

Analysis Dimension of Healthy Work Environment for Successful Patient Safety Incident Reporting: A Cross Sectional Study

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ABSTRACT

Incident reporting of patient safety is the first step in improving patient safety through learning from previous incidents. However, barriers to incident reporting caused by work environment factors make the patient safety incident system not run well in various countries. This study analyzes nurses' dimensions of a healthy work environment toward reporting patient safety incidents. This study used an observational analytic design with a cross-sectional approach. This study was conducted in a regional hospital in West Nusa Tenggara province in October - November 2022 with a total sample of 151 nurses working in the inpatient room. Sample determination used a quota sampling technique. Measurement of a healthy work environment was adopted from the HWE Tools and Measurement of incident reporting. The questionnaire was adopted from the Patient Safety Incident Reporting and Learning Systems. Data collection techniques implemented primary data questionnaires and multiple linear regression tests. The results showed a relationship between communication, collaboration, decision-making, staff suitability, recognition, and leadership to patient safety incident reporting with a p-value of 0.001 each ($p < 0.05$). The most dominant relationship is Recognition ($B=0.39$, $p=0.001$). Recognition means stimulating a person's psychological growth and a positive mindset to complete tasks, solve problems, overcome obstacles, and bounce back from difficult situations. Therefore, individual attitudes alone are not enough to make individuals behave to report or not report incidents but must be supported by the wishes of those who have great influence in the environment and want individuals to report if an incident occurs.

Kata kunci:

Lingkungan Kerja;
Perawat;
Keselamatan Pasien;
Pelaporan Insiden
Keselamatan Pasien

Pelaporan insiden keselamatan pasien merupakan langkah awal didalam meningkatkan keselamatan pasien melalui pembelajaran dari insiden sebelumnya, namun hambatan pelaporan insiden yang disebabkan oleh faktor lingkungan kerja membuat sistem insiden keselamatan pasien tidak berjalan baik diberbagai negara. Penelitian ini bertujuan untuk menganalisis dimensi lingkungan kerja yang sehat pada perawat terhadap pelaporan insiden keselamatan pasien. Penelitian ini menggunakan desain analitik observational dengan pendekatan cross sectional. Penelitian ini dilakukan di sebuah rumah sakit daerah di provinsi Nusa Tenggara Barat pada bulan Oktober - November 2022 dengan jumlah sampel 151 perawat yang bekerja diruang rawat inap. Penentuan sampel menggunakan tehnik kuota sampling. Instrumen pengukuran lingkungan kerja yang sehat diadopsi dari Healthy Work Environment Assesment Tools dan Pengukuran pelaporan insiden, kuesioner diadopsi dari Patient Safety Incident Reporting and Learning Systems serta telah dilakukan validasi kuesioner. Tehnik pengumpulan data menggunakan data primer kuesioner dan dilakukan uji regresi linier berganda. Hasil yang diperoleh terdapat hubungan antara komunikasi, kolaborasi, pengambilan keputusan, kesesuaian staf, pengakuan, kepemimpinan terhadap pelaporan insiden keselamatan pasien dengan angka p value masing-masing 0,001 ($p < 0,05$). Hubungan paling dominan adalah Pengakuan ($B=0,39$, $p=0,001$). Pengakuan berarti menstimulus pertumbuhan psikologis seseorang, yaitu pola pikir positif untuk menyelesaikan tugas, memecahkan masalah, mengatasi rintangan, dan bangkit kembali dari situasi sulit Oleh karena itu, sikap individu saja tidak cukup untuk membuat individu berperilaku melaporkan atau tidak melaporkan adanya insiden, tetapi harus didukung oleh keinginan pihak yang memiliki pengaruh besar di lingkungan yang menghendaki individu untuk melaporkan jika terjadi insiden.

INTRODUCTION

Patient safety events (PSEs) are unintended or unexpected events that can endanger patients' lives and are a massive clinical problem in the healthcare sector worldwide (Fujita et al., 2021). According to data collected *World Health Organization (WHO)* (2022), 4 out of 10 patients are harmed in primary and outpatient health care. One in every 10 patients is injured while receiving hospital care in developed countries. While in developing countries, 134 adverse events occur every year. These events are triggered by unsafe care, resulting in 2.6 million deaths. Other causes include medication errors, surgical errors, and sharps injuries (Elizabeth, 2017). In addition, secondary impacts such as permanent disability add to the suffering of victims and their families and significantly increase the hospital's loss burden (Shin & Won, 2021).

Due to the serious impact of patient safety incidents, the WHO (2020) developed guidelines that include a reporting and learning system, a conceptual framework for classifying types, development and technical implementation of patient safety incident reporting (PSIR), and the availability of self-assessment guidelines to assess the level of achievement in implementing PSIR. In the patient safety learning system, healthcare workers are encouraged to report near misses, adverse events, or sentinel events to the hospital reporting system and sometimes to the national-level reporting system. PSIR is recognized by every country as the first step in improving patient safety through learning from previous incidents (Stavropoulou et al., 2015).

PSIR systems have been implemented in several countries in Asia, Europe, and the Americas (Tingle, 2018; Fujita et al., 2021; Lee & Oh, 2020). WHO (2020) developed guidelines that include a reporting and learning system, a conceptual framework for classifying the types, development, and technical implementation of PSIR, and the availability of self-assessment guidelines to assess the level of achievement in the implementation of PSIR. The PSIR system has been implemented in all hospitals worldwide for over a decade. However, the patient safety incident reporting system has not followed the WHO guidelines (Dhamanti et al., 2019).

Data on reporting of PSEs in Indonesia are still small, recorded in 2019 as many as 7465 reports. Among the categories, death has 171 reports, severe injury 80 reports, moderate injury 372 reports, mild injury 1183 reports, and no injury 5,659 reports. Compared to ASEAN countries' safety incident report data, there are 8,555 PSEs reports, with an average of 237 incident reports every month (Jerng et al., 2017).

Nurdin & Wibowo (2021) stated that barriers to PSIR in health workers in several countries have 4 barriers, a culture of blaming and shaming, an unideal ratio of nurses and patients resulting in limited time in providing services, lack of knowledge in reporting PSEs, lack of support in implementing the PSEs program. In addition, the reward system has no clear rules, there is a lack of understanding about the limitations that must be reported, the socialization of PSEs has not been maximally given to all staff, and some hospital staff has not been given training (Astuti et al., 2021). Hwang et al. (2012) mentioned that the factors hindering PSIR are external environmental factors related to education and training programs conducted by the academic community, accreditation demands in upholding patient safety standards, and regulatory support from national institutions supporting patient safety activities in hospitals. And the internal environmental factors of the hospital consist of

organizational factors such as the reward system, safety culture, opportunities to provide training, follow-up of reports, and individual factors such as awareness to report, fear of blame, and leadership quality of middle managers.

American Association of Critical-Care Nurses (2022a) stated that a healthy work environment (HWE) is achieved by approaching the dimensions of communication skills, collaboration, effective decision-making, nurse fit, meaningful recognition, and authentic leadership that help produce effective and sustainable care for patients and nurses. Brubakk et al. (2021) suggested that an HWE is essential in managing the patient safety climate. HWE of nurse care areas can increase nurses' involvement in care delivery, improve nurses' satisfaction and increase patient safety to achieve quality care for hospital patients (Manning & Jones, 2021). Data linking the work environment with PSIR in Indonesia is difficult to find at this level. So, this study aims to analyze the dimensions of an HWE in nurses towards PSIR.

RESEARCH METHOD

This study used an observational analytic design with a cross-sectional approach. The population in this study were 204 executive nurses in the inpatient room of X hospital in West Nusa Tenggara province, Indonesia. The sample was 151, which was determined through calculations using the Isaac and Michael formula and proportionate random sampling.

Data were collected using two questionnaires; the healthy work environment measure was adopted from the AACN Healthy Work Environment Assessment Tools (HWEAT) (American Association of Critical-Care Nurses, 2022b) with the validity test result (r) was 0.602 ($r > 0.35$) meaning that the instrument was declared valid. The reliability of alpha Cronbach's was 0.89 ($\alpha > 0.60$), meaning that the instrument was reliable. The questionnaire items consisted of 18 items and 6 subscales: nurses' communication skills (3 items), nurses' collaboration (3 items), effective decision making 3 items, Staff compatibility (3 items), meaningful recognition (3 items), and authentic leadership (3 items).

PSIR measurement questionnaire adopted by World Health Organization (2020) about Patient Safety Incident Reporting and Learning Systems. The validity test result is 0.70 ($r < 0.35$), meaning that the instrument was valid, and alpha Cronbach's reliability was 0.93 ($\alpha > 0.60$), meaning that the instrument was reliable. The measurement items consisted of 16: an environment for reporting, Reporting rules and content, Analysis and investigation, Governance, Action, and learning. The assessment of both questionnaires used closed questions, and respondents could rate with a Linkert scale with a score of 1-5.

Data were analyzed using SPSS ver.26, and independent variables from 6 dimensions of HWE using univariate, bivariate, and multivariate analysis. Pearson correlation test to see whether there is a relationship between the dimensions of the work environment and patient safety incident reporting. Multivariate analysis is a multiple linear regression test to see which independent variable has the most dominant effect on reporting patient safety incidents.

The research protocol was reviewed through the health research ethics committee of the Faculty of Health Sciences, Universitas Brawijaya, and declared ethically feasible based on the ethical approval number 4808/UN10.F17.10/TU/2022.

RESULT AND DISCUSSION

Characteristics of Respondent

Table 1 shows that of the 151 respondents with an average age of 31 years, the majority were aged 26-35 (69.53%), included in the productive age category. The characteristics of respondents are dominated by 105 female respondents (69.54%). The percentage with D3 and S1 education is balanced (50.33%). The working period of respondents is dominated by 1-5 years of work (62.91%). Most employees are 127 non-civil servants (84.11%).

Good communication skills are described by the interlocutor's logic of thinking, knowledge, and maturity (Buckner et al., 2016). This study also found that the average age of nurses was 31 years. Hence, 31 years is included in the productive age category where potential and energy become motivation and burning enthusiasm to improve performance through understanding, thinking, and knowledge gained. Syarianingsih Syam & Kurnia Widi Hastuti (2018) found that mature-age nurses in an organization could improve the quality of patient safety event reporting.

Table 1. Characteristics of Respondents (n=151)

	Characteristics	n	Percentage (%)
Gender	Male	46	30,46
	Female	105	69,54
Age	≤ 25 years	20	13,25
	26-35 years	105	69,53
	36-45 years	24	15,89
	> 45 years	2	2,32
Education Level	Diploma of Nursing	75	49,67
	Bachelor of Nursing	76	50,33
	1-5 Tahun	95	62,91
Work Experience	6-10 Tahun	28	18,54
	>10 Tahun	28	18,54
Employment Status	Civil servant	24	15,89
	Non-Civil servant	127	84,11

Based on Table 2, the variables of skilled communication, true collaboration, decision-making, staff suitability, and meaningful recognition have mean values ranging from 4.02 - 4.39 SD 0.54 - 0.82. Therefore, the data is less varied because the standard deviation is smaller than the mean. CI 95% between 3.89 - 4.30 means the confidence interval with a level of 95% with a lower limit of 3.89 and an upper limit of 4.30. And PSIR has a mean value of 65.0 SD 3.430 which means it is in a good category. Therefore, the data is less varied because the standard deviation is smaller than the mean. CI 95% between 64.52 - 65.62 means the confidence interval with a level of 95% with a lower limit score of 64.52 and an upper limit of 65.62.

Table 2. Description of research variables

Characteristics	Mean±SD	CI 95%
Skillful Communication	4.31±0.55	4.23 – 4.40
True Collaboration	4.28±0.64	4.17 – 4.39
Decision Making	4.39±0.54	4.30 – 4,47
Staff Suitability	4.02±0.78	3.89 – 4.14
Meaningful Recognition	4.19±0.61	4.10 – 4.29
Authentic Leadership	4.21±0.82	4.08 – 4.34
Patient Safety Incident Reporting	65.08±3.43	64.52 – 65.62

Based on the Pearson correlation value in Table 3, the degree of relationship between variables has different relationship strengths. There are 4 out of 6 independent variables that have a “moderate” strength of relationship to the reporting of patient safety incidents, including skilled communication, decision making, staff suitability, and meaningful recognition, each of which sequentially has a Pearson correlation value (0.460; 0.498; 0.520 and 0.594). Meanwhile, the true collaboration factor has a weak relationship with patient safety incident reporting, with a Pearson correlation value of 0.271. The authentic leadership factor has a weak relationship to reporting patient safety incidents, with a Pearson correlation value of 0.339. The Pearson correlation value is positive, so the better the skilled communication, true collaboration, decision-making, staff suitability, meaningful recognition, and authentic leadership, the better the reporting of patient safety incidents.

Table 3. Relationship of Skilled Communication, True Collaboration, Decision Making, Staff Suitability, Meaningful Recognition, and Authentic Leadership to Patient Safety Incident Reporting (n=151)

Independent Variable	P Value	Pearson Correlation
Skillful Communication	<0.001	0.460
True Collaboration	0.001	0.271
Decision Making	<0.001	0.498
Staff Suitability	<0.001	0.520
Meaningful Recognition	<0.001	0.594
Authentic Leadership	<0.001	0.339

Relationship between Skilled Communication and Patient Safety Incident Reporting

Based on the results of the Pearson correlation test (Table 3) shows that the dimension of skilled communication has a significant relationship with the PSIR with a p-value of <0.001 (p<0.05). Skilled communication conveys messages through open and effective conversations among the team and organizational members. The highest mean score on the communication dimension statement is the openness of information about past mistakes and discussing how to learn. Most nurses feel the reciprocity of good communication with leaders, thus encouraging mutual openness.

Topcu et al. (2017) revealed that failures in communication cause most medical errors committed by nurses and medical personnel. Common communication problems associated with digital communication and health professionals' misunderstanding of health

professionals' clinical activities are temporary and permanent (Manias et al., 2021). Communication is an important basic element in providing incident response and coordination, so nurses should be as proficient in communication skills as they are in clinical skills through 2-way communication, briefing, and feedback (Jang et al., 2022; Schmidt et al., 2021).

Overall, good nurse communication skills in reporting patient safety incidents can be achieved through training, the logic of thinking, and the maturity of the interlocutor and supported by the organization in facilitating discussions to analyze the root of the problem and find the right solution.

Relationship between True Collaboration and Patient Safety Incident Reporting

The Pearson correlation test (Table 3) shows that the dimension of True collaboration has a significant relationship with the PSIR with a p-value of 0.001 ($p < 0.05$). True collaboration is a core principle of cooperation that creates trust, honesty, and success by building consensus, ownership, and the right direction in all areas of the organization. Based on the description of collaboration in this study, the highest mean is a statement stating that nurses support each other in this unit when finding and solving problems together. This data shows that nurses not only work to complete their respective tasks but also see the problem as a common problem that needs a solution.

Azyabi et al. (2021) showed that collaboration and mutual assistance between team members within a unit positively impacted reporting patient safety incidents and cross-unit teamwork. Collaboration is not a temporary problem-solving program or technique but a total change in how nurses work together, think about patients or individuals served and approach each other in a work unit through a relationship of trust and openness in providing feedback and solving a problem. (Green & Johnson, 2015; Overton & Lowry, 2013).

In another study, Connor & Paul (2021) mentioned that collaboration as a conflict management style requires assertiveness and cooperation in our interactions with others. Therefore, although it can be concluded that teamwork is one of the factors influencing the reporting of patient safety incidents, the low strength of the relationship indicates that there are always things that need to be improved in terms of the collaboration process between nurses, nurses and other health workers, and nurses with patients and patient's families.

Relationship between Decision Making and Patient Safety Incident Reporting

The Pearson correlation test (Table 3) shows that the dimension of skilled decision-making has a significant relationship with the PSIR with a p-value of < 0.001 ($p < 0.05$). Decision-making leads to decisions that can solve problems without causing new problems. Based on the description of decision-making in this study, the highest mean score is a statement that states that nurses actively do various things to improve patient safety. In another study, it was mentioned that patient safety could be improved if safety incident cases are used to improve safety management (Winkler et al., 2019), especially if nurses have the motivation to participate in identifying, evaluating, and understanding patient safety incidents and their causes (S. E. Lee et al., 2021).

Effective decision-making, according to Nibbelink & Brewer (2018) at least consists of two components, including 1) decision-making is based on a deep understanding of the

problem and 2) the resulting decision leads to concrete actions that affect problem-solving so that the form of decision making depends on the characteristics of the problem being addressed.

Regarding the tangible actions of collaboration, Nibbelink & Brewer (2018) implied that experience represents the greatest influence on more effective decision-making. Most nurses' length of service at X hospital is 1-5 years, with nurses with a length of service of 6-10 years a balance in making decisions. Experience facilitates the development of nurses' confidence and subconscious reasoning to guide decision-making and provides a basis for collaboration with fellow nurses in decision-making (Dougherty et al., 2012). However, when emerging problems are random, unstructured, and unpredictable, the decision-making process is also unstructured, which requires innovative and creative thinking.

Relationship between Staff Suitability and Patient Safety Incident Reporting

Based on the Pearson correlation test (Table 3), the dimension of staff Suitability has a significant relationship with the PSIR with a p-value of <0.001 ($p < 0.05$). Staff Suitability ensures an effective match between nurses' knowledge, skills, and abilities in safety incident reporting. Based on the description of staff suitability in this study, the highest mean score is the statement that nursing managers work with nurses to ensure the adequacy of nursing staff to maintain patient safety. This finding aligns with a study that mentioned that nurses' perception of having adequate staff increased their assessment of patient safety by at least two and a half times (Alenius et al., 2014).

Musy et al. (2021), in their study on the relationship between nurse staffing and inpatient mortality, stated that patient mortality was higher by 10% in units with a low or inadequate number of nurses. Adjusting the need of hospital nurses needs to pay attention to factors such as patient conditions based on complexity, length of hospitalization, the process of admission or transfer between units, expertise and staff skills, and room capacity. In addition, nurses need to have a sense of empathy, dedication, and care to help improve patient outcomes and ensure that patients are satisfied with their care (Yu et al., 2022; Kerasidou et al., 2021).

In addition, Okoye & Ezejiolor (2013) showed that investing only in human resources in the absence of a healthy work environment is ineffective. Therefore, in creating a healthy work environment, the staff suitability factor has a role in reporting patient safety incidents. Good staff suitability includes providing security, healing, humanizing, and respecting rights and responsibilities.

The Relationship of Meaningful Recognition to Patient Safety Incident Reporting

Based on the Pearson correlation test (Table 3), the dimension of Meaningful recognition has a significant relationship with the PSIR with a p-value of <0.001 ($p < 0.05$). Meaningful recognition includes recognized nurses and nurses who recognize others for the value each brings to the organization's work. Based on the description of meaningful recognition in the study, the highest mean score is the statement that states nurses treat each other with respect. This data shows that nurses have a sense of respect for each other. Ageiz et al. (2021) mentioned that meaningful recognition could positively impact individuals and organizational culture. In addition, Zwickel et al. (2016) mentioned that recognizing nurses

in a meaningful way can illustrate the quality of nursing in health facilities, reinforce actions related to patient satisfaction, maintain team spirit, and create organizational culture.

These results align with findings by (Woo & Avery, 2021) that meaningful recognition can increase one's self-awareness of the impact one makes and build and enhance one's sense of pride regarding their duty in carrying out patient safety incident reporting. Recognition stimulates a person's psychological growth, a positive mindset including an optimistic outlook and belief in one's capacity to accomplish challenging tasks, solve problems, overcome future obstacles, and bounce back from difficult situations (Kim & Chang, 2022; Motamed-Jahromi et al., 2017; Barnes et al., 2016).

According to the theory of action, existing attitudes and subjective norms, namely what others want individuals to do, will influence individual behavior. Individual attitudes alone are not enough to make individuals behave to report or not report an incident but must be supported by subjective norms, namely the desire of the majority of people or parties who have great influence in the environment who also want individuals to report if a patient safety incident occurs.

Relationship between Authentic Leadership and Patient Safety Incident Reporting

Based on the Pearson correlation test (Table 3), the dimension of Authentic leadership has a significant relationship with the PSIR with a p-value of <0.001 ($p < 0.05$). Authentic leadership requires leaders to have their behavior and beliefs in line with showing thoughts, attitudes, and actions. Based on the description of authentic leadership in this study, the highest mean score is the action of hospital management, showing that patient safety is a top priority. Leaders are aware of the importance of patient safety, which will result in policies that favor patient safety. Another research finding mentioned a positive relationship between leaders and subordinates in the reporting structure. Every time a safety incident is reported, nurses must be informed about the organization's follow-up actions (e.g., dissemination of information about the follow-up plan as a consequence of the report) to maintain motivation in reporting future incidents (Jungbauer et al., 2018).

Authentic leaders involve others, request, listen to and consider opinions that do not match their personal beliefs to produce fair and objective decisions (Kupperschmidt et al., 2010). Changes in leadership patterns occur along with conditions that continue to develop dynamically, institutional structures that continue to change systematically, and social cultures that develop along with patient safety needs. Leadership is a competency that can only be measured by its outcomes: achieving high patient safety.

On the other hand, Tage et al. (2021) mentioned that the obstacles in incident reporting are due to the lack of leadership's ability to provide appropriate strategies to improve patient safety incident reporting on a scheduled and continuous basis.

Table 4. Results of Linear Regression Multivariate Modeling of Variables Associated with Patient Safety Incident Reporting at Hospital X

Dependent Variable	Independent Variable	Regression coefficient	Standardized Coefficients (B)	Value	Desc.
Patient Safety Incident Reporting	Constant	40,058		0,000	Significant
	communication	0.424	0.149	0.041	Significant
	Appropriate Staff	0.624	0.293	<0.001	Significant
	Meaningful Recognition	0.956	0.392	<0.001	Significant
α		0.05			
R		0.68			
Coefficient of determination (R ²)		0,462 (46%)			

Based on Table 4, of the six independent variables, only 3 are included in the model, including skilled communication, staff suitability, and meaningful recognition, with their respective p values (0.041; <0.001; <0.001). The p-value is <0.05 or significant. From the results of this multiple linear regression analysis, the regression equation model is obtained as follows: Patient safety incident reporting = 40.058 + 0.424 (Skilled communication) + 0.624 (Staff suitability) + 0.956 (Meaningful recognition).

From the results of this multiple linear analysis, the most influential factor on patient safety culture is the meaningful recognition factor with the highest Standardized Coefficient Beta value of 0.392 with a sig value <0,001

Meaningful recognition increases nurses' engagement in their work, commitment to the organization's mission, and delivery of high-quality care. (Brubakk et al., 2021; Malinowska-Lipień et al., 2021; Zwickel et al., 2016). In that regard, lack of recognition in reporting patient safety incidents from leaders, fellow nurses, or other health professionals may be a risk factor contributing to a sense of indifference to reporting incidents (Godsey et al., 2020). Therefore, a growing organization requires creativity, support, and involvement of staff who can influence the decision-making process, especially in reporting patient safety incidents.

In principle, the incident reporting system should be well organized, clear, and reported within a maximum of 2x24 hours. Continuous reporting between the reporter and the recipient of the report can make it easier to identify the incident's root cause and prevent it from recurring so that nurses' patient safety awareness improves (De Fatima et al., 2019; Peerally et al., 2017). In this regard, nurses need to understand the patient's condition and any medications, procedures, or treatments the patient is receiving to identify potential problems, education strategies, collaborative shared decision-making, and communication.

CONCLUSION

A healthy nurse work environment has a role in influencing patient safety incident reporting in hospitals. Meaningful recognition is the most dominant dimension among the sixth dimensions of a healthy work environment in reporting patient safety incidents. Meaningful recognition needs to be considered in making strategies to improve incident reporting. Recognition related to the functional tasks performed, recognition of clear rewards

and punishments, and recognition in the form of follow-up plans for changes from the problems found so that there is learning in the future.

Hospitals need to create regulations and continuous training programs so that nurses can communicate in various cases and situations, collaborate with other units or professions in making problem-solving decisions, practice critical thinking according to their abilities, hone leadership skills, and get recognition from other individuals for their abilities and learn to appreciate the abilities and limitations of others in a team.

Researchers assume that the measurement of safety incident reporting will be complete if carried out by direct observation using more diverse instruments to get a picture of a healthy work environment. The multiple linear regression model in this study could only conclude that the variables in the study only influenced patient safety incident reporting by 46.2%. The remaining 53.8% was caused by other factors not examined in this study.

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