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RESEARCH ARTICLE

Influence of Patient Safety Culture on Medication Administration Error among Nurses and Midwives at Restu Ibu Hospital in Balikpapan, Indonesia

Niken Dayu Anggraini[1*], Fridawaty Rivai [2], Syahrir A. Pasinringi [2], Indahwaty Sidin[2,3], Herlina Hamzah[2], Khalid Saleh[4]

[1]Master Program in Hospital Administration Faculty of Public Health, Hasanuddin University, Makassar, Indonesia
[2]Hospital Administration Study Program, Faculty of Public Health, Hasanuddin University, Makassar, Indonesia
[3]Hasanuddin University Teaching Hospital, Makassar, Indonesia
[4]Department of Cardiology, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia

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***Corresponding Author:**

anggrainiqueen@yahoo.com

ABSTRACT

Patient safety has become a global issue and is an important component of the quality of health care in hospitals. Patient safety is an important aspect to ensure the continuity of quality health services, protect patients, and prevent serious or potential risks that may arise and threaten the health of patients. The purpose of this study is to analyze the influence of patient safety culture on Medication Administration Error among nurses and midwives in Restu Ibu Hospital Balikpapan. This research is a quantitative research with analytic observational research design with cross-sectional approach. The results showed that the dimension of open culture on patient safety culture affects Medication Administration Error, the dimension of fair culture on patient safety culture affects Medication Administration Error, the dimension of reporting culture on patient safety culture affects Medication Administration Error, the dimension of learning culture on patient safety culture affects Medication Administration Error, simultaneously the variables of open culture, fair culture, reporting culture, and learning culture affect Medication Administration Error, with the highest influence on fair culture. It is recommended that hospital management foster a culture of fairness by promoting support for patient safety with fairness where staff can report problems without fear of blame, as well as ensuring clear and accessible patient safety policies.

INTRODUCTION

Patient safety incidents themselves have a high incidence rate and cause great losses. On the basis of WHO data from 2018, approximately 1 in 10 patients experienced incidents in health services, and more than 3 million deaths occurred each year due to unsafe services. These patient losses have the potential to reduce global economic growth by 0.7% per year. On a global scale, indirect losses amount to trillions of US dollars annually (Slawomirski et al., 2018). Given the magnitude of the losses experienced, it is important to know the causes of patient safety incidents so that preventive measures can be taken.

The most common cause of patient safety incidents is medication errors. Medication-related incidents are experienced by 1 in every 30 patients in healthcare settings, with more than a quarter of these incidents categorized as fatal or life-threatening (WHO, 2023). A landmark IOM report estimated that medication errors cause 44,000--98,000 deaths in the US each year. However, medication errors are the single most preventable cause of patient injury (William, 2007).

The importance of preventing medication errors is because this problem occurs not only in developed countries but also in low- to middle-income countries, where as many as 4 out of 100 people die from medication errors and cause significant harm (Lachman et al., 2022). However, studies on medication errors are very limited in Southeast Asian countries. A literature review conducted on medication errors in Southeast Asian countries, namely, Singapore, Malaysia, Thailand, Vietnam, the Philippines, and Indonesia, revealed a lack of data due to minimal reporting and documentation. This is evidence of a weak reporting system in the region (Habibah & Dhamanti, 2021a; Salmasi et al., 2015).

Indonesia also experiences weaknesses in the patient safety reporting system, as most of the reported cases are only severe and sentinel cases, with a sizable number. According to data from the Directorate General of Health Services in 2019, the number of patient safety incidents reported in Indonesia reached 10,570 cases (Adriansyah et al., 2021). Despite the high number of incidents recorded, a study conducted in 2019 with 16 national, provincial, and municipal organizations in Indonesia concluded that incident reporting has not implemented a reporting system according to WHO standards. Furthermore, the understanding and appreciation of the reporting system by officers at every level is generally lacking. This illustrates the low implementation of patient safety culture in Indonesia (Dhamanti et al., 2019).

In East Kalimantan, research results also show that the number of medication errors is still high, with minimal reporting of mild to moderate cases. A study at Samarinda Medika Citra Hospital in 2020 reported an average incidence of medication errors of 52 cases per year (Larasasih, 2020). Another study conducted at Panglima Sebaya Grogot Hospital in 2020 reported 26 cases of medication error (Kusuma, 2021). These data highlight the high number of cases of medication error, which is often caused by the nonoptimal culture of patient safety in hospitals (Dhamanti et al., 2019; Fadillah & Nisa, 2018). High cases of medication errors and low patient safety culture also occur in hospitals in Balikpapan, as listed in Table 1, with the highest data in Restu Ibu Hospital. Data on medication error cases at Restu Ibu Hospital in the last three years taken from the Quality Committee data averaged 17 cases per year (61.4% of all events). The problem of medication errors from year to year is still a problem and has never even reached the zero incident target as targeted in the Minimum Hospital Service Standards, so further study needs to be done.

Patient safety culture at Restu Ibu Hospital is also a problem. The last patient safety culture survey in Restu Ibu Hospital, Balikpapan, was conducted in 2022 via the Hospital Patient Safety Culture Survey instrument. The results revealed that the patient safety culture was 62.41%, which did not reach the expected target of 75%, with the lowest dimension being incident reporting. This means that case reports of patient safety incidents, including recorded medication errors, are very likely still underreported. The results of the interviews with the Quality Committee of Restu Ibu Hospital also revealed that patient safety culture surveys are not routinely carried out; thus, there is no routine and adequate review and follow-up to improve existing deficiencies. Research on medication errors, especially in the administration phase, is also still rare, although almost all KTD events at Restu Ibu Hospital occur in the administration phase involving nurses and midwives.

This study aims to examine the influence of patient safety culture on medication errors among nurses and midwives in Restu Ibu Hospital, Balikpapan, Indonesia.

MATERIALS AND METHODS

Location and research design

This type of research is quantitative and uses an observational analytic design with a cross-sectional approach. This study was conducted at Restu Ibu Hospital Balikpapan from February - August 2024.

Population and sample

The population in this study included nurses and midwives at Restu Ibu Hospital in Balikpapan. The population in this study consists of nurses and midwives at Restu Ibu Hospital, Balikpapan, with 150 samples.

Data collection method

The instrument used in data collection is a questionnaire. The questionnaire used in this study was first tested for validity and reliability. All statements were declared valid and reliable on the basis of the results of the validity and reliability tests via the SPSS program, where all statements from the statement items in the questionnaire were declared valid and reliable.

Data analysis

Univariate analysis was conducted to obtain an overview of the research problem by describing each variable used in the study and the characteristics of the respondents. Univariate analysis consists of descriptive analysis of respondent characteristics, descriptive analysis of research variables and cross-tabulation analysis between respondent characteristics and research variables. Bivariate analysis was conducted to determine the relationship between two variables, namely, between the independent variable and the dependent variable, via the chi-square test, and multivariate analysis was performed via logistic regression.

RESULTS

Univariate analysis

Frequency distribution of the general characteristics of the respondents

The characteristics of the respondents included position/profession, gender, installation/work unit, age, latest education, length of work in the hospital, length of work in the installation/unit, average working hours during the week, and patient safety training experience.

Table 1 Frequency distribution of the general characteristics of the respondents

Characteristics	Sample	
	N	%
Profession		
Midwife	22	14.67
Nurse	128	85.33
Sex		
Female	144	96.00
Male	6	4.00
Work Unit		
Emergency Unit	24	16.00
Intensive Care Unit	21	14.00
Operating Room Unit	19	12.67
Inpatient Unit	28	18.67

Characteristics	Sample	
	N	%
Outpatient Unit	18	12.00
Obstetrics and Perinatology Unit	12	8.00
Hemodialysis Unit	15	10.00
Medical Rehabilitation Unit	13	8.67
Age (years)		
25-29	36	24.00
30-34	35	23.33
35-39	45	30.00
40-44	21	14.00
45-49	8	5.33
50-54	4	2.67
55-59	1	0.67
Education		
Master/PhD	8	5.33
Registered Nurse/Midwife	98	65.33
Bachelor Nurse/Midwife	9	6.00
Diploma IV Nurse/Midwife	17	11.33
Diploma III Nurse/Midwife	18	12.00
Length of Service in Hospital		
< 1 Year	11	7.33
1-5 Years	44	29.33
6-10 Years	62	41.33
> 11 Years	33	22.00
Length of Service in Current Unit		
< 1 Year	11	7.33
1-5 Years	44	29.33
6-10 Years	62	41.33
> 11 Years	33	22.00
Weekly Average Working Hours		
< 30 hours per week	0	0
30-40 hours per week	114	76.00
> 40 hours per week	36	24.00
Patient Safety Training		
Ever	139	92.67
Never	11	7.33

Table 1 shows the characteristics of the respondents in terms of their position or profession; the majority of the respondents were nurses (128 people; 85.33%), whereas 22 (14.67%) were midwives. In terms of gender, most respondents were female, 144 (96.00%), whereas only 6 (4.00%) were men. The characteristics of respondents based on work units show that inpatient installation has the highest number of respondents, namely, 28 people (18.67%), followed by emergency

department installation, with as many as 24 people (16.00%), and intensive care installation, with 21 people (14.00%). Other work units, such as the operating room installation, outpatient installation, and obstetric and perinatal installation, had fewer respondents. In terms of age, 45 (30.00%) of the respondents were 35--39 years old, 36 (24.00%) were 25--29 years old, and 35 (23.33%) were 30--34 years old. Only a few respondents were over 50 years old, with the proportion decreasing significantly at ages above 60 years. The characteristics of the respondents, on the basis of their latest education, revealed that the majority had a Bachelor's degree in Nursing or Midwifery Profession, as many as 98 people (65.33%), whereas 35 people (23.33%) had a D3 or D4 education. Only a small proportion had Master's (S2) or Doctoral (S3) education in nursing or midwifery. The characteristics of the respondents in terms of length of service in the hospital and work unit showed a similar pattern, where most respondents had worked for 6--10 years (41.33%). In addition, approximately 29.33% of the respondents had worked for 1--5 years, whereas only a few had worked for less than 1 year or more than 11 years. The characteristics of the respondents in terms of average working hours per week were dominated by those who worked for 30--40 hours per week (76.00%), with the rest working more than 40 hours per week (24.00%). The characteristics of the respondents based on patient safety training experience revealed that the majority of them, namely, 139 people (92.67%), had received patient safety training, whereas 11 people (7.33%) had never received such training.

Table 2. Distribution of Respondents Based on Patient Safety Culture

Variable	Research Sample	
	N	%
Open culture		
High	132	88.0
Low	18	12.0
Just culture		
High	125	83.3
Low	25	16.7
Reporting culture		
High	132	88.0
Low	18	12.0
Learning culture		
High	137	91.3
Low	13	8.7
Medication administration error		
High	19	12.7
Low	131	87.3

On the basis of Table 2, out of 150 respondents at Restu Ibu Hospital Balikpapan, 132 respondents (88.0%) assess the level of open culture as positive, whereas the other 18 respondents (12.0%) assess open culture as negative. Out of 150 respondents in Restu Ibu Hospital Balikpapan, 125 respondents (83.3%) assess the level of just culture as positive, whereas the other 25 respondents (16.7%) assess just culture as negative. Out of 150 respondents at Restu Ibu Hospital Balikpapan, 132 respondents (88.0%) assess the level of reporting culture as negative. Out of 150 respondents in Restu Ibu Hospital Balikpapan, 137 respondents (91.3%) assessed the level of learning culture as positive, whereas the other 13 respondents (8.7%) assessed learning culture as negative. Out of 150 respondents in Restu Ibu Hospital Balikpapan, 19 respondents (12.7%) considered the medication

administration error level positive, whereas 131 respondents (87.3%) considered the medication administration error negative.

Bivariate Analysis

Relationship between open culture and medication administration errors

Table 3. Relationship between open culture and medication administration errors

Open culture	*Medication administration error*				Total		*P*
	Low		High				
	N	%	n	%	N	%	
Low	0	0.0%	18	94.74	18	12%	0.000
High	131	100%	1	5.26	132	88%	
Total	131	87.3%	19	12.7	150	100.0	

Table 3 shows that out of 18 respondents (12%) with a culture of openness in the low category made medication administration errors in the low category as well, namely, 0 respondents (0%) and 18 respondents (94.74%) who made medication administration errors in the high category. Conversely, 132 respondents (88%) with a high degree of openness made medication administration errors in the high category as well, namely, 1 respondent (5.26%), whereas 131 respondents (100%) made medication administration errors in the low category. A p value = 0.000 was obtained because the p value = <0.05 when Ho was rejected, which means that there was a statistically significant effect of open culture on medication administration error at Restu Ibu Hospital Balikpapan.

Relationship between just culture and medication administration errors

Table 4. Relationship between just culture and medication administration error

Just culture	*Medication administration error*				Total		*P*
	Low		High				
	N	%	n	%	N	%	
Low	7	5.34%	18	94.74	25	16.67%	0.000
High	124	94.66%	1	5.26	125	83.33%	
Total	131	100%	19	100	150	100%	

Table 4 shows that 25 respondents (16.67%) with a fair culture in the low category made medication administration errors in the low category as well, namely, 7 respondents (5.34%) and 18 respondents (94.74%) who made medication administration errors in the high category. Conversely, out of 125 respondents (83.33%) with a highly fair culture, 1 respondent (5.26%) made medication administration errors in the high category as well, whereas 124 respondents (94.66%) made medication administration errors in the low category. A p value = 0.000 was obtained because p value <α = 0.000<0.05; thus, Ho was rejected, which means that there was a statistically significant effect of just culture on medication administration error at Restu Ibu Hospital, Balikpapan.

Relationship between reporting culture and medication administration errors

The results of the analysis of the effect of reporting culture on medication administration error are shown in the following table.

Table 5. Relationship between reporting culture and medication administration errors

Reporting culture	*Medication administration error*				Total		*P*
	Low		High				
	N	%	n	%	N	%	
Low	0	0%	18	94.74	18	12%	0.000
High	131	100%	1	5.26	132	88%	
Total	131	100%	19	100	150	100.0	

Table 5 shows that out of 18 respondents (12%) with a low reporting culture, they made medication administration errors in the low category as well, namely, 0 respondents (0%) and 18 respondents (94.74%) who made medication administration errors in the high category. Conversely, out of 132 respondents (88%) with a high reporting culture, 1 respondent (5.26%) made medication administration errors in the high category as well, whereas 131 respondents (100%) made medication Administration errors in the high category. The statistical test results yielded a p value = 0.000 because the p value <α = 0.000<0.05; thus, Ho was rejected, which means that there was a statistically significant effect of reporting culture on medication administration errors at Restu Ibu Hospital Balikpapan.

Relationship between learning culture and medication administration errors

The results of the analysis of the effect of learning culture on medication administration error are shown in the following table.

Table 6. Relationship between learning culture and medication administration errors.

Learning culture	*Medication administration error*				Total		*P*
	Low		High				
	N	%	n	%	N	%	
Low	0	0%	13	68.42	13	8.67%	0.000
High	131	100%	6	31.58	137	91.33%	
Total	131	100%	19	100	150	100.0	

Table 6 shows that out of the 13 respondents (8.67%) with a low degree of education, medication administration errors were in the low category as well, namely, 0 respondents (0%) and 13 respondents (68.42%) who made medication administration errors in the high category. Conversely, out of 137 respondents (91.33%) with a strong learning culture, 6 respondents (31.58%) made medication administration errors in the high category, whereas 131 respondents (100%) made medication administration errors in the low category. A p value = 0.000 was obtained because p value <α = 0.000<0.05; thus, Ho was rejected, which means that there was a statistically significant effect of learning culture on medication administration error at Restu Ibu Hospital, Balikpapan.

Multivariate Analysis

A multivariate test is conducted to find the direct or indirect effects between variables, i.e., between the variables of openness culture, fair culture, report culture, and learning culture and the variable

of medication administration error. The following are the results of logistic regression analysis on the variables of interest in this study.

Table 7. Multivariate Analysis Results

Variable	B	S.E.	Wald	Sig.	Exp(B)
Open culture	-.056	.063	10.298	.000	.923
Just culture	.040	.068	2.101	.000	.960
Reporting culture	.071	.089	1.393	.000	.848
Learning culture	-.001	.070	13.492	.000	.890
Constant	1.503	.204		.000	

On the basis of the variables in the equation table, the value of Constant (Bo) = 1.503, the logistic regression coefficient value for the independent variable openness culture (B1)=-0.56, fair culture (B2)=0.40, report culture (B3)=0.071, and learning culture (B4)= -0.001. The p value of the variables of openness culture, fair culture, reporting culture, and learning culture is p=0.0000. By paying attention to the Exp(B) value, simultaneously/together, it is known that the fair culture variable has the greatest influence on the MAE, with an Exp(B) value = 0.960 and a p value of 0.000 = <0.05.

DISCUSSION

An open culture illustrates that all hospital staff feel comfortable discussing incidents that occur or topics about patient safety with teammates or managers. Staff feel confident that the main focus is on openness as a learning medium and not to find faults or punish them. Open communication can also be realized during patient handover, staff briefings or morning reports (Carthey & Claker, 2010). The results of the statistical tests revealed that patient safety culture from the open culture dimension influences medication errors among nurses and midwives at Restu Ibu Hospital, Balikpapan. The influence is shown by a p value = 0.000 because the p value < α = 0.000 < 0.05; thus, H1 is accepted (Ho is rejected). This finding shows that an open culture, which encourages openness and honest communication about errors, plays an important role in reducing medication errors.

The results of this study are in line with those of Suranto et al. (2020), who reported that openness has an influence on patient safety, with a value of p = 0.000. Openness is closely related to communication. Hospitals with many interprofessional interactions require strategies in the interprofessional communication process. Communication between officers will be better and more open if there is standardization of communication regarding what should be communicated to colleagues.

This is also in line with research conducted by Shin (2021), which shows that there is a positive relationship between patient safety culture and the intention to report medication errors (β = .26, p = .001). The study revealed that the lack of clear criteria for reporting medication errors and the burden of time and personal responsibility required for reporting can affect the level of openness in reporting medical errors. When medical institutions lack clear guidelines, staff may feel confused or uncertain about what to report, which may lead to uncertainty and reduce the motivation to report errors. In addition, if error reporting is perceived as an additional burden that requires extra time and effort, medical staff may feel burdened and less motivated to do so. This reduces openness in reporting, reduces transparency, and hinders efforts to improve patient safety.

The just culture dimension is a culture that presents an atmosphere of "trust" so that members are willing and motivated to provide data and information and involve patients and their families fairly in every therapeutic decision. Nurses and patients are treated fairly when incidents occur and do not focus on finding individual errors but rather on studying the system that resulted in the error. An

open and fair environment helps staff make honest reports about incidents that occur and use incidents as lessons in improvement efforts (Carthey & Claker, 2010).

The results of the statistical tests revealed that patient safety culture from the dimension of fair culture influences medication errors among nurses and midwives at Restu Ibu Hospital Balikpapan. The influence is shown by a p value = 0.000 because the p value < α = 0.000 < 0.05; thus, H1 is accepted (Ho is rejected). The results show that fair culture, which emphasizes fair assessment and does not punish individuals if mistakes occur, plays an important role in reducing medication errors. The results of this study are in line with research conducted by Suranto et al. (2020), who reported that in the cultural dimension of justice, there is an influence of nonpunitive responses to errors (p=0.001). The number of health workers greatly affects the quality of service received by patients; as the number of health workers is proportional to the number of health workers served, patient safety improves. Staff adequacy is said to be sufficient if hospital staff feel that the number of staff working in their unit is sufficient to implement patient safety while working. Research from Kim & Yu (2021) states that the results of the fair culture test (β=0.442, p<0.000) were then identified as a variable that had a statistically significant effect on patient safety activities and explained approximately 19.5% of the variance in patient safety activities. The results showed that nurses' performance in patient safety activities improved when they had a positive perception of a fair culture and a level of empowerment in the hospital.

Reporting culture is building an organizational climate where everyone is ready to report errors and near misses. The reporting culture dimension of patient safety culture refers to an atmosphere in which the reporting of safety incidents and risks is seen as an essential component of an effective safety management system. In this context, a reporting culture includes encouragement to report incidents and potential hazards without fear of punishment or retaliation. This is important for preventing more serious incidents by enabling early detection and remediation before problems develop further. According to Pronovost & Sexton (2009), building a strong reporting culture is key to improving patient safety and quality of care by enabling rapid identification and response to problems. The results of the statistical tests revealed that patient safety culture has an influence on medication errors among nurses and midwives at Restu Ibu Hospital, Balikpapan. The influence is shown by a p value = 0.000 because the p value < α = 0.000 < 0.05; thus, H1 is accepted (Ho is rejected). This finding indicates that when nurses and midwives feel supported in reporting errors without fear of negative consequences, they are more likely to report errors that occur, thus enabling faster identification and improvement.

The results of this study differ from research conducted by Ambarwati Lestari & Devi Fitriani (2021) at Mitra Medika Bandar Klippa Hospital, where the study revealed a relationship between the number of incident reports and patient safety incident reporting. In addition, this study revealed a relationship between handover and the transfer of patients between units and the reporting of patient safety incidents.

The results of the study by Moureaud et al. (2021) revealed that a safety culture that supports reporting was positively associated with the number of reported medication errors. The study also highlighted the importance of transparency in the reporting process by ensuring that any reported errors are thoroughly investigated and that corrective measures are taken. Data collected from error reports should be used for in-depth analysis to identify patterns and prevent future errors.

A learning culture is the process of learning from the event of an error, how it occurred, and the precautions that must be taken so that the error does not occur again, which then creates a continuous learning process that brings positive change. Learning culture is the process of learning from mistakes, how they happen, and the precautions that must be taken so that mistakes do not happen again, which then creates a continuous learning process that results in positive changes.

The results of the statistical tests indicate that patient safety culture from the learning culture dimension influences medication errors among nurses and midwives in Restu Ibu Hospital, Balikpapan. The influence is shown by a p value = 0.000 because the p value < α = 0.000 < 0.05; thus, H1 is accepted (Ho is rejected). This shows that a strong patient safety culture and learning orientation have a significant positive influence on reducing the frequency of medication errors. The results of this study are in line with those of Utami et al. (2023), who reported that the t value of 7.903 is greater than the t value of 1.975 (7.903>1.975) and that the significance value obtained is 0.000 less than 0.05 (0.000 <0.05). It can be concluded that Hypothesis IV, which states that Learning Culture affects the IKP Reporting Attitude, can be proven correct. The results of this study are in line with research conducted by Karmila et al. (2023) at Pelamonia Makassar Class II Hospital, where the learning culture, in this case, continuous learning improvement or learning culture, has a significant relationship with reporting patient safety incidents. This research is also in line with research conducted by Ambarwati Lestari & Devi Fitriani (2021), where the organizational learning process and continuous improvement, supervisors, managers or clinic leaders support patient safety, and hospital management support for patient safety is related to reporting patient safety incidents. Patient safety is the freedom from accidental injury. Accidental injury is caused by errors that include failure to plan or the use of the wrong plan to achieve a goal. Accidental injury is also the result of performing a wrong action (commission) or not performing an action that should have been performed (omission). Unintentional injury in practice takes the form of an undesirable event (almost always occurring) (Oliviany et al., 2023).

On the basis of the results of the statistical tests carried out on the variables in the equation table, the Constant value (Bo) = 1.503, the logistic regression coefficient value for the independent variable openness culture (B1)=-0.56, fair culture (B2)=0.40, report culture (B3)=0.071, and learning culture (B4)= -0.001. The p value of the variables of openness culture, fair culture, reporting culture, and learning culture is p = 0.0000. By paying attention to the p value, the variables of openness culture, fair culture, reporting culture, and learning culture affect the MAE simultaneously, with a p value of 0.000 < 0.05. This finding shows that implementing and strengthening a patient safety culture that includes openness, fairness, reporting, and learning can effectively reduce errors in drug administration, which ultimately improves patient safety. Research from Lee & Dahinten (2021), which showed the results of regression analysis after considering hospital characteristics and grouping of nurses within the hospital, revealed that staff adequacy (odds ratio (OR) = 2.57, 95% confidence interval (CI) = 2.35--2.81) was the strongest predictor of patient safety. This was followed by hospital management support for patient safety (OR = 2.41, CI = 2.19--2.66), continuous improvement in organizational learning (OR = 2.04, CI = 1.81--2.30), open communication (OR = 1.75, CI = 1.58--1.93), supervisor/manager expectations and actions to improve safety (OR = 1.45, CI = 1.30--1.62), and feedback and communication about errors (OR = 1.29, CI = 1.16--1.44). The study revealed that nurses who felt that they had enough staff to provide quality care were approximately two and a half times more likely to report that patient safety in their unit was excellent or very good than nurses who felt understaffed. In addition, nurses who felt that they had high support from hospital management for patient safety were more than twice as likely to report patient safety as excellent or very good as nurses who felt that they had low management support. Nurses who perceived ongoing organizational efforts to improve patient safety were also twice as likely to report patient safety as excellent or very good than nurses who perceived lower organizational commitment. In addition, nurses were more likely to rate patient safety in their unit highly if they perceived open communication, supervisor/manager expectations and actions, and good feedback and communication about errors. In contrast, nonpunitive response to errors was significantly associated with nurses' patient safety ratings in unadjusted analyses.

The results revealed that the dimension of open culture in patient safety culture affects Medication Administration Error, the dimension of fair culture in patient safety culture affects Medication

Administration Error, the dimension of reporting culture in patient safety culture affects Medication Administration Error, the dimension of learning culture in patient safety culture affects Medication Administration Error, and the variables of open culture, fair culture, reporting culture, and learning culture affect Medication Administration Error, with the greatest influence on fair culture. It is recommended that hospital management foster a culture of fairness by promoting support for patient safety with fairness where staff can report problems without fear of blame, as well as ensuring clear and accessible patient safety policies.

AUTHORS' CONTRIBUTIONS

NDA: Conceptualization, methodology, data collection, data analysis, and manuscript drafting.

FR: Methodology, supervision, critical revision, and final approval of the manuscript.

SAP: Data analysis, supervision, critical revision, and final approval of the manuscript.

IS: Statistical analysis, literature review, and critical revision of the manuscript.

HH: Project design, data analysis, literature review, and critical revision of the manuscript.

KS: Data analysis, reviewer and critical revision of the manuscript.

All authors have read and approved the final version of the manuscript and agree to its submission.

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