The results of the Chi-square test showed a significance value of 0.006 ( $p < 0.05$ ), which means that there is a significant relationship between workload and patient safety culture. Other studies have also found a significant relationship between workload and patient safety (Hutauruk & Fauza, 2021; Yunita & Sumiati, 2022). High workloads are at risk of increasing adverse events in health services.

## Multivariate Analysis

Multivariate analysis using logistic regression, the results obtained are:

Table 10.

Relationship between variables and Patient Safety Culture

No	Independent Variables	Sig	OR
1	Knowledge	0.784	.875
2	Perception	0.516	.781
3	Workload	0.009	2,712

Based on the table above, the variable that has a significant influence on patient safety culture is workload with a significance value (Sig) of 0.009, which is smaller than the significance limit of 0.05. The Odds Ratio (OR) value = 2.712 indicates that individuals with a higher workload are 2.7 times more likely to influence patient safety culture compared to those with a lower workload. Meanwhile, the knowledge and perception variables do not show a significant influence on patient safety culture because the significance value is greater than 0.05.

## DISCUSSION

### Relationship of Nurses' Knowledge to Patient Safety Culture

The results of the analysis showed that the majority of respondents (105 people) had good knowledge of safety culture, although 42 people had good knowledge but were lacking in implementing safety culture. The Chi-square test showed a significance value of 0.600 ( $p > 0.05$ ), which indicated there was no significant relationship between knowledge and patient safety culture. This finding is in line with previous studies showing that officer knowledge is not related to the implementation of patient safety (Sholikhah et al., 2022). This study concluded that many nurses are still at a basic level in cognitive aspects, which affects their actions.

### Relationship of Nurses' Perceptions to Patient Safety Culture

In terms of perception, 66 respondents had a good perception of safety culture, but 63 respondents indicated a poor safety culture. The results of the Chi-square test indicated a significance value of 0.302 ( $p > 0.05$ ), indicating no significant relationship between perception and safety culture. Other studies have shown that nurses' perceptions can affect the frequency of adverse events, with better understanding reducing the risk of incidents (Kakemam et al., 2021). However, research by Lestari et al. (2024) showed that work experience does not always affect nurses' perceptions. Perception is considered a direct response to the environment, which can help nurses recognize aspects of patient safety culture.

### Relationship between Nurse Workload and Patient Safety Culture

The results showed that respondents with low and high workloads had poor safety culture, but 30 respondents with low workloads showed good safety culture. The Chi-square test showed a significance value of 0.006 ( $< 0.05$ ), which means there is a relationship between workload and patient safety culture. Other studies have also found a significant relationship between workload and patient safety (Hutauruk & Fauza, 2021; Yunita & Sumiati, 2022). High workloads are at risk of increasing adverse events in health services.

### Variables Most Related to Patient Safety Culture

Workload was shown to be the most significant variable influencing patient safety culture, with a significance value of 0.009 and an Odds Ratio (OR) of 2.712. This indicates that individuals with higher workloads are 2.7 times more likely to influence patient safety culture than those with lower workloads. Meanwhile, knowledge and perception did not show a

significant effect. This study suggests the need for optimization of nursing staff and greater support to improve patient safety culture, which in turn can improve the quality of nursing care. Further research is needed to explore other factors that influence patient safety culture and develop effective strategies to improve patient safety in the hospital environment.

## **CONCLUSION**

There is no relationship between nurses' knowledge and patient safety culture at Beriman Balikpapan Regional Hospital. There is no relationship between nurses' perceptions and patient safety culture at Beriman Balikpapan Regional Hospital. There is a relationship between nurses' workload and patient safety culture at Beriman Balikpapan Regional Hospital. The workload variable is the variable that is most closely related to patient safety culture, the dimensions of staffing and work tempo, and the dimension of information openness are in the moderate category.

## **REFERENCES**

- Al Rahmi Nurul, et. al. (2021). The Relationship between Knowledge, Attitude, and Motivation of Nurses and the Implementation of Patient Safety at Labuang Baji Regional Hospital. *Window of Public Health*.
- Asmawati, NL, & Idealistiana, L. (2024). Analysis of Nurses' Perceptions on the Effectiveness of Using the SBAR Method in Handover in Relation to Patient Safety at Mekar Sari Hospital. *Malahayati Nursing Journal*, 6(4), 1456–1466. <https://doi.org/10.33024/mnj.v6i4.11186>
- Ekawardani, N., Manampiring, AE, & Kristanto, EG (2022). Analysis of Factors Associated with Health Workers Perceptions about the Implementation of Patient Safety Culture at Prof. Dr. Medical Scope Journal, 4(1), 79–88. <https://doi.org/10.35790/msj.v4.i1.44770>
- Gunarni Sri, AA (2021). The Relationship Between Nurses' Knowledge and the Implementation of Procedures for Patients at Risk of Falling at Dustira Hospital. *Journal of Health Science*.
- Handriana, I., & Yuningsih, E. (2021). The Relationship between Nurses' Knowledge Level and the Implementation of Patient Safety in the Emergency Room of Gunung Jati Hospital, Cirebon City in 2020. *Jurnal Health Sains*, 2(5), 621–628. <https://doi.org/10.46799/jhs.v2i5.162>
- Hastono, SP (2006). *Data Analysis*.
- Hutauruk, PM, & Fauza, R. (2021). Determinants Of Nurses' Performance In The Implementation Of Patient Safety At Imelda Hospital, Indonesia Workers In 2020. *Imelda Scientific Journal of Nursing*, 7(1). <http://jurnal.uimedan.ac.id/index.php/JURNALKEPERAWATAN>
- Inas Syabanasyah, & Solehudin Solehudin. (2023). The Relationship between Nurses' Knowledge and Compliance with the Implementation of Patient Safety Culture. *USADA NUSANTARA: Traditional Health Journal*, 2(1), 229–238. <https://doi.org/10.47861/usd.v2i1.720>
- Kakemam, E., Gharaee, H., Rajabi, M.R., Nadernejad, M., Khakdel, Z., Raeissi, P., & Kalhor, R. (2021). Nurses' perception of patient safety culture and its relationship with adverse events: a national questionnaire survey in Iran. *BMC Nursing*, 20(1). <https://doi.org/10.1186/s12912-021-00571-w>

- Kaplan, G.S., & Stokes, C.D. (2017). *Leading a Culture of Safety: A Blueprint for Success*. Institute for Healthcare Improvement, 48. [www.npsf.org/LLI.%0Ahttp://c.ymcdn.com/sites/www.npsf.org/resource/resmgr/lli/Leading\\_a\\_Culture\\_of\\_Safety\\_.pdf](http://www.npsf.org/LLI.%0Ahttp://c.ymcdn.com/sites/www.npsf.org/resource/resmgr/lli/Leading_a_Culture_of_Safety_.pdf)
- Director General of Health Services Decree No. Hk.02.02/D/43463/2024. (2024). *GUIDELINES FOR PATIENT SAFETY CULTURE SURVEY*.pdf.
- KMKP RSUD Beriman. (2023). *Report on the Results of the Safety Culture Survey at RSUD Beriman Balikpapan*.
- Kustini, TY (2023). *The Influence of Nurses' Knowledge of Patient Safety Culture on Reporting Patient Safety Incidents*.
- Lestari, IGAAP, Widiati, S., & Hendrartini, J. (2024). *The Relationship between Education, Experience and Work Unit with Perception of Patient Safety Culture at Panti Rahayu Hospital*. *Open Access Jakarta Journal of Health Sciences*, 3(3), 1131–1142. <https://doi.org/10.53801/oajjhs.v3i3.344>
- Lumenta, Nico. A. (2021). *Patient Safety is Non-negotiable*. Rayyana Komunikasindo.
- Masnitari, C., Thamrin, Y., & Ahri, RA (2023). *Analysis of Factors Influencing the Implementation of Patient Safety in Nurses in the Inpatient Unit of Labuang Baji Regional Hospital, South Sulawesi Province in 2022*. *Journal of Aafiyah Health Research (JAHR)* 2023, 4(1), 121–130. <https://doi.org/10.52103/jahr.v5i2.1616>
- Nasrija, H., Triharini, M., & Purwaningsih. (2024). *Personal Factors of Nurses and Their Relationship with the Implementation of Patient Safety Culture in Hospitals*. *Journal of Nursing*, 16(1), 383–396.
- Minister of Health Regulation No. 11. (2017). *Patient Safety*. PMK No. 11 of 2017 concerning Patient Safety, 14(7), 450. <https://tel.archives-ouvertes.fr/tel-01514176%0Ahttps://www.kemhan.go.id/itjen/wp-content/uploads/2017/03/bn308-2017.pdf>
- Profile of Beriman Regional Hospital, Balikpapan City. (nd).
- Risqiandri, AA, Amelia, AR, & Hamzah, W. (2024). *The Effect of Nurses' Physical Workload on the Implementation of Patient Safety with OCB at Pelamonia Class II Hospital, Makassar*. *Journal of Aafiyah Health Research (JAHR)* 2024, 5(2), 350–357. <https://doi.org/10.52103/jahr.v5i2.1773>
- Rizki Amelia, A., Puspita Halim, I., Baharuddin, A., Aril Ahri, R., Semmaila, B., & Aulia Yusuf, R. (2022). *Relationship Between Nurses' Workload And Unexpected Events*. <http://journal.stikeskendal.ac.id/index.php/Keperawatan>
- Safira, R., & Imanuddin, B. (2023). *The Relationship Between Workload And Patient Safety Application Towards Work Stress In Nurses At Balaraja Regional Hospital In 2022*. *Nusantara Hasana Journal*, 2(8), 198–204.
- Safitri, W., Naviatun Maesaroh, U., Dwi Sulisetyawati, S., & Murharyati, A. (nd). *Workload Of Nurses With The Implementation Of Patient Safety In The Emergency Installation (Igd)*. <http://jurnal.globalhealthsciencegroup.com/index.php/JPPP>

Sari, AN, Setiawan, H., & Rizany, I. (2022). The Relationship between Nurses' Knowledge and the Implementation of Patient Safety at RSD Idaman, Banjarbaru City. *Journal of Nursing Leadership and Management*, 5(1), 8–15. <https://doi.org/10.32584/jkmk.v5i1.1371>