Relationship between Work Environment and Patient Safety Culture

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Abstract

Background: The Agency of Health Care Research and Quality in assessing patient safety culture in hospitals have several aspects of dimensions that need to be considered, that is the expectations and actions of supervisors / managers in promoting patient safety, learning of continuous improvement, teamwork in units, open communication, feedback on errors, no-blame responses, adequate staffing, overall perception, hospital management support, inter-unit teamwork, patient submission and transfer and frequency of incident reporting

***Materials and Methods*:** This study used a cross-sectional research design to obtain information about the relationship between the workplace environment and patient safety culture between resident physician and profession students. The sample (n = 105) consisted of 32 dental resident and 73 profession students. This questionnaire contained 34 questions that were distributed to subjects, data were collected and analyzed by SPSS software.

***Results*:** The work environment of dental hygienist has a close relationship with patient safety. Dental hygienist with 1-2 years of work experience, 2-8 years and more than 9 years have a significant relationship to patient safety culture. There was

no statistically significant difference in the amount of work per week to the patient safety culture (P> 0.05).

***Conclusion*:** Among the work environment in the oral and dental hospital of Hasanuddin University, only 1 aspect had a significant effect on patient safety culture variables, that is work experience.

***Keywords*:** resident physician, dentistry profession students, patient safety culture, work environment

INTRODUCTION

Patient safety is a basic principle in health care. According to the Indonesian Ministry of Health (2008) Hospital patient safety is a system in which hospitals make patient care safer. The system includes: risk assessment, identification and management of matters related to patient risk, incident reporting and analysis, the ability to learn from incidents and their follow-up and the implementation of solutions to minimize risks. The system is expected to prevent injuries caused by errors due to carrying out an action or not doing the action that should have been done.[1-3]

Some great reports on patient safety published by the Institute of Medicine (IOM), have encouraged public awareness about this issue. Patient safety cannot be influenced by organizational culture, and their relationship is usually known as "patient safety culture," which refers to the shared values and beliefs of organizational members, and organizational norms related to patient safety. Increased awareness of patient safety has raised concerns into patient safety culture. According to the IOM report, enhancing a patient safety culture is the biggest challenge in creating a safer health care system; it is affects the possibility of medical errors and personal failures. In addition, previous studies have focused more on patient safety culture in developed countries than in developing countries. In addition, it has been observed more in large public hospitals (tertiary hospitals) than in low level hospitals (secondary hospitals).[4-7]

Various study results, recommend to improve patient safety efforts by taking into cultural / climate patient safety issues at the initial stage. Surveys to measure the safety climate in hospitals are develop and used routinely and play a role in predicting the hospital's attention to patient safety. The Agency of Health Care Research and Quality in assessing patient safety culture in hospitals have several dimensions that need to be considered, that is the expectations and actions of supervisors / managers in promoting patient safety, continuous improvement learning, teamwork in units, open communication, feedback on error, no-blame response, adequate staff, overall perception, hospital management support, inter-unit teamwork, patient submission and transfer and frequency of incident reporting.[8-10]

One of the basic principles of patient safety is a patient safety culture, which refers to patient safety ranking as the highest priority during all health care and medical procedures in all health care facilities. Research on this culture is consistently increasing. Several studies have shown a significant relationship between the level of patient safety culture, the number of deaths in hospital, medication administration errors, and inpatient, and that the patient safety culture is positively related to the level of satisfaction among patients and patients' families.[11-14]

Accidents related to patient safety at health facilities, range from small problems to permanent damage and even death. The Institute of Medicine reports that deaths caused by preventable medical errors in health care facilities range between 44,000 and 98,000 per year in the United States. The Korea Centers for Disease Control and Prevention, estimates that 9.2% likelihood of medical accidents among inpatients in hospitals, 7.4% likelihood of death due to medical errors, and likelihood of prevention is 43.5%, that indicate the need for accident prevention. Work accidents are an urgent problem in the hospital environment. This is caused because the hospital is a health service unit that provides services in all fields and types of

diseases. Therefore the hospital is required to be able to provide and implement an effort so that all human resources in the hospital can be protected, both from illness and accidents due to work.[14-17]

Based on this background description, this study assesses patient safety culture in a sample of hospital dental hygienist in dental care facilities. In addition, find out the relationship between workplace environment and patient safety culture.

MATERIALS AND METHODS

This study uses a cross-sectional research design to find out the relationship between workplace environment and patient safety culture between resident physician and profession students. The sample (n = 105) consisted of 32 resident physician and 73 profession students. This questionnaire consisted of 38 items covered 10 aspects of patient safety culture: (1) eight questions about patient safety policies in the hospital unit, (2) five questions about feedback and openness of communication about patient safety, (3) three questions on supervisor/ manager democratic expectation/actions, (4) three questions on frequency of reported incidences, (5) four questions on within-unit teamwork for patient safety, (6) six questions on systems and procedures for patient safety, (7) three questions on strict manager responses to errors, (8) two questions on concerns about errors, (9) two questions on organizational training and responses, and (10) two questions on workload. Response options on all of the items were on five-point Likert-type scales, where 1=strongly disagree, 2=disagree, 3=neither agree nor disagree,4=agree, and 5=strongly agree.

Regarding approvement to participate, it is stated on the front page of the questionnaire that contains the consent form to participate in the research by signing the consent form.

The data obtained were analyzed using analysis of variance (ANOVA) that used to compare the meanings of knowledge, attitudes, and compliance scores while independent t-tests were used to compare whether the two sample groups had different mean values. The level of significance was set at $p < 0.05$ for all statistical tests.

RESULT

This research uses analytic observational research with cross sectional study design. With a total sample of 115 people in the Oral and dental Hospital of Hasanuddin University. Questionnaires with incomplete or unusable answers, were taken out, so that dental hygienist being 105 in the final analysis.

Table.1

Demographic data of participated respondents (n = 105)

Demografi		N(%)
Sex		
	Female	76 (72,4%)
	Male	29 (27,6%)
Department		
	Oral Surgery	10 (9,5%)
	IKGA	11 (10,5%)

	IKGM	6 (5,7%)
	Integration	7 (6,7%)
	IPM	5 (4,8%)
	Conservation	24 (22,9%)
	Periodontia	24 (22,9%)
	Prostodonsia	14 (13,3)
	Radiology	4 (3,8)
	Ortodontia	0 (0%)
Working experience		
	1-2 year	75 (71,4%)
	2-8 year	24 (22,9%)
	≥9 year	6 (5,7%)
Working hours per week		
	≤ 40 h	76 (72,4%)
	> 40 h	29 (27,6%)
Number of unit chair		
	≤ 7	49 (46,7%)
	8 – 13	17 (16,2%)
	14 – 25	15 (14,3%)
	≥ 26	24 (22,9%)
Number of patients per day per dental hygienist		
	≤ 8 patients	92 (87%)
	> 8 Patients	13 (13%)
Dental institution type		
	Clinic Level	0 (0%)
	Hospital Level	105 (100%)
Certification evaluation of dental institution		
	Certification	105 (100%)
	Non certification	0 (0%)

**analisi deskriptif*

Based on table 1, shown the frequency demographics of each variable, there are gender, age, and department variables, it can be seen in the gender variable, that the number of female respondents is higher than male respondents which is 76 respondents or 72.4% of the total for respondents women and 29 respondents or 27.6% of the total for male respondents, the difference between men and women is too far away, which is 47 respondents. For departmental variables, there are several categories, there are Oral Surgery, 10 respondents or 9.5%, IKGA of 11 respondents or 10.5%, IKGM of 6 or 5.7%, integration of 7 people or 6.7%, IPM of 5 respondents or 4.8%, 24 respondents or 22.9% of each conservation and periodontia, prostodonsia of 14 respondents or 13.3%, radiology of 4 respondents or 3.8% and nothing for orthodontia, we can find out that the most respondents came from the department of conservation and periodonsia. For respondent's work experience, it is found that the most respondents have 1 to 2 years work experience, there are 75 people or 71.4% of the total, while for 2 to 8 years work experience there are 24 respondents or 22.9% and 6 respondents for work experience above 9 years . In the variable of working hours per week, obtained that respondents who have working hours per week below or equal to 40 hours amount 76 respondents or 72.4% and 29 respondents or 27.6% for more than 40 working hours per week, for variable number of dental chairs obtained 49 respondents who have a number of seats below or equal to 7 seats, 17 respondents or 16.2% who have a number of seats 8 to 13 seats, 15 respondents or 14.3% who have 14 to 25 seats and there are 24 respondents or 22.9% which has more or equal to 26 seats. In the variable number of patients per day per dental hygienist were obtained 92 respondents or 87% who had less or equal to 8 patients and only 13 respondents or 13% had more than 8 patients, while for the type of dental institution and evaluation of dental certification obtained overall or 105 respondents who have certification and have a type of dental institution, that is hospital level.

Table 2

Average percent positive dimension score of all respondents (N = 105)

Dimension	Positive response rate	Mean ± SD
A. Patient safety policy across hospital units	30.5%	2.86±0.51
1–1 Things “fall between the cracks” when transferring patients from one unit to another	22.9%	2.51±1.09
1–2 Important patient care information is often lost during shift changes	23.8%	2.47±1.14
1–3 Problems often occur in exchange of information across hospital units	21.0%	2.53±1.05
1–4 Hospital units do not coordinate well with each other	15.2%	2.38±1.03
1–5 There is good cooperation among hospital units that need to work together	74.3%	3.82±0.78
1–6 It is often unpleasant to work with staff from other hospital units	12.4%	2.49±0.89
1–7 Hospital units work well together to provide the best care for patients	78.1%	3.96±0.84
1–8 Hospital management seems interested in patient safety only after an adverse event happens	30.5%	2.72±1.16
B. Feedback and openness of communication for patient safety	82.9 %	3.49±0.58
2–1 We are given feedback about changes put into place based on	47.6%	3.36±0.97

event reports		
2–2 We are informed about errors that happen in this unit	81.0%	3.8±0.75
2–3 In this unit, we discuss ways to prevent errors from happening again	78.1%	3.88±0.94
2–4 Staff will freely speak up if they see something that may negatively affect patient care	64.8%	3.59±1
2–5 Staff feel free to question the decisions or actions of those with more authority	28.6%	2.8±1
C. Supervisor /manager democratic expectation/actions	60%	3.17±0.46
3–1 My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures	80.0%	4.05±0.86
3–2 My supervisor/manager seriously considers staff suggestions for improving patient safety	62.9%	3.71±0.85
3–3 My supervisor/manager overlooks patient safety problems that happen over and over	4.8%	1.76±0.84
D. Frequency of events reported	49,5%	3.23±0.65
4–1 When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	78.1%	3.94±0.82
4–2 When a mistake is made, but has no potential to harm the patient, how often is this reported?	31.4%	3.02±0.93
4–3 When a mistake is made that could harm the patient, but does not, how often is this reported?	23.8%	2.72±1.03
E. Teamwork within units for patient safety	86,7%	3.9±0.74
5–1 People support one another in this unit	82.9%	4.09±0.77
5–2 When a lot of work needs to be done quickly, we work together as a team to gets the work done	81.0%	4.07±0.9
5–3 In this unit, people treat each other with respect	84.8%	4.17±0.86
5–4 We have enough staff to handle the workload	45.7%	3.27±1.08
F. System and procedure for patient safety	79,0%	3.4±0.42
6–1 We are actively doing things to improve patient safety	87.6%	4.11±0.68
6–2 After we make changes to improve patient safety, we evaluate their effectiveness	78.1%	3.91±0.83
6–3 When an event is reported, it feels like the person in being written up, not the problem	16.2%	2.46±1.01
6–4 We work in “crisis mode” trying to do too much, too quickly	33.3%	3.05±0.97
6–5 Our procedures and systems are good at preventing errors from happening	61.9%	3.62±0.79

6–6 Staff in this unit work longer hours than is best for patient care	41.9%	3.26±0.94
G. Strict manager response to error	71.4%	3.38±0.6
7–1 Staff are afraid to ask question the when something does not seem right	20.0%	2.54±1.1
7–2 Hospital management provides a work climate that promotes patient safety	60.0%	3.5±0.98
7–3 The actions of hospital management show that patient safety is a top priority	80.0%	4.1±0.81
H. Concern for error	49.5%	3.27±0.9
8–1 Staff feel like their mistakes are held against them	43.8%	3.12±1.05
8–2 Staff worry that mistakes they make are kept in their personnel file	52.4%	3.41±0.95

This study targets dental hygienist to examine the relationship between their workplace conditions and patient safety culture in their workplaces. Based on table 2, the proportion of positive responses about patient safety culture was 63.68%, which is higher than 50.4% as reported by previous studies. Some aspects of patient safety culture, such as patient safety policies in all hospital units have 30.5% positive responses with an average score of questionnaire answer is 2.86, which is quite low, for the aspects of Feedback and communication openness for safety patients, obtained 82.9% positive responses with an average score of the questionnaire answers is 3.49, which is above average, for the aspects of supervisor/ manager democratic expectation/actions, obtained 60% positive response to the average score of the questionnaire answers is 3.17% that shown above the average, for the aspect of the frequency of reported incidences, obtained 49.5% positive responses with an average score of questionnaire answers is 3.23, which is quite above average, for aspects of teamwork in the unit for patient safety obtained 86, 7% positive responses with an average score of questionnaire answers is 3.9, which is high enough, for the aspects of the system and procedures for patient safety obtained 79% positive response with an average score of questionnaire answers is 3,4, which is above average, for aspects of strict manager's response to errors obtained 71.4% positive responses with an average score of questionnaire answers is 3.38, which is above average, while the last for the aspect of Concern about error obtained 49.5% positive responses with an average of questionnaire answers is 3.27, which is considered to be on average. Among all the questions in questions 6-1 "We are actively doing things to improve patient safety" was found 87.6% positive responses with an average score of questionnaire answers is 4,11, which is the highest.

Table 3

Relationship between work environment and patient safety culture (N = 105)

Work environment	Category	n	Patient safety culture Mean ± Sd
Working experience	1-2 year	75	3.99 ± 0.26
	3-8 year	24	3.79 ± 0.41

	≥9 year	6	3.83 ±
			0.41
	p-value	0.023*	
Working hours per week	≤ 40 h	76	3.93 ±
			0.30
	< 40 h	29	3.93 ±
			0.37
	p-value	0.967	
Dental institution type	Clinic Level	0	-
			-
	Hospital level	105	3.93 ±
			0.32
	p-value	-	
Number of unit chair	≤ 7	49	3.94 ±
			0.32
	8-13	17	3.94 ±
			0.43
	14-25	15	3.87 ±
			0.35
	≥26	24	3.9583
			0.20412
	p-value	0.846	
Number of patients per day per dental hygienist	≤ 8	92	3.91 ±
			0.32
	> 8	13	4.08 ±
			0.28
	p-value	0.082	
Certification evaluation of dental institution	Certification	105	3.93 ±
			0.32
	Non certification	-	-
			-
	p-value	-	

Based on table 3, obtained that in the right work environment with the work experience who possessed by each group is significantly different, indicating that work experience for 1-2 years, 2-8 years and more than 9 years has a relationship to the patient safety culture, while at work hours per week shown significance values, that indicates working hours per week less than 40 hours and working hours per week more than 40 hours do not different, so that working hours per week do not have a close relationship with work safety culture, while the types of dental institutions show results that cannot be analyzed because respondents in this study all at the hospital level in the type of dental institution, different with the number of dental chairs which obtained results that were not significantly different in each group, that's mean the number of seats is less than 7, 8-13, 14-25 and more than 26 the same in this study, the mean is that there is no meaningful relationship with the number of dental chairs with a patient safety culture, as well as the number of

patients per day per dental hygienist where obtained who shown that there is no significant difference between less than 8 patients and more than 8 patients, so there is no meaningful relationship between the number of patients per day per dental hygienist with the patient safety culture, and finally for the evaluation of dental institution certification in this study, the results could not be concluded because all respondents in this study indicated that the evaluation of their dental institution certification was certified, so that it could not be distinguished between certified and uncertified.

DISCUSSION

This study targets dental hygienist such as resident physician and profession students at the Oral and dental Hospital of Hasanuddin University, to examine the relationship between their workplace environment and the patient safety culture at their workplaces. The proportion of positive responses about patient safety culture is 63.68%, which is higher than 44.9% as reported by a previous study of dental students and professional facilities in 2014. In Korean hospitals the percentage is 58% lower than 60% as reported for the United States and Taiwan, that show a relatively low patient safety culture among dental professionals.[18-20]

Some aspects of patient safety culture, such as patient safety policies in all hospital units, teamwork within the unit for patient safety, and supervisor/ manager democratic expectation/actions, are relatively positive evaluations. Based on that, teamwork in the unit for patient safety was previously found to have the highest percentage of positive responses, and that was relatively high in our study (86.7%). These findings indicate the level of positive teamwork and collaboration who undertaken by hygienists, and the problems appear with a small percentage (45.7%).[18, 19, 21]

The safety culture aspects of patients with relatively low positive responses are systems and procedures for patient safety, concern for errors, and the frequency of reported incidents, with the lowest frequency of reported incidents among them (30.5%). Previous studies similar to domestic and foreign medical facilities, found a relatively stronger patient safety culture (67-68%), as founded by previous studies on dental medical facilities in the United States (47%).[19, 20]

In this study obtained from the work experience that each group has different, this signifies indicate that work experience for 1-2 years, 2-8 years and more than 9 years has an influence on patient safety culture, where this study is not in line with previous studies that performed in clinics or hospitals in Korea that have no influence on patient safety culture.[15]

In the research of Jang Hee-un et.al's, state that experience seems to be a factor in engaging in safety measures, using experienced nurses to guide young nurses with an emphasis on safe practices may be a way to positively influence safety practices. Among participants in this study who had worked less than 2 years, the level of temporary workers was high, and they spent most of their time to caring for patients. [22, 23]

This study selected samples using a purposive sampling method and targeted dental hygienist, such as profession students and profession students at the Oral and dental Hospital of Hasanuddin University. Where, not all patient safety culture characteristics can be analyzed because items with a low level of confidence need to be excluded.

CONCLUSION

Based on the results of this survey it can be concluded that the dimensions that have the lowest mean values, are the dimensions of patient safety policy in all unit of hospital, the dimensions of the frequency of reported incidenced, and the dimensions of concern for errors. Among the work environment in the oral and dental hospital of

Hasanuddin University, only 1 aspect had a significant effect on the patient safety culture variable, that is work experience.

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