Original Article

Patient safety attitude among nurses: A comparison between teaching hospitals

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Abstract

Patient safety attitude perception of the nurses could represent part of the patient safety culture in the hospital setting. The existing different types of hospitals had exhibited different characteristics of patient safety attitude perception in the past. However, there was a lack of comparative study on the patient safety attitude for a different type of hospitals. The main purpose of the study was to compare the patient safety attitude perception of the nurses in teaching hospitals with different establishment periods. A cross-sectional study was conducted in 2 selected teaching hospitals with a difference in characteristics. The validated Safety Attitude Questionnaire was utilized for data collection of nurses working in general medical and surgical wards via an online survey form. A total of 152 nurses were recruited as participants with the majority coming from more established teaching hospitals [TH1] (109/152). The gender ($p<0.05$) and years of working experience ($p=0.006$) were significantly different between the two hospitals. It was found that 5 out of 6 domains of patient safety attitude revealed significantly different types of responses when compared between these two hospitals. A higher proportion of positive responses was found for the majority of items by the nurses of TH1. A teaching hospital with a longer operational duration and a bigger number of beds could influence the perception of patient safety among the nurses. Thus, policymakers could create a policy that should be able to cultivate a positive patient safety attitude specifically for the newly established hospital. One of the policies is by recommending the teaching hospital managers to practice a workplace pre-placement patient safety training briefing or short courses for the newly appointed nurses in the future.

Keywords: patient safety, attitude, nurses, teaching hospital, comparison.

1. INTRODUCTION

Patient safety culture (PSC) is a must for all hospital or medical facilities that provides care to the patient to be deemed of providing a high quality of care. It was seen as the culture to prevent harm to the patient from the point of being hospitalized until the time of being discharged after receiving the needed treatment. There were several definitions of patient safety in the works of literature, one of the definitions highlighted by the World Health Organization was, that it was a culture where a high level of importance is placed on safety beliefs, values, and attitudes and shared by most people within the workplace [1]. Over the years, PSC became a subject of increasing interest among researchers worldwide [2]. Many aspects of the PSC were analyzed in terms of its contents, perspective of organizations or people related to it, its determinants, and interventions to improve or maximize its benefit. However it was pointed out that there was still a gap that could be fulfilled in the future which includes the lack of comparative studies [1], the culture itself is a complex phenomenon that is difficult to be understood by hospital leaders [3], the appropriateness of measuring instruments for PSC [4-5], non-robustness of evaluation design for the impact of an intervention to improve PSC [6] and the lack of a link between strategies and evaluation to measure the PCS [7].

From the organizational perspective that could benefit from having a patient safety culture embedded in their organization, the characteristics of hospitals were among the factors that were found to be associated with the PSC in the works of literature. In Malaysia, there are four known types of hospitals that act as healthcare providers to the population. These include public hospitals, district public hospitals, tertiary public or private hospitals that provide specialized care and teaching hospitals that are affiliated with the government or private universities. The types of hospitals will determine the level of care and expected personnel experience in handling care. In the past, studies that investigate the relationship of areas in PSC with various types of hospitals had focused on the components or the characteristics of PSC in each of these settings, nevertheless as pointed out earlier, the knowledge gap lies in the comparative aspect of PSC between or within the type of hospitals. Focusing on teaching hospitals, apart from providing medical care, these hospitals are the place for training future doctors and other allied health personnel. In other words, teaching hospitals were seen as healthcare facilities that provide services to patients and at the same

time offer teaching services to medical students and nurses and often are linked to a medical school, nursing school, or university [8]. In the past, there was mixed evidence on the performance of teaching hospitals when compared to other types of hospitals. According to a systematic review, it was found that teaching hospitals had better-quality measures than non-teaching hospitals [9]. On the other hand, another review found that only 10% of teaching hospitals can effectively be competitive with non-teaching hospitals based on the provision of patient services [10]. On further thought, the teaching hospital's features themselves might differ from one another.

Thus, with the focus on teaching hospitals and nurses as one of the key personnel for PSC in hospitals, a comparison on one dimension of PSC which was the patient safety attitude was done between teaching hospitals that differs in terms of operational duration and bed number. The study aimed to compare the patient safety attitude perception of the nurses in these two selected teaching hospitals.

2. Materials and Methods

2.1 Study design and setting

An observational cross-sectional study was conducted in two selected teaching hospitals. Both hospitals were in an urban area and the central zone of Malaysia. The first teaching hospital (TH1) started its operation in the year 1997 which make it age about 25 years during the study period. This hospital is affiliated with a research university (a university that focuses primarily on research and innovation activities, driven by highly competent academics and competitive student admissions [11]), which had 850 beds and 14 clinical services [12]. Meanwhile, the second teaching hospital started its operation in the year 2021 which makes it one year in the age of operation during the study period. This hospital was affiliated with a non-research university, had 400-beds but was not fully utilized during the study period, and had planned 23 clinical service departments which were not fully operationalized during the study period [13]. The study survey was distributed from 17th January 2022 to 18th February 2022 to the targeted participants.

2.2 Study participants

The participants were recruited based on the fulfillment of eligibility criteria of working as nurses with the duration of a minimum of 6 months from the data collection period, workplace either in the general medical ward or general surgical ward and able to read and write in Malay and English language, consented to participate and able to use online survey form. Those who had been working in the ward as part of training attachments from other institutions were excluded to ensure that the participants were aware of the workplace culture and the organizational culture of the selected study site.

2.3 Sampling, study instrument and key variables

The minimum sample size was calculated using the online OpenEpi software for proportion. Using the expected proportion of positive patient safety culture perspectives in general hospitals from a previous study by Kolankiewicz et al. [14] of 91.1%, power of 80% and precision of 95% with a 20% of attrition rate, the minimum sample for each study site will be 17 participants. The participants were sampled using convenience sampling

The main outcome and dependent variables were categorized for each domain in the safety attitude questionnaire (SAQ). Thus, it was measured from the participant's response in the online survey and recorded as a categorical scale for data analysis. The key independent variable was the selected hospitals of either teaching hospital 1 (TH1) or teaching hospital 2 (TH2) as mentioned earlier. In the survey form, the researcher had put this item to be selected as the place of practice on the survey form.

The study instrument was a self-administered online survey form divided into 2 sections; Section 1 (3-items) was related to the participants' background which was the question on gender, age group, and duration of working experiences; Section 2 (31-items) assessed participants on the patient safety aspect and was modified from Safety Attitude Questionnaires (SAQ) published in the past study [15]. SAQ was a validated self-administered questionnaire that was recommended for gathering and measuring data on patient safety culture among nurses. The 31-item questionnaire measured six domains which were Teamwork Climate (6-items), Safety Climate (7-items), Job Satisfaction (5-items), Stress Recognition (4-items), Perception of Unit Management (6-items), and Working Conditions (3-items). Respondents were requested to answer a 5-point Likert scale statement (1 = disagree strongly, 2 = disagree slightly, 3 = neutral, 4 = agree slightly, 5 = agree). The items on numbers 2 and 11 were

negatively worded. The 'disagree' and 'disagree slightly' responses were analyzed as negative responses while the 'agree' and 'agree slightly' responses were analyzed as positive responses. Before the actual data collection, the questionnaire was translated into Malay language using back-to-back translation, and the Likert scale was reduced to 3-point (1=Disagree, 2=Neutral, 3=Agree). To operationalize the study's main outcome, the category SAQ was transformed into two categories as non-positive responses for both 'disagree' and 'neutral' answers and positive responses for 'agree' answers. Reliability analysis based on pre-testing with 30 respondents who were not part of the study revealed internal consistency as Cronbach alpha for the six domains ranges from 0.7 to 0.9 which is deemed to be acceptable.

2.4 Data collection and data analysis

Data collection began with the recruitment of the nurse team leaders from selected wards of selected teaching hospitals after ethics clearance and a letter of permission being received from the respected hospitals. The team leaders were then given a briefing on the purpose of the study and the link to the online survey form was then given via mobile phone message application and organization email once they agreed to assist with the study. The link was shared by the team leader to all nurses in the selected wards to be filled in if they consented to participate. The consent form needs to be filled in as part of the survey form because the survey form can only be accessed after the participants choose to give their consent. The obtained data were transferred to an excel sheet that was linked to the online survey form and can only be accessed by the research team. All data collected were then manually transferred to SPSS software for analysis of results. The descriptive results were presented in frequency and proportion. The differences in the characteristics between the teaching hospitals were tested using the Pearson Chi-square test. For the inferential analysis, a similar statistical test was applied to determine any significant association between the independent variable and the main outcome.

3. Results

A total of 152 nurses were recruited for this study. The total participant in TH1 was 109 nurses which were higher (72%) than the total number of participants from TH2 with less than half of the number of participants (43/152). Table 1 summarizes the respondents' characteristics in both teaching hospitals.

Table 1: Participants characteristics in two selected teaching hospitals

Variable	**Study site**				**p-value[a]**
	TH1 (n= 109)		**TH2 (n= 43)**		
	Freq, (n)	**%**	**Freq, (n)**	**%**	
Age group (years)					
1-25					
26-35	3	2.8	2	4.7	1.00
36-45	43	39.4	34	79.1	
46-55	55	50.5	7	16.3	
	8	7.3	0	0	
Gender					
Male	4	3.7	2	4.7	<0.05*
Female	105	96.3	41	95.3	
Working experience					
≤2 years					
>2 years	3	2.8	7	16.3	0.06*
	106	97.2	36	83.7	

aPearson chi square, $p<0.05$ taken as level of significant

Based on Table 1, the differences in participants' characteristics in both teaching hospitals were statistically significant for both gender and working experience. However, for both sites, most respondents were female and had been working for more than 2 years in their profession.

Table 2: Type of responses for SAQ domains and its association with different teaching hospitals.

SAQ Domain	Study site				p-value[a]
	TH1 (n= 109)		**TH2 (n= 43)**		
	Non-positive	**Positive**	**Non-positive**	**Positive**	
	%	**%**	**%**	**%**	
Teamwork Climate					
Q1					
Q2	17	83	33	67	0.051
Q3	73	28	84	16	0.208
Q4	32	68	42	58	0.264
Q5	15	85	28	72	0.067
Q6	27	73	37	63	0.237
	11	89	37	63	**<0.05**
Safety Climate					
Q7					
Q8	26	74	47	54	**0.019**
Q9	15	85	40	61	**0.001**
Q10	17	83	44	56	**0.008**
Q11	15	85	35	65	0.653
Q12	80	20	84	16	0.678
Q13	24	76	28	72	0.367
	42	58	51	49	**0.004**
Job Satisfaction					
Q14					
Q15	7	93	26	74	**0.004**
Q16	17	83	30	70	0.120
Q17	17	84	33	67	**0.045**
Q18	19	81	30	70	0.194
	20	80	37	63	**0.038**
Stress Recognition					
Q19					
Q20	60	40	58	42	1.000
Q21	61	39	54	48	0.467
Q22	73	27	67	33	0.549
	67	33	67	33	1.000
Preparation of Unit Management					
Q23					
Q24					
Q25	48	52	56	44	0.472
Q26	68	32	79	21	0.233
Q27	42	58	58	42	0.104
Q28	44	56	63	37	**0.048**
	44	56	63	37	0.848
	67	33	70	30	**0.004**
Working Conditions					
Q29					
Q30	42	58	70	30	**0.004**
Q31	35	65	56	44	**0.027**
	39	61	63	37	**0.011**

aPearson chi-square, $p<0.05$ taken as level of significant, TH1= Teaching Hospital 1, TH2= Teaching Hospital 2, Q=Question

Based on Table 2, the TH1 had a higher percentage of participants with positive responses for all 31-items in the questionnaire which was about 24 out of 31 compares to TH2 which had only 15 items (23%) out of 31. In terms of the six domains,

statistically significant differences in positive and non-positive responses between TH1 and TH2 were found in all domains except for the stress recognition domain with all responses not found to be statistically different.

For the teamwork climate domain, the type of responses to Question 6 (Health care workers here work together as a well-coordinated team) was significantly different ($p=<0.05$) in the type of responses between the teaching hospitals. More positive responses were observed in TH1 compared to TH2 (89% vs 63%). For the safety climate domain, 4 out of 7 items were observed to be different statistically in the type of responses. Among these 4 items, the highest proportion of non-positive responses was observed in TH2 on Question 13 (The culture in this clinical area makes it easy to learn from the errors of others) while the highest proportion of positive responses was observed in TH1 on Question 8 (Medical errors are handled appropriately in this clinical area). In the job satisfaction domain, 3 out of 6 items were different statistically for the type of responses with the most positive responses proportion observed for Question 14 (I like my job) in TH1 and a majority of non-positive responses in TH2 for Question 18 (Morale in this clinical area is high). For the preparation of the unit management domain, 2 out of 6 items were statistically different with the highest positive responses in TH1 for Question 26 (Problem personnel in this clinical area are dealt with constructively by our management) and the highest non-positive responses in TH2 for and Question 28 (The staffing level in this clinical area are sufficient to handle the number of patients). Finally, for the working condition domain, all 3 items were significantly different with the highest positive responses observed in TH1 for Q31 (Trainees in my disciplines are adequately supervised) and the highest non-positive responses observed in TH2 for Question 29 (This hospital does a good job of training new personnel).

4. Discussion

Findings from the present study found that there was a significant difference in safety attitudes among the nurses working in teaching hospitals with different attributes. More positive responses were observed in longer established hospitals with larger bed capacity. This is expected because it can be safely assumed that the longer the hospital was in operation the more experience the management team will have in terms of managing its human resource. Nonetheless, it can be argued that to be able to establish a hospital, a competent team was expected to be in place so as not to compromise the quality of care to the patients. Although the nurse's safety attitude responses did not directly represent the competency of the hospital management team, it was a vital component to ensuring the safety of care and should be addressed as a priority in managing the hospitals as well as to ensure the patient safety culture is in place. The difference in the nurse's safety attitude echoed the findings in an earlier study comparing Brazil and Portuguese university hospitals which revealed that 8 out of 12 composites of PSC were significantly different between hospitals [16] and supported the finding of another study in Saudi Arabia that showed working in a different hospital was one of the significant predictors for nurses' perceived PSC [17].

With regards to the team climate domain, it was expected that the more recently established hospitals will be consisted of nurses working together for a short duration and were not well acquainted with each other to be able to perceive the team as working in a well well-coordinated manner. This was supported by an earlier meta-analysis [18] that found health professionals' experience of teamwork education will be influenced by their starting point of learning, thus it might imply the longer the working together period the starting point happened much earlier giving rise to better team climate in TH1. Similarly, if the experience of nurses were the key factor, then it would apply across the other 3 domains (safety climate, job satisfaction, and preparation of unit management) that showed the highest positive responses affiliated with TH1 compared to TH2. All of this gave rise to the question of whether the more recently established hospitals will have more nurses with a non-positive safety attitude, and if so, will this lead to poor PSC and substandard care for patients? Further study was needed to answer this question, but it will be expected that the PSC should be implemented early in the hospitals and planned earlier by the provider to prevent compromise in patient safety. Nonetheless, one item which was the working condition for Question 30 (All the necessary information for diagnostic and therapeutic decisions is routinely available to me) showed a significant difference in the majority of positive responses among the nurses in a more recently established hospital. This could be due to the reason that information sharing was easier or more widely spread to the smaller number of staff with a lower number of hospital beds. Additionally, a newly established hospital could also employ a more recent information technology system that was up to date that allows easier information sharing between nurses in the hospitals regardless of their period of establishment or the size of the hospital. This supported findings from a past study [19] that found hospital size has no significant effect on health information system adoption.

Based on the findings from the present study, it was recommended that in the future, the hospital provider should prepare a patient safety culture-related program that could equip their key personnel with a positive patient safety attitude regardless of the duration of the establishment. The management team should also strive to ensure that adequate staffing was in place and

the training needs of new personnel are properly addressed in newly established hospitals to reduce the non-positive responses on safety attitudes among nurses in the future.

The findings of this study might be limited due to its cross-sectional nature which cannot infer causality. The use of an online survey form could also lead to selection bias of those who agreed to participate they might be more information savvy, however, at the same time, it can eliminate the possibility of information bias that can occur during the manual handling of data transfer to data analysis software. The findings highlighted the attitude of nurses in teaching hospitals, thus, might not apply to those working in other types of hospitals. The strength of the study was it managed to contribute to the body of knowledge on the association between patient safety attitudes in relation to the establishment period and bed size of the teaching hospitals.

5. Conclusion

Patient safety attitudes among the nurses differed in different teaching hospitals for all domains in SAQ except for stress recognition. Policymakers could create a policy related to the pre-placement requirement on the nurses to undergo a patient safety training program as an early step to cultivate PSC among the nurses working in teaching hospitals in the future.

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