

# NURSES' PERCEPTION ON PATIENT SAFETY CULTURE IN CRITICAL CARE AREA AT A TERTIARY HOSPITAL IN PAHANG, MALAYSIA

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## ABSTRACT

**Background:** Patient safety culture is important in measuring the quality of health care. There is a need for the establishment of patient safety culture in hospitals as it is one of the global issues that requires attention. Issues such as medication errors are the third leading cause of death in the US and approximately one in ten patients have been reported being harmed while receiving hospital treatment. Adverse events such as bed falls, adverse drug effects, infections, work overload and absenteeism have become the matters of risk for the patient's safety. Nevertheless, research that is related to patient safety were less studied in the healthcare area especially dealing with ill patients in the Intensive Care Unit (ICU). **Methods and Materials:** A cross sectional study design was employed to explore critical care nurses' perceptions on patients' safety culture using a set of questionnaires (HSOPSC) distributed to 144 nurses in critical care areas with a response rate of 81.3% (n=117). The data was analysed using the Statistical Package for Social Sciences (SPSS) 20.0 for descriptive and inferential analysis. **Findings:** The positive response that met the criteria (AHRQ >75%) were organizational learning (80.8%), feedback and communication about errors (78.9%) and teamwork within units (78.4%). No relationship was seen between nurses' ages, educational backgrounds, and experiences. However, there was a significant difference between the patient safety cultural dimensions and area of working units ( $p < 0.05$ ). **Discussion:** Critical Care nurses was found to have a positive patient safety culture attitude (positive response rates that met the criteria as stated by AHRQ's guidelines). Nurses' characteristics did not show any effect on their perception of patient safety cultural dimensions that are accepted in their workplace. Handling of patient safety matters might be different due to severity of cases. **Conclusion:** Overall the result shows positive attitude among Critical Care nurses towards the patient safety culture within their organizations.

**Keywords:** Patient Safety, Patient Safety Culture, Nurses' Perception, Patient Safety Culture in Critical Care

## INTRODUCTION

Patient safety had become a major concern in the medical field during the past few years as stated in the published report from Institute of Medicine (IOM., 2001; Kohn *et al.*, 2000). These reports stated the number of medical errors that occurred in the medical field in the United States. The study by Kohn *et al.*, (2000) found that 98,000 Americans died each year due to medical errors and it has become the third leading cause of death in the United States (Makary *et al.*, 2006). In addition, it was reported that approximately one of ten patients had been harmed while receiving healthcare in the hospital (de Vries *et al.*, 2008) and the common errors that occurred in hospitals were falls from bed, clinical and surgical complications, medication errors and infection (Bampi *et al.*, 2017). Based on the Ministry of Health Malaysia, patient safety is defined as the absence of preventable harm to a patient during the process of health

care administration. Batcheller *et al.* (2004) defined patient safety as an avoidance and prevention of injuries and adverse events in delivering health care. Furthermore, in the report of "To Err is Human: Building a safer health system" by Kohn *et al.*, (2000), patient safety is defined as "freedom from accidental injury and ensuring patient safety by involving the establishment of operational systems and processes that can minimize the errors". However, in response to the increased number of patients that had been harmed, healthcare organizations need to find ways in order to maintain and improve patient safety by implementing patient safety culture individually and organizationally. This is because developing, maintaining and sustaining a strong safety culture is seen as imperative to the safe delivery of healthcare, high quality and cost-effective patient care (IOM, 2004; Weingart *et al.*, 2004). The aim of this study is to investigate the nurses' perceptions in ensuring patient safety culture in critical care areas.

## METHODOLOGY

A cross-sectional study was done in the critical care areas of the hospital. In the first phase, the researchers needed to identify suitable participants according to the inclusion and exclusion criteria as the samples for the research. The researcher gave an envelope consisting of questionnaire sets with an information sheet and a written consent form attached to each set. In the second phase, the questionnaires were distributed to the respondents within 2 months. Following that, all the data were combined; descriptive as well as inferential analyses were conducted using the Statistical Package for Social Science (SPSS) software version 20.0. The p-value was set at 0.05.

A total of 144 staff nurses met the inclusion criteria for this study without knowing their limitations. However, only 117 completed the questionnaires and returned it back (response rate: 81.25%). The sample size calculated was based on Raosoft Sample Size Calculator with margin error of 5%, confidence interval of 95%, response rate of 50% and drop out of 10%. The participants of this study were recruited by convenience sampling due to a limited number of critical care nurses. The inclusion criteria of this study were (a) RN U29 and U32, (b) work in the ICUs, PICU, NICU and CCU, (c) with more than 6 months working experience, (d) able to read and understand, (e) agree to participate and (f) all the races. Meanwhile, the exclusion criteria of this study were (a) nurses who were on long leave (maternity, study and unpaid leave) and (b) worked for less than 6 months.

The Hospital Survey on Patient Safety Culture (HSPOSC) Questionnaire (Agency for Healthcare Research and Quality, 2013) consists of 42 items which include 12 safety-culture dimensions – (a) Supervisor/Manager Expectations, (b) Organizational Learning, (c) Teamwork within Units, (d) Communication, (e) Feedback and Communication Regarding Error, (f) Non-Punitive Response to Error, (g) Staffing Matters, (h) Support of Hospital Management, (i) Teamwork across Units in Hospital, (j) Hospital Handoffs, (k) Overall Perceptions of Patient Safety, (l) Frequency of Event Reporting, (m) Patient Safety Grade, (n) Number of Events Reported – were used in this study. The questionnaire used a Likert-type response score from 1 to 5 which were strongly disagree, disagree, neither, agree and strongly agree. The total Cronbach's alpha for 44 items in Hospital Survey on Patient Safety Culture (HSOPSC) is 0.88 (Aboshaiqah, 2010).

The study was approved by the university Research

Ethics Committee, and Medical Research and Ethics Committee (MREC). Permission was also obtained from participants to participate in the study through a written consent form for them to sign; the details about the participants were disclosed for the sake of the study only and kept confidential. They had the right to refuse from being a participant in the study if they think that the study would not bring any benefit to them or the community; there were no penalties or consequences if they withdrew from the study.

## RESULTS

### Socio-Demographic Characteristics

Table 1 summarizes the socio-demographic data where the majority are mostly female (97.4%, n=114). Their ages were mostly from 20 to 30 years (43.6%, n=51) and 31 to 40 years (43.6%, n=51), while the rest were from 41 to 50 years old and 51 to 60 years old with 6.0% (n=7) and 6.8% (n=8) respectively. As for the education level of the participants, more than 75.2% (n=88) of them were diploma holders and 23.1% (n=27) were baccalaureate degree holders. Less than 1.7% (n=2) of the nurses furthered their studies in post basic but none of them had masters.

As this study was conducted in five different areas, 29.1% (n=34) of the respondents were nurses who worked in the Intensive Care Unit 1 (ICU 1), 25.6% (n=30) of them worked in the Paediatric Intensive Care Unit (PICU) and 21.4% (n=25) worked in Intensive Care Unit 2 (ICU 2). The respondents who worked in Neonatal Intensive Care Unit (NICU) and Cardiac Care Unit (CCU) were 14.5% (n=17) and 9.4% (n=11) respectively. With regard to the length of time nurses worked in this nursing profession, most of them worked from 6 to 10 years (41%, n=48), while approximately 27.4% (n=32) worked from 1 to 5 years, and 22.2% (n=26) of them worked from 11 to 15 years as a nurse. However, less than 6% (n=7) of the respondents worked for 16 to 20 years, 2.6% (n=3) worked for less than 1 year, and only 0.9% (n=1) worked for more than 21 years.

With regards to the duration of working in that particular hospital, 40.2% (n=47) of the respondents had 1 until 5 years and 29.1% (n=34) of them already worked for 6 to 10 years. However, some of the respondents had worked for 11 to 15 years (19.7%, n=23) and 16 to 20 years (9.4%, n=11). Less than 0.9% (n=1) had less than 1 year and more than 21 years working experience in that hospital.

**Table 1: Socio-Demographic Data of the Respondents**

Demographic		Frequency (n)	Percentage (%)
Gender	Male	3	2.6%
	Female	114	97.4%
	Total	117	100%
Age	20 – 30 years	51	43.6%
	31 – 40 years	51	43.6%
	41 – 50 years	7	6%
	51 – 60 years	8	6.8%
	Total	117	100%
Level of Education	Diploma	88	75.2%
	Degree	27	23.1%
	Post-Basic	2	1.7%
	Total	117	100%
Years in Nursing Profession	Less than 5 years	3	2.6%
	1 – 5 years	32	27.4%
	5 – 10 years	48	41%
	11 – 15 years	26	22.2%
	16 – 20 years	7	6%
	21 years and above	1	0.9%
	Total	117	100%
Work Unit	ICU 1	34	29.1%
	ICU 2	25	21.4%
	PICU	30	25.6%
	NICU	17	14.5%
	CCU	11	9.4%
	Total	117	100%
Length of time working at current hospital	Less than 1 years	1	0.9%
	1 to 5 years	47	40.2%
	5 to 10 years	34	29.1%
	11 to 15 years	23	19.7%
	16 to 20 years	11	9.4%
	21 years and above	1	0.9%
	Total	117	100%

**Critical Care Nurses' Perception Regarding Patient Safety Culture**

Table 2 summarized the percentage of positive responses in the Hospital Survey on Patient Safety Culture questionnaires ranging from 59.4% to 80.8% where the highest was organizational learning (80.8%) and the lowest percentage being hospital handoffs and transitions (59.4%). There were four dimensions of patient safety culture of which the positive response rates were less than 70% such as overall perception of safety (69.6%), non-punitive responses to error (68.2%), teamwork across hospital units (67.2%), communication openness (66.6%), staffing (65%), frequency of events reported (64.6%) and hospital handoffs and transition (59.4%).

**Table 2: Percentage of Positive Responses of Patient Safety Culture Dimensions**

Patient Safety Culture Dimensions	% Positive Responses
Supervisor / manager expectation	71%
Organizational Learning	80.8%
Teamwork within units	78.4%
Feedback and communication about error	78.9%
Non - punitive response to error	68.2%
Staffing	65%
Communication Openness	66.6%
Hospital management support	73%
Teamwork across hospital units	67.2%
Hospital handoffs and transition	59.4%
Frequency of Event reported	64.6%
Overall perceptions of safety	69.6%

**Relationship between Critical Care Nurses' Socio-Demographic Data and Patient Safety Culture Dimensions**

A one-way ANOVA test was used to find the relationship between nurses' socio-demographic data and patient safety culture dimensions. The finding shows that there was no significant difference between respondents' ages and patient safety culture dimensions  $p > 0.05$ .

**Table 3: Relationship between Respondent's Ages with Patient Safety Culture Dimensions**

Patient Safety Culture Dimension	F	df	Asymp. Sig. (2-sided)
Supervisor / manager expectation	0.577	9	0.814
Organizational Learning	0.180	7	0.989
Teamwork within units	0.554	9	0.831
Feedback and communication about error	0.513	7	0.823
Non-punitive response to error	0.861	8	0.552
Staffing	0.874	10	0.560
Communication Openness	0.689	7	0.681
Hospital management support	0.734	7	0.643
Teamwork across hospital units	0.913	8	0.509
Hospital handoffs and transition	0.438	13	0.952
Frequency of Event reported	0.484	10	0.897
Overall perceptions of safety	1.574	7	0.151

However, in terms of respondents' educational background, the smallest result of the *p* value were teamwork within units (*p*=0.060), frequency of events reported (*p*=0.141) and hospital management support (*p*=0.268), while the *p* value of the rest of the dimension cultures were higher than 0.30.

**Table 4: Relationship between Respondent's Educational Backgrounds with Patient Safety Culture Dimensions**

Patient Safety Culture Dimension	F	df	Asymp. Sig. (2-sided)
Supervisor / manager expectation	0.525	9	0.854
Organizational Learning	0.441	7	0.875
Teamwork within units	1.898	9	0.060
Feedback and communication about error	0.695	7	0.676
Non-punitive response to error	0.646	8	0.737
Staffing	0.748	10	0.678
Communication Openness	0.474	7	0.852
Hospital management support	1.278	7	0.268
Teamwork across hospital units	0.393	8	0.922
Hospital handoffs and transition	0.852	13	0.605
Frequency of Event reported	1.523	10	0.141
Overall perceptions of safety	0.324	7	0.942

Furthermore, respondents' experiences in the nursing profession shows no influence on any of the patient safety cultural dimensions. This is based on the results in table 5, where no significant differences are seen in the *p* values between the years of working in nursing profession with the patient safety cultural dimensions.

**Table 5: Relationship between Respondents' Experience in Nursing Profession with Patient Safety Culture Dimensions**

Patient Safety Culture Dimension	F	df	Asymp. Sig. (2-sided)
Supervisor / manager expectation	0.856	9	0.567
Organizational Learning	0.904	7	0.507
Teamwork within units	1.205	9	0.299
Feedback and communication about error	1.046	7	0.403
Non-punitive response to error	0.370	8	0.934
Staffing	0.920	10	0.518

Communication Openness	0.618	7	0.740
Hospital management support	1.174	7	0.323
Teamwork across hospital units	0.958	8	0.473
Hospital handoffs and transition	0.873	13	0.584
Frequency of Event reported	0.996	10	0.451
Overall perceptions of safety	0.476	7	0.850

However, respondents' working units were found to have a significant difference with some of the patient safety cultural dimensions such as supervisors/manager expectations (*p*=0.004), organizational learning (*p*=0.004), feedback and communication about error (*p*=0.005), non-punitive response to error (*p*=0.000), hospital management support (*p*=0.014), hospital handoffs and transition (*p*=0.000) and frequency of events reported (*p*=0.004) as shown in Table 6.

**Table 6: Relationship between Respondent's Different Places of Working Unit with Patient Safety Culture Dimensions**

Patient Safety Culture Dimension	F	df	Asymp. Sig. (2-sided)
Supervisor / manager expectation	2.944	9	0.004
Organizational Learning	3.193	7	0.004
Teamwork within units	1.914	9	0.057
Feedback and communication about error	3.121	7	0.005
Non-punitive response to error	5.182	8	0.000
Staffing	1.324	10	0.227
Communication Openness	1.243	7	0.286
Hospital management support	2.659	7	0.014
Teamwork across hospital units	0.931	8	0.494
Hospital handoffs and transition	4.168	13	0.000
Frequency of Event reported	2.769	10	0.004
Overall perceptions of safety	1.367	7	0.227

**Relationship between Each Cultural Dimension**

Pearson's correlation was used in order to find the relationship between each patient safety culture dimension. Patient safety culture dimensions were positively correlated with other dimensions of patient safety culture.



**Table 7: The Correlation between Each Patient Safety Culture Dimension**

Patient Safety Culture Dimensions	1	2	3	4	5	6	7	8	9	10	11	12
Supervisor / Manager Expectations	1.0											
Organizational Learning	0.239**	1.0										
Teamwork Within Units	0.117	0.538**	1.0									
Feedback & Communication about Error	0.165	0.539**	0.349**	1.0								
Non-Punitive Response to Error	0.119	0.002	0.362**	-0.044	1.0							
Staffing	0.503**	0.183*	0.040	0.141	-0.069	1.0						
Communication Openness	0.267**	-0.023	0.000	-0.030	0.241**	0.150	1.0					
Hospital Management Support	0.097	0.145	0.161	0.157	0.159	0.178	0.030	1.0				
Teamwork across Hospital Units	0.319**	-0.029	0.205*	0.050	0.299**	0.342**	0.148	0.316**	1.0			
Hospital Handoffs and Transition	0.197**	-0.079	-0.006	-0.078	0.310**	0.255**	0.388**	0.206**	0.517**	1.0		
Frequency of Event Reported	0.055	0.122	0.050	0.309**	-0.014	-0.133	0.061	0.191*	-0.045	0.004	1.0	
Overall Perceptions of Safety	0.245**	0.327**	0.366**	0.246**	0.2308	0.297**	0.293**	0.153	0.279**	0.250**	-0.063	1.0

**DISCUSSION**

**Nurses' Perception Regarding Patient Safety Culture**

Critical care nurses were found to have a positive patient safety culture attitude as the percentage of positive response rates met the criteria in areas of strength as stated by AHRQ's guidelines. The positive response rate that was known to be an area of strength in the hospital were (1) Organizational Learning (80.8%), (2) Feedback and communication about Error (78.9%) and (3) Teamwork within Units (78.4%). The percentage showed that the hospital environment provided an organizational learning skill which supported nurses' education and development where the management took error as a serious thing that will give the opportunity for their staff to learn and improve their knowledge and skills. Besides that, the

hospital has moved towards a safer health system where the culture of blaming will not be treated as personal failures but more to an opportunity to improve the system and prevent harm from happening in the future (Kohn *et al*, 2000). However, in order to achieve a positive patient safety culture, a strong teamwork especially within units are important in order to deliver safe health care to the patients which can be demonstrated by good cooperation, collaboration and coordination in handling patient safety issues among the team members.

**Relationship between Nurses' Characteristics and Patient Safety Cultural Dimensions**

Nurses in critical care areas acknowledged their roles and responsibilities in serving for the patients and understand ways on how to improve and maintain patient

safety culture regardless of their ages since there was no association between respondents' ages and patient safety cultural dimensions. In addition, educational level and working experiences did not make any difference in changing the perception of nurses (Karadağ, 2016) in maintaining and improving patient safety. Experienced nurses or less experienced, both have good understanding and knowledge in ensuring their patients are safe. Furthermore, the nurses who worked in a different working unit had a different perception in handling patient safety matters (Mayo, 2004) as they might experience different severity of cases such as cardiac cases, burn cases, paediatric cases etc.

### Relationship between the Cultural Dimensions and Patient Safety Culture

The finding shows positive correlation among patient safety culture dimensions. However, there were dimensions such as non-punitive response to error, staffing, communication openness, teamwork across hospital units, hospital handoffs and transition, frequency of event reporting and overall perception of safety that were negatively significantly correlated with some of the patient safety culture dimensions. According to the results, the higher dimensions that have inter-correlation are feedback and communication about error and organizational learning which was  $r = 0.539$ .

### Study Limitations

The limitations that need to be acknowledged in this study was that the questionnaires were given in English and that might affect the understanding of the nurses even though they can read and understand English. However, HSOPSC questionnaires can be translated in

Bahasa Melayu in order to help nurses who are weak and have difficulties understanding English. Other than that, patient safety cannot be measured fully by using HSOPSC questionnaires as some of the problems of patient safety were due to the limitation of resources such as infrastructure. Finally, the hospital was randomly chosen, and the population was only focused on the nurses where the findings are not representing all hospitals in Malaysia as a whole.

### CONCLUSION

In order to counter the limitations, recommendations can be made in three areas such as nursing education, future research and nursing practice. As for nursing education, patient safety education, workshop and continuous education sessions can be implemented on nursing students and staff nurses. In addition, nurse educators should emphasize more on patient safety in nursing curricula. In terms of future research, researchers need to focus on perceptions of the nursing students on patient safety culture and also compare the perceptions of nurses who worked in different areas such as medical, surgical or specialized areas. However, important information and awareness can be provided to healthcare providers regarding the critical patient safety issues that arise in the healthcare setting.

Overall, the nurses in the hospital have a positive perception of patient safety by implementing a safe culture. Furthermore, the only factors affecting patient safety culture was the different working units and patient safety cultural dimensions that correlated positively with one another.

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