The Effect of Safety Management and Perceived Motivation on Safety Practices for Safety Performance and Quality of Care

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Abstract

People factors are important to enhance safety performance and quality of care. The Self-Determination Theory concentrates its consideration on factors of social-contextual. The study will evaluate safety practices of Malaysian healthcare professionals. The findings will provide knowledge of the safety practices for better performance in safety and quality of care. The questionnaire survey was conducted from respondents of various departmental backgrounds of medical centres in Malaysia. It was found that the main factor affecting safety practices was safety management; safety practices have impacted moderately safety performance and quality of care. With the positive relationship from safety practice, the higher level of safety performance and quality of care. Safety performance and quality of care could be further enhanced by upholding safety practices. It is recommended that improving the work system and supporting the healthcare professionals are crucial philosophies for enhancement of safety performance and quality of care.

Keywords

Emerging Market; Emerging Economies; Healthcare; Quality of care; Safety Performance

1. Introduction

Safety performance is influenced by organisations' beliefs and attitudes toward safety which transmitted socially (Ostrom, Wilhelmsen, & Kaplan, 1993). Safety culture is the norms, beliefs, roles, attitudes, and practices of an organisation on reducing workplace hazards exposure (Turner, 1991). The literature has found a straightforward link of organisational culture–performance. Sustainability on performance of healthcare are under stress, and the safety in the Malaysian healthcare sector may be impacted due to lacking resources (Rahman, Jarrar & Don, 2015).

An organisation's ability to minimise harm will be achieved only when it is succeeded to create a culture of safety among its employees. Safety culture is a performance shaping factor that guides behaviours of healthcare professionals toward viewing safety performance and quality of care as their priorities. To ensure patient and occupational safety amidst challenging environment motivated work environment and strong leadership by management in the healthcare play central roles.

Healthcare infections can be avoided by compliance to the safety standards (World Health Organisation, W.H.O., 2014). Infections are among the key concerns hospital environment; it is not a single matter which is to be tackled. There are other incidents that may occur and endanger lives and safety of patients as well as healthcare professionals.

Information on safety measures is crucial in creating work environment that may enhance patient outcomes (Aiken, Sermeus, Van den Heede, Sloane, Busse, Mckee and Smith, 2012).

1.1 Objectives

This study aims to investigate the impacts on safety performance and quality of care by safety practices antecedents amongst healthcare professionals. Safety management and safety practices are the two safety performance antecedents discussed.

2. Literature Review

Growing volumes of literature are focusing on safety and quality of care of the patient. This has merited a study to be organized especially in Malaysia. The following reviews are to examine the many possible outcomes of safety practices in the healthcare industry. In addition to reviewing determinants of safety practices as a construct that measures safety performance that is important for the healthcare professionals.

2.1 Perceived Motivation

Natan and Berker (2010) argued that healthcare professionals are drawn by positive environment that influences their performance. Ghahramanian, Rezaei, Abdullahzadeh, Sheikhalipour and Dianat (2017) added that World Health Organisation's 2002 resolution has steered a strong motivation for healthcare professionals to increase patient's safety comprising reinforcement of healthcare systems, measurement of the culture of patient safety as well as safety culture. This inspired environment could be the motive for the staff to be more dedicated and responsible. Control of employers motivates the employees to compliance with safety and task completion on time (Barling & Hutchinson, 2000). Key Performance Indicators is an element that can determine performance in the healthcare industry (Wong, Chong, Chew, Tay & Mohamed, 2018). Reported by Korlén et al. (2017), managerial strategies could make incentives motivating for the employee. Employees are influenced by extrinsic motivation and also environment of work (Shader, Broome, Broome, West, & Nash, 2001). In turn, individual safety motivation was linked to safety behaviour (Neal & Griffin, 2006). For example, flight cabin crews were motivated to work in a team for safety emergency precautions (Tjosvold, 1990**);** this can also be practiced to motivate the medical professionals to uphold safety standards by working as a team in the healthcare sector.

2.2 Safety Management and Process Improvement

Front-line healthcare professionals perceive a stronger commitment to patient safety from their managers and safety climate (Abbas, Bassiuni & Baddar, 2008). In essence, important safety management practices include management commitment, training, rules and procedures (Subramaniam, et al., 2016). In details, safety satisfaction and feedback were affected by work pressure, and safety involvement, reporting, objectives and management commitment (Abdullah, 2009). Furthermore, the study of Subramaniam et al. (2016) found that three dimensions of safety management practices were significantly related to safety compliance. Eventually, safety management systems have a positive effect on safety performance (Ng al et., 2019).

2.3 Safety Practices

In Malaysia, safety practices have showed sporadic results (Chan, Sooaid, Cheng, & Sriraman, 2013; Jarrar et al., 2016) despite having an international recognized and accredited standard operating procedures. This non-compliance became the reason for safety breach, dangerous working environment for healthcare professionals and may causes irreversible harm to patients under care (Jarrar et al., 2016). Specifically, safety practices have been accepted as an indicator to the patient safety. Based on Chan, et al. (2013), after interventions, the knowledge score and the practice score of nurses were recorded significant increase indicating that safety knowledge and attitude had changed practices. However, there are still instances where awareness about regulations may not produce compliance behaviour as there is still a gap between knowledge and practice among the healthcare professionals (Rampal et al., 2010). According to Yang, Guo-Ping, Jijan-Wei and Ying (2010) and Mashi et al. (2017), management commitment positively relates to safety compliance. Specifically, nurses' perceived compliance was positively influenced by perceived practices in co-worker safety, supervisor safety, and satisfaction with safety practices (Subramaniam, 2013). In other words, management attitudes and group norms predict unsafe (violation) behaviour (Fogarty & Shaw, 2010). Results from Hurtado, et al. (2018) show a positive correlation between more peers for safe patient handling advice and using

equipment more frequently, i.e. safety climate correlated positively with safety behaviour (Amponsah-Tawaih & Adu, 2016).

2.4 Safety Performance

Over the years, researchers have consistently subscribed to the notion that safety performance refers to behaviours that individuals exhibit. Appropriate intra-department synchronization is required accidents prevention and safety performance promotion. The occupational safety and health laws are significantly related to safety performance, as continuous OSH communication between superior and subordinates may curb workplace incidents (Andriessan (1978). In addition to effective communication, knowledge acquisition, transmission and conversion will improve employees' performance and bring high service quality (Wheelen et al., 2015). Neal, Griffin and Hart, 2000 illustrated safety performance as behaviour of employees on safety compliance and participation. Improvements in the average safety behaviour in a group were related with a corresponding decrease in accidents in the group (Neal & Griffin, 2006). Thus, there is consistent acceptance of the conceptualisation safety performance across disciplines however the differences may lie in the measurements of safety performance across areas. Specifically, the assessment of safety performance is different in different fields of study.

Researchers in the healthcare sectors would refer safety performance in many different ways. Most popular indicator of safety performance would be compliance with safety guidelines but the outcome of it varies (Keat et al., 2013). One of the outcomes of compliance with safety guidelines would be to eliminate danger or disease to the healthcare professionals such as the nurses as they deal with dangerous medical procedures (Keat et al., 2013), to ensure safety of the patient (Groves et al., 2011), instead of the healthcare professionals' safety performance (Lievens, 2014). Others have measured safety performance based on the number of incidents or unsafe events that occur (Barling et al., 2002; Hofmann & Morgeson, 1999). Parker and Plooy (2021) found that psychological safety is positively related to performance and team learning, while team learning was also found to be positively related to performance.

Lack of research has specifically defined safety performance for the healthcare industry. In the industrial sector, i.e manufacturing, safety performance would mean no injuries or accidents at the workplace (Gopang, Nebhwani, Khatri & Marri, 2017) but it is not so straightforward for the healthcare sector. Past researches in this discipline refers impacts on patient safety and wellbeing as the consequences of error made by healthcare professionals, working for the healthcare providers. Specifically, errors made by healthcare professionals may have irreversible harms and litigation costs in addition to the lost incurred (Jarrar, Abdul-Rahman & Don, 2016). On the other hand, errors made in manufacturing may be corrected and customers can get replacements. Moreover, safety performance is subject to the individual workers themselves and to a much lesser extent does it affect third parties such as the clients of the firms. However, Donabedian (1993) argued that satisfaction in the healthcare services are a total sum of the patients-provider relationships which is not obvious and considered in the industrial safety. Specifically, the sum of the services rendered by multi-personnel and multi-departmental responsible for the patients care and this starts from the registration clerk as the front-liners, the radiologist, the nurses, the physicians, and the pharmacist to name a few. And this depends very much to the disease and symptoms that each patient came in with. The variety of contacts and lack of proper standard steps to follow in healthcare services will make safety management complex. Each of these contact and treatment receives by the patients are subject to safety assessments and thus safety performance. The extent of the process and works involved in the healthcare sector is much more complex and requires further examination.

2.5 Quality of Care

Generally, quality performance is influenced by patient; staffing; and working environment (Jarrar, Rahman & Don, 2016), as the healthcare professionals' engagement has a significant influence on performance (Kartal, 2018). Overall, Keroack et al. (2007) found that Common qualities shared by top clinical enterprise performers included a shared sense of purpose, a hands-on leadership style, accountability systems for quality and safety, a focus on results, and a culture of collaboration. While Reisi et al. (2018) reported that leadership, commitment, and support; education and training; rewards and recognition; and staff involvement were factors affecting quality results.

Leaders who have supportive behaviour and trust are needed for employees to bring up concerns and submit improvement suggestions (Wong & Cummings, 2009). Nurses and healthcare professionals supported by leadership can improve the efficiency and quality of the healthcare (Needleman & Hassmiller, 2009). About hospital management system, Continuous Quality Improvement initiatives are positively associated with improved process quality, and also associated with higher patient safety (McFadden, Stock & Gowen III, 2015). Furthermore, positive associations with

quality included compensation attached to quality, using quality improvement measures and having a board quality committee (Parand et al., 2014). Eventually, the overall rating of the hospital and willingness to recommend the hospital have strong relationships with technical performance in all medical conditions and surgical care (Isaac et al., 2010).

The score of safety climate was associated with safety behaviour of the employee as well as injury measures of the patient and employee (Agnew, Flin, & Mearns, 2013). Better nursing practice environment leads to better patient outcomes (Maziah, Wichaikhum & Nantsupawat, 2012). Learning organisations and quality of care have significant relationship (Chen & Kuo, 2011). Larger consideration to the organisational learning may promote faster improvement in patient safety (Edwards, 2017). Staffing and resource adequacy, professional communication style, and nurses' participation in hospital quality improvement activities were associated with higher levels of perceived patient safety (Mihdawi et al., 2020). Likewise, studies uncovered that experienced nurses are more connected to safety and quality of care of the patient (Cramer, Jones & Hertzog, 2011). However, doctors gave a higher rating on quality of patient care than their nurse counterparts (Liu, Bartram & Leggat, 2020). Hospitals should have knowledgeable medical professionals to sustain quality of care (Rahman, Jarrar & Don, 2015).

In contrast, overload predicted patient safety incidents (Teoh, Hassard & Cox, 2021), and job demands have a negative impact on the quality of care (Costa, et al., 2014), therefore, errors can be reduced by interventions to deal with the safety culture systemically (Singer & Vogus, 2013).

2.6 Hypothesis

It is hypothesized that safety practice with antecedents affect safety practice and safety practice is mediating safety performance and quality of care. Precisely, the hypotheses are:
H1: Perceived motivation positive affects safety practice.
H2: Safety management positive affects safety practice.
H3: Safety practice positive affects safety performance.
H4: Safety practice positive affects quality of care.

3. Methods

Respondents were given informed voluntary consent. The questionnaire examined the healthcare professionals' viewpoints of safety and health in the workplace. The survey questionnaire was adapted from Singer et al. (2012). Respondents were located in four states in Malaysia, namely Melaka, Penang, Perak and Selangor, with approval from the participating medical centres. These respondents were selected because they were healthcare professionals directly dealt with safety hazards in the medical centres. Surveys were conducted with the support of the management of the medical centres. Reliability coefficient was computed for Cronbach's alpha. Descriptive statistics were reported and analyses were conducted with the use of Smart PLS 3.0.

4. Data Collection

In this paper, 175 respondents have filled up the survey questionnaire. The respondents are of 25 to 58 years old range, from various departments in the hospitals. Most of the employees have obtained education from institutions of higher learning. The minimum working experience is one year and the most is 25 years' experience among the respondents in this study.

5. Results and Discussion

Before testing hypothetical models, the measurement models have been examined for reliability, convergence validity and discrimination validity. The measurement model scores are shown in Table 1. Refer to the Table 1, all loads are higher than 0.70, the recommended cut-off. The score of composite reliability is more than 0.7 (Hair et al., 2013) and the average variance extracted all exceeds 0.5 (Bagozzi & Yi, 1988). In essence, the convergent conclusions have been achieved.

The VIF has also examined on the multicollinearity problems (Table 1). For all the constructs, a range of VIF values below 3.3 confirms the absence of multicollinearity.

Table 1. Convergent validity

No	**Items**	**Loadings**	**CR**	**AVE**	**VIF**
1	PM1	0.888	0.882	0.789	1.501
2	PM2	0.889			1.501
3	POHQ2	0.791	0.842	0.572	1.57
4	POHQ3	0.694			1.316
5	POHQ4	0.744			1.4
6	POHQ5	0.792			1.574
7	SMPI1	0.745	0.893	0.545	1.903
8	SMPI2	0.711			1.856
9	SMPI3	0.811			2.225
10	SMPI4	0.739			1.736
11	SMPI5	0.722			1.693
12	SMPI6	0.709			1.691
13	SMPI7	0.728			1.75
14	SP1	0.716	0.784	0.547	1.115
15	SP2	0.767			1.262
16	SP4	0.735			1.253
17	SPE2	0.756	0.877	0.64	1.616
18	SPE3	0.816			1.776
19	SPE4	0.828			1.881
20	SPE5	0.799			1.659

Each development's AVE should be higher correlation between them and anything else construction model (Fornell & Cha, 1994), Fornell & Larcker, 1981). Table 2 shows that results for the validity test of discrimination. Based on the Table 2, PM is recorded at 0.8 which is higher than the rest, POHQ is recorded at 0.7 which is higher than the rest SMP is recorded at 0.7 which is higher than the rest, SP is recorded at 0.7 which is higher than the rest and finally SPE are recorded at 0.8.

Table 2. Fornell & Lackers

	PM	POHQ	SMP	SP	SPE
PM	**0.888**				
POHQ	0.599	**0.756**			
SMP	0.537	0.596	**0.739**		
SP	0.519	0.552	0.592	**0.74**	
SPE	0.647	0.691	0.552	0.543	**0.8**

The measured variable load of items should be more than cross-load by all at least 0.1 (Hair et al., 2013). Refer to Table 3, by meeting this criterion, all constructions has the validity of discrimination. All constructions have met this criterion as shown in Table 3. Therefore, it can be concluded that the validity of discrimination has been obtained.

Table 3. Cross Loadings

No		PM	POHQ	SMP	SP	SPE
1	PM1	**0.888**	0.509	0.504	0.46	0.558
2	PM2	**0.889**	0.555	0.451	0.462	0.591
3	POHQ2	0.561	**0.791**	0.407	0.431	0.615
4	POHQ3	0.321	**0.694**	0.403	0.381	0.521
5	POHQ4	0.431	**0.744**	0.47	0.417	0.455
6	POHQ5	0.484	**0.792**	0.519	0.44	0.501
7	SMPI1	0.369	0.455	**0.745**	0.431	0.447
8	SMPI2	0.388	0.493	**0.711**	0.364	0.401
9	SMPI3	0.474	0.43	**0.811**	0.51	0.472
10	SMPI4	0.399	0.451	**0.739**	0.496	0.447
11	SMPI5	0.317	0.398	**0.722**	0.42	0.341
12	SMPI6	0.356	0.394	**0.709**	0.387	0.316
13	SMPI7	0.464	0.473	**0.728**	0.422	0.408
14	SP1	0.447	0.438	0.438	**0.716**	0.419
15	SP2	0.363	0.427	0.432	**0.767**	0.419
16	SP4	0.334	0.353	0.443	**0.735**	0.363
17	SPE2	0.432	0.456	0.292	0.382	**0.756**
18	SPE3	0.527	0.594	0.437	0.445	**0.816**
19	SPE4	0.475	0.567	0.487	0.426	**0.828**
20	SPE5	0.618	0.58	0.526	0.477	**0.799**

Henseler, Ringle, and Sarstedt (2015) establish this method's superior performance by ways of a Monte Carlo simulation. There is an issue of discriminant validity when the HTMT value is larger than HTMT.85 value of 0.85 (Kline 2015), or HTMT.90 value of 0.90 (Gold & Arvind Malhotra, 2001). This study follows the measurement model fitness evaluation guide of Henseler, Hubona, and Ray (2016) with examination of the saturated model and Standardized Root Mean Square Residual (SRMR) at a 95% bootstrap quartile with the SRMR as the only approximate model fit criterion. The dG and the dULS (Dijkstra & Henseler, 2015) have also been highlighted (Henseler et al., 2016). Table 4 indicates a well-fitting measurement model having the dG and the dULS are 0.523 and 1.196 respectively. The SRMR is 0.075 implying the measurement model fit of the study as it is below the threshold of 0.08 (Hu & Bentler, 1999).

Table 4. HTMT

	PM	POHQ	SMP	SP	SPE
PM					
POHQ	0.803				
SMP	0.674	0.744			
SP	0.786	0.827	0.824		
SPE	0.831	0.881	0.646	0.779	

These results were analysed by *Smart PLS 3.2.7*. A minimum threshold of 1.65 t-statistics values at $p \leq 0.1$ confidence interval to probe the path coefficients' statistical significance (Hair, Ringle, & Sarstedt, 2011). Effect sizes of 0.35, 0.15, and 0.02 suggest a large, medium, and small effect correspondently (Lowry & Gaskin, 2014). Refer Figure 1 for the measurement model.

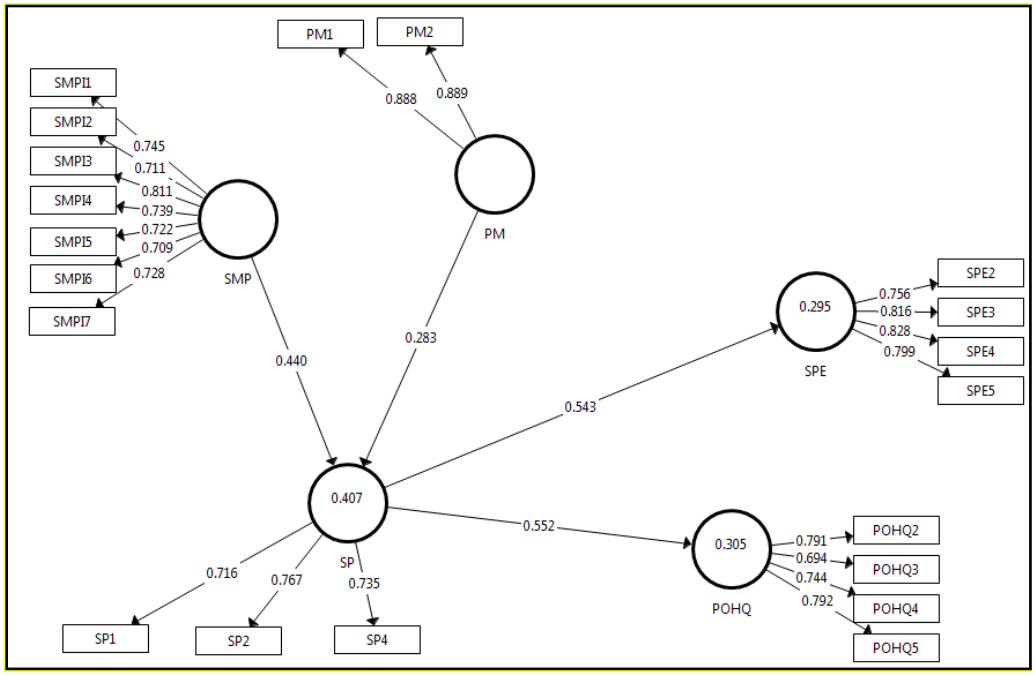

Figure 1. Measurement Model

Refer Figure 2 for the structural model. The analysis of R^2 is applied to find the coefficient for determination in the dependent constructs (Sarstedt, Ringle, Smith, Reams & Hair, 2014). Besides, the R^2 of 0.75 is strong, 0.5 is moderate, and 0.25 is weak according to Hair et al. (2016). Based on Chin (1998), a strong R^2 needs 0.67, while for moderate needs 0.33 and for a weak R^2 needs 0.19.

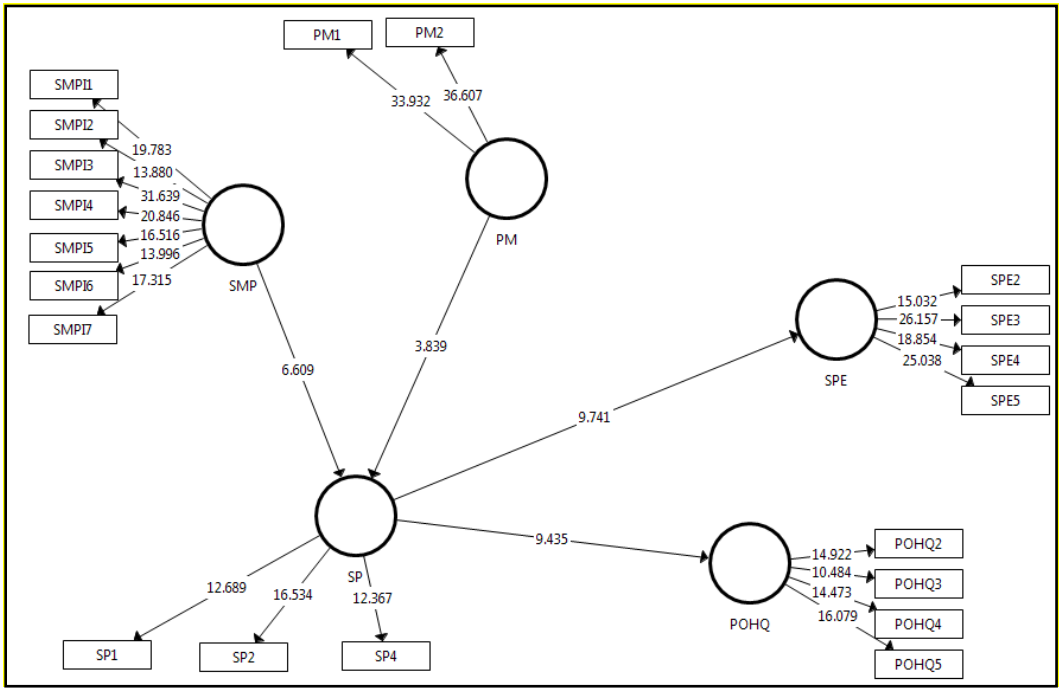

Figure 2. Structural Model

The PLS bootstrapping using 5000 subsamples option was introduced in order to attain the significance levels (Hair et al., 2014). Hence, the R^2 for the study is good enough (0.62) as per Table 5. Next, researchers have to know F Square to grasp the model's power. It is to have the Effect Size (F Square) to establish a good model. By looking up the table 5, it has a nearly large effect size. The model had met the requirement with the measurement requirement for the Inner Model. Table 5 indicates the entire hypothesis stated down from H1 to H4. It also contains the t-statistics value for every one of the hypothesis. The hypothesis is significant if the t-value for 1-tail test is more than 1.645 ($p<0.05$) or more than 2:33 ($p <0.01$). Table 5 indicates that the entire hypotheses were supported.

Table 5. Hypothesis results

Hypothesis	Beta	St Err	T Value	P Values	LL	UL	R2	F2	Q^2 (=1-SSE/SSO)	Decision
PM -> SP	0.283	0.074	3.839	0	0.124	0.417	0.407	0.283	0.204	Supported
SMP -> SP	0.440	0.067	6.609	0	0.305	0.563		0.440		Supported
SP -> POHQ	0.552	0.059	9.435	0	0.417	0.650	0.305	0.552	0.162	Supported
SP -> SPE	0.543	0.056	9.741	0	0.413	0.638	0.295	0.543	0.174	Supported
PM -> SP-POHQ	0.156	0.047	3.339	0.001	0.063	0.246				Supported
PM -> SP-SPE	0.154	0.047	3.285	0.001	0.063	0.246				Supported
SMP -> SP-POHQ	0.243	0.049	4.916	0	0.148	0.336				Supported
SMP -> SP-SPE	0.239	0.047	5.120	0	0.147	0.327				Supported

5.2 Discussion

This study has contributed to the needs of safety practices as well as healthcare professionals concern on their occupational safety performance in delivering a quality service for the industry that is dedicated to saving human's life. Hospitals should provide the assurance for those who are seeking medical treatment and trusting safety practices during their stay at these hospitals. In this study, it can be concluded that there are positive relationships of safety practice to safety performance, and safety practice to quality of care. Perceived motivation and safety management are really the factors deriving the safety practice while safety practice is the mediator to safety practice, and quality of care.

6. Conclusion

The results show a link between perceived motivation as well as safety management and safety practice, which, in turn, is identified to associate with safety performance and quality of care. It highlights perceived motivation as well as safety management correlated clearly with safety practice and suggests that perceived motivation of safety management is possible to be an effective instrument to uncover issues in team dynamics which may obstruct efficient safety practice. Taken together, these findings suggest that increased motivation and stronger safety management can lead to better safety practice, which will affect not only wellbeing of employees but also patient outcomes, recommending the requirement to integrate staff motivation strategies into quality improvement plans. Thus, improving safety practice could directly improve safety performance and quality of care. This adds further weight to the importance of strategies that focus on safety culture in the healthcare. Further, this research framework wills add-value into safety culture. These results prove self-determination theory which suggests that factors of social-contextual affect the well-being of individuals. These results provide a vital implication to the safety management programme. In this case, safety practice level should be increased in order to increase safety performance and quality of care. Managers first have to be committed by being safety role models. The safety management programme should encourage alertness of potential hazards, insist on implementing safety operating procedures and guide employees' safety behaviours. Additionally, safety management programmes should provide information about safety through consistent safety training classes and safety information flows. Also, safety performance must be given higher priority than other organisational outcomes such as productivity. Safety management programmes should be implemented to

enable healthcare professionals to see the benefit of safety practice up-keeping. There were concerns of the study for consideration of future studies. First, the data collected is limited due to the difficulty to get participating hospitals. Second, as in any survey is the possibility of measurement error. This method relies on an organization's health professionals to describe safety climate in a valid manner. Oversimplification of the findings for wider scope needs further enquiries. Finally, while use of questionnaires is an efficient method to collect data anonymously, researchers have to review other techniques e.g. observation for detection of organisational culture.

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