

A Comparative Study of a State-Owned and A Private Regional Hospitals in Taiwan by Safety Attitudes Questionnaire from Viewpoints of Physicians and Nurses

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Abstract—This study evaluates if physicians and nurses perceive the patient safety culture differently in a state-owned and a private regional hospitals in central Taiwan by using the data of six dimensions of safety attitudes questionnaire in 2016. Mann-Whitney U test for two independent samples is used to compare if the perceptions from physicians and nurses are significantly different with $\alpha = 0.05$ for both hospitals. The results show that physicians and nurses do not have different perceptions in safety climate, perceptions of management, and job satisfaction statistically. However, physicians and nurses in the private regional hospital have better perceptions in teamwork climate and stress recognition significantly. In contrast, physicians and nurses in the state-owned hospital have better working conditions statistically.

Index Terms—patient safety culture, safety attitudes questionnaire, private regional hospital, state-owned regional hospital, Mann-Whitney U test for two independent samples

I. INTRODUCTION

Sabouri et al. [1] stated that patient safety culture is critically important to promote safety and improve the quality of patient care by changing the organizational

culture and adapting it to progress in quality of care. A healthcare organization should develop a patient safety culture among its medical staffs and establish its structural interventions to enhance quality and safety. Chi et al. [2] pointed out that assessing the existing patient safety culture enables hospital management to have a clear vision of a healthcare organization to identify its strengths and weaknesses. Safety attitudes questionnaire developed by Sexton et al. [3] possesses good psychometric properties and great internal consistency, has been validated in different languages, and is considered as an effective tool to assess the patient safety culture from employees' viewpoints in healthcare organizations [2], [4], [5].

Physicians and nurses are the core staff of each healthcare organization and their performance would directly influence quality of care and patient safety [2], [6], [7]. However, the patient safety culture perceived by physicians and nurses from a state-owned hospital or a private hospital might be somewhat different. For instance, Li et al. [8] concluded that state-owned companies tend to have poor quality performance due to employees' attitudes and companies' structures. Kim et al. [9] highlighted that state-owned companies tend to be more collective, whereas private companies tend to be more individual for Chinese employees due to different

cultural values existed in state-owned and private companies. Moreover, Tseng and Pilcher [10] emphasized that a state-owned company might have a greater autonomy in human resource recruitment but restrictions in regulation rules. Furthermore, employees in a state-owned enterprise might have a negative working attitude toward operations efficiency because they think they are public servants and might not like to change their working attitudes.

In order to assess if physicians and nurses in either a state-owned regional hospital or a private regional hospital perceive the patient safety culture differently, this study that uses the datasets from a state-owned and a private regional hospitals based on the safety attitudes questionnaire in 2016 intends to identify if there is any difference existed between these two hospitals in central Taiwan. This paper is organized as follows. Section II briefly reviews safety attitudes questionnaire. In Section III, research method is introduced. Results and conclusions are provided in Sections IV and V, respectively.

II. SAFETY ATTITUDES QUESTIONNAIRE

Safety attitudes questionnaire developed by Sexton et al. [3] is the most commonly used questionnaire worldwide to assess the patient safety culture in healthcare organizations from employees' viewpoints [2], [11]. Safety attitudes questionnaire contains thirty questions, which can be categorized into six dimensions, including teamwork climate, safety climate, perceptions of management, job satisfaction, stress recognition, and working conditions [11], [12]. The detailed information is summarized in Table I.

TABLE I. THIRTY QUESTIONS IN SAFETY ATTITUDES QUESTIONS

Teamwork climate: perceived quality of collaboration between personnel	
1	Nurse input is well received in this clinical area.
2	In this clinical area, it is difficult to speak up if I perceive a problem with patient care.
3	Disagreements in this clinical area are resolved appropriately (i.e., not who is right, but what is best for the patient).
4	I have the support I need from other personnel to care for patients.
5	It is easy for personnel here to ask questions when there is something that they do not understand.
6	The physicians and nurses here work together as a well-coordinated team.
Safety climate: perceptions of a strong and proactive organizational commitment to safety	
7	I would feel safe being treated here as a patient.
8	Medical errors are handled appropriately in this clinical area.
9	I know the proper channels to direct questions regarding patient safety in this clinical area.
10	I receive appropriate feedback about my performance.
11	In this clinical area, it is difficult to discuss errors.
12	I am encouraged by my colleagues to report any patient safety concerns I may have.
13	The culture in this clinical area makes it easy to learn from the errors of others.
Job satisfaction: positivity about the work experience	
14	I like my job.
15	Working here is like being part of a large family.
16	This is a good place to work.
17	I am proud to work in this clinical area.

18	Morale in this clinical area is high.
Stress recognition: acknowledgement of how performance is influenced by stressors	
19	When my workload becomes excessive, my performance is impaired.
20	I am less effective at work when fatigued.
21	I am more likely to make errors in tense or hostile situations.
22	Fatigue impairs my performance during emergency situations (e.g. emergency resuscitation, seizure).
Perceptions of management: the approval of managerial actions	
23	Management supports my daily efforts.
24	Management doesn't knowingly compromise patient safety.
25	I get adequate, timely information about events that might affect my work.
26	The levels of staffing in this clinical area are sufficient to handle the number of patients.
Working conditions: perceived quality of the work environment and logistical support such as staffing and equipment	
27	Problem personnel are dealt with constructively by our unit.
28	This hospital does a good job of training new personnel.
29	All the necessary information for diagnostic and therapeutic decisions is routinely available to me.
30	Trainees in my discipline are adequately supervised.

Physicians and nurses are required to fill out thirty questions as shown in Table I. Each question uses a five-point Likert's scale ranging from strongly agree to strongly disagree for each respondent. Items 2 and 11 are the reversed questions such that each respondent's answer needs to be adjusted. For instance, if a respondent's answer is strongly agree, the numerical value of one should be used instead of the original numerical value of five. The score for each dimension is to aggregate the scores of the questions under that particular dimension. For instance, there are seven questions in safety climate. Therefore, the score of safety climate ranges from seven to thirty five for each respondent. By the same token, the scores of the other five dimensions can be computed.

III. RESEARCH METHOD

The purpose of this study is to identify whether or not physicians and nurses perceive the patient safety culture differently when they are in a state-owned regional hospital or in a private regional hospital. The selected state-owned hospital is under Department of Health and Welfare in Changhua County, Taiwan, while the selected private hospital is located in Taichung City, Taiwan. In order to assess the differences between these two hospitals from viewpoints of physicians and nurses, thirty questions from safety attitudes questionnaire as shown in Table I are used. The internal survey results conducted in 2016 from these two hospitals are used and compared. By removing incomplete questionnaire, the number of the effective questionnaire in the state-owned hospital is 310, while the number of the effective questionnaire in this private hospital is 432. The demographic information of these two hospitals is shown in Table II. The distribution of the total score for each dimension for both hospitals does not follow a normal distribution such that Mann-Whitney U test for two independent samples is selected for analyses with $\alpha = 0.05$.

TABLE II. DEMOGRAPHIC INFORMATION OF TWO HOSPITALS

Demographic Variables	State-Owned Hospital (n = 310)		Private Hospital (n = 432)	
	Frequency	Percentage	Frequency	Percentage
Gender				
Male	42	13.5	54	12.5
Female	268	86.5	378	87.5
Age				
Less than 20 years old	1	0.3	11	2.5
21-30 years old	94	30.3	168	38.9
31-40 years old	154	49.7	145	33.6
41-50 years old	46	14.8	82	19.0
51-60 years old	12	3.9	24	5.6
61 years old and above	3	1.0	2	0.5
Supervisor/Manager				
Yes	53	17.1	56	13.0
No	257	82.9	376	87.0
Job Position				
Physician	42	13.5	48	11.1
Nurse	268	86.5	384	88.9
Job Status				
Full Time	58	18.7	388	89.8
Contract	202	65.2	17	3.9
Part Time	49	15.8	7	1.6
Agency	1	0.3	20	4.7
Experience in Organization				
Less than 6 months	15	4.8	54	12.5
6 to 11 months	28	9.0	38	8.8
1 to 2 years	39	12.6	71	16.4
3 to 4 years	46	14.8	52	12.0
5 to 10 years	121	39.0	100	23.1
11 to 20 years	57	18.4	104	24.1
21 years or more	4	1.3	13	3.0
Experience in Position				
Less than 6 months	21	6.8	65	15.0
6 to 11 months	33	10.6	39	9.0
1 to 2 years	51	16.5	77	17.8
3 to 4 years	59	19.0	60	13.9
5 to 10 years	104	33.5	108	25.0
11 to 20 years	39	12.6	76	17.6
21 years or more	3	1.0	7	1.6
Education				
Junior High School and below	0	0.0	0	0.0
Senior High School	4	1.3	3	0.7
College/University	285	91.9	399	92.4
Graduate School and above	21	6.8	30	6.9
Direct Patient Contact				
No	3	1.0	13	3.0
Rare	14	4.5	27	6.3
Very Often	293	94.5	392	90.7

The distribution of the total score for each dimension in both 2016 and 2017 does not follow a normal distribution, independent sample t-test cannot be applied to evaluate if the perceptions from physicians and nurses in patient safety culture are different in 2016 and 2017. In contrast, this study uses Mann-Whitney U test for two independent samples with $\alpha = 0.05$.

IV. RESULTS

The average value and its standard deviation for each dimension of both hospitals are summarized in Table III. Because the number of questions in each dimension is different, it is inappropriate to make a comparison among the mean values of six dimensions. To make a

comparison among six dimensions, the mean value for each dimension should be further divided by its number of the questions. In contrast, the same dimension from two hospitals can be directly compared based on mean and standard deviation. From the descriptive statistics, the mean scores of job satisfaction and working conditions in the state-owned hospital are higher than those in the private hospital. On the contrary, the mean scores of teamwork climate, safety climate, perceptions of management, and stress recognition in the private hospital are higher than those in the state-owned hospital.

TABLE III. THE AVERAGE VALUES AND STANDARD DEVIATIONS OF SIX DIMENSIONS

Dimension (Number of Questions)	State-Owned Hospital (n = 310)		Private Hospital (n = 432)	
	Mean	Standard Deviation	Mean	Standard Deviation
Teamwork climate (6)	22.39	4.656	23.32	4.344
Safety climate (7)	25.49	4.936	26.11	4.955
Perception of management (5)	18.06	4.343	18.54	4.042
Job satisfaction (4)	14.67	3.762	14.26	3.436
Stress recognition (4)	10.83	2.536	14.39	2.871
Working conditions (4)	16.79	4.081	14.37	2.932

By performing Mann-Whitney U test for two independent samples with $\alpha = 0.05$, Table IV provides the detailed information. Physicians and nurses in this private regional hospital have significantly better perceptions in teamwork climate and stress recognition than physicians and nurses in this state-owned regional hospital. In contrast, physicians and nurses in the state-owned hospital perceive better working conditions than those in the private hospital. Besides, there are no significant differences in safety climate, perceptions of management, and job satisfaction statistically.

TABLE IV. MANN-WHITNEY U TEST FOR TWO HOSPITALS IN SIX DIMENSIONS

Dimension	Mann-Whitney U Test	Z Value	Exact. Sig. (2-tailed)	Post Hoc
Teamwork climate	59715.0	-2.526	.012	Private > State
Safety climate	62615.5	-1.518	.129	
Perceptions of management	64058.0	-1.023	.306	
Job satisfaction	62013.0	-1.739	.082	
Stress recognition	24395.0	14.966	< .001	Private > State
Working conditions	41569.0	-8.896	< .001	State > Private

Physicians and nurses in this private regional hospital outperform those in this state-owned hospital in teamwork climate indicating that physicians and nurses in the private hospital can work as teams better to

accomplish their tasks. In stress recognition, physicians and nurses in the private regional hospital have higher mean score than those in the state-owned hospital, showing that physicians and nurses might receive more pressure or be more stressful in the private hospital. Finally, physicians and nurses in the state-owned hospital have better working conditions than those in the private hospital, indicating that physicians and nurses in the state-owned hospital receive more training and/or support from hospital management.

V. CONCLUSIONS

This study evaluates the perceptions of physicians and nurses in patient safety culture based on the data in 2016 from the six dimensions of safety attitudes questionnaire of a state-owned and a private regional hospitals. Physicians and nurses in the private hospital have better perceptions in teamwork climate and stress recognition, while physicians and nurses in the state-owned hospital have better working conditions. For a private hospital, physicians and nurses might feel more pressure and be more stressful with p-value less than 0.001 in order to achieve better performance set up by the hospital. In order to gain the incentives from the private hospital, physicians and nurses might need to work as teams. On the contrary, physicians and nurses in the state-owned hospital have better working conditions with p-value less than 0.001 showing the hospital management might not setup higher goals for them to achieve and/or is willing to provide needed training and support for them when both stress recognition and working conditions are taken into account.

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