ASM Sc. J., 13, Special Issue 5, 2020 for APRU2018, 44-50

Assessing Safety Management and Practices in Improving Safety Performance and Quality of Care in West Coast of Peninsular Malaysia

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This study examines the safety performance of professionals in the healthcare sector and identifies the factors contributing to safety performance. It also assesses the performance impacts on the quality of care. Data was collected from late 2017 to early 2018. Respondents comprised of health care professionals such as dental officers, medical officers, optometrists, nurses, pharmacists and radiologists from hospitals located in Ipoh, Kuala Lumpur, Melaka and Pulau Pinang. Self-administered, structured questionnaire was employed in this cross-sectional study. Our findings showed that the most important element affecting safety performance was safety practices (R^2 = 0.227), with medium impact on the quality of care (R^2 = 0.298). The higher the level of safety performance achieved in the healthcare, the better is the quality of care. Safety performance among medical professionals in Malaysia could be improved through safety management programmes.

Keywords: emerging market; healthcare; quality of care; safety management; safety performance

I. INTRODUCTION

Health care can be regarded as a group of services that offers various types of medical treatment, in which a patient's safety is crucial. Unexpected events occur, however, when safe practices are not prioritized and this affects the quality of care (Wong, Chong, Chew, Tay and Mohamed 2018). Safety culture includes the norms, beliefs, roles, attitudes, and practices that reduces the risks of hazards at the workplace (Turner, 1991). The existing literature reported links between organisational culture and its performance. Neal, Griffin and Hart (2000) described safety performance as a safety compliance behaviour and the employee's participation at the workplace.

The healthcare system in Malaysia is under pressure, and the shortage of funding is said to negatively affected health care safety (Rahman, Jarrar and Don 2015). The Malaysian Human Recourses Ministry reported that in 2016, 41005 workplace-related accidents had taken place (Msar, 2017). In the same year, the workplace accident rate was 2.88 per 1,000 employees (Jay, 2017).

Hospital-acquired infection is one of the most important issues that compromises patients' safety and quality of care (Zingg *et al.*, 2015). Most cases of exposure to infections are preventable through strict safety standards (World Health Organization, 2014). Aiken *et al.* (2012) highlighted the knowledge on safety measures among health care providers as being essential in improving patient's safety and care.

Prior studies indicated that many hospitals had the intention to enhance safety management in their premises. However, much attention had been on occupational and patients' safety assessment tools. Harrison, Cohen and Walton (2015) in their study, drew attention to different dimensions of safe practices and quality of care. They included safety management, compliance with safety practices and safety performance feedback. Improved quality of care – which is usually the goal of any health care facility – is determined by safety performance. Safety performance on the other hand, is achieved through safety management and safety practices. Figure 1 below illustrates the relationship between these four components.

We hypothesized that better safe practices and management leads to better safety performance, and greater safety performance improves the quality of care. Our study aims at examining: 1) the relationship between the two components – safety management and safety practices – and

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safety performance among health care professionals, and; 2) the relationship between safety performance and quality of care.

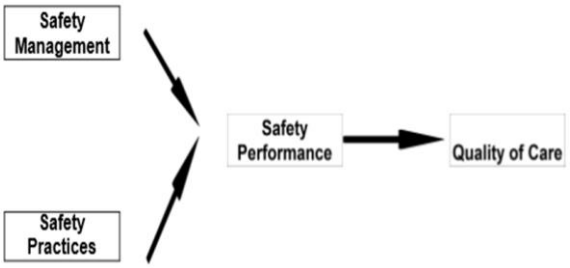

Figure 1. Conceptual Framework

II. MATERIALS AND METHOD

This is a cross-sectional study employing a structured, self-administered questionnaire. Respondents were health professionals from facilities in Ipoh, Melaka, Selangor and Pulau Pinang. These are the medical centres which the team maintains close collaboration relationships, as the former had agreed to participate in the project. All employees of the medical centres are the targeted respondents and there are no exclusion criteria for the respondents. A total of 400 questionnaires were distributed via the assistance of the management of the respective medical centres, and 133 responses were obtained. The response rate was 33%.

The questionnaire consisted of two sections: basic socio-demographic data and variables of interest (outcome and explanatory). Questions were adapted from Singer *et al.* (2012) with minor amendments.

The Likert scale used in the study is a 5-point scale that ranges from "strongly disagree" to "strongly agree." Respondents were instructed to rate their agreement with each statement. Questions for safety management included "I am provided with adequate equipment to provide safe patient care", "I am provided with training and education before using new equipment" and "My department takes the time to identify and assess risks to patients".

For safety practices, questions were "Staff are required to put on protective clothing in the performance of their duties", "Reporting a patient's safety problem will not result in negative repercussions for the person reporting it" and "Good communication flow exists in the chain of command regarding patients' safety issues".

Table 1. Definition of Variables

Variable	Definition
Safety Management1	The part of the organisation's management which covers the safety and health work organisation and policy, the planning process for accident and ill health prevention, the line management' responsibility and the practices, procedures and resources as well as the maintenance of the occupational safety and health policy.
Safety Practice2	Use of a proactive approach to perform a specific work assignment safely.
Safety Performance2	The tracking of goals and targets that indicates whether or not the safety and health programme is making progress.
Quality of Care 3	The extent to which healthcare services provided to individuals and patient populations improves the desired health outcomes. In order to achieve this, healthcare must be safe, effective, timely, efficient, equitable and people-centered.

The items on safety performance included statements like "Disregarding safety policies is rare in my department", "I have not suffered any injuries in this hospital since I was engaged", and "I think effective OSH policies have an impact on job performances in the hospital".

For quality of care, the items were "This facility cares more about the quality of patient care", "Employees never sacrifices healthcare quality for quantity" and "Overall, over the past year, the quality of patient care in my hospital was good".

We tested the validity and reliability of the questionnaire first. The validity of the questionnaire was assessed based on experts' opinion. Reliability tests showed acceptable results; Cronbach's alpha was 0.848, 0.764, 0.787 and 0.730 for the safety management, safety practice, safety performance and the quality of care, respectively.

The data analysis was performed using the SPSS version 19 statistical software. The descriptive analysis was performed using frequency and percentage. Multiple linear regression at 95% confidence interval was computed. The statistical significance for the analyses was set at p-value < 0.05. R-Squared is the correlation between the observed and predicted values of the dependent variable for the overall model fit. F-Statistics is an overall significance test assessing whether or not the group of independent variables reliably predicts the dependent variable when used together.

The research team had secured the permission from

participating hospitals before proceeding with the study. Verbal and written consent had been obtained from the respondents.

III. RESULT

A total of 133 responses were obtained. Respondents were from Melaka (53), Pulau Pinang (26), Ipoh (26) and Selangor (28). They were 94 (72%) females and 37 (28%) males. The mean age was 34, while the average tenure with the hospitals was 9 years. Concerning the respondents' educational background, 61% of the respondents had a degree and above. In relation to their departments, 30% are from Physiotherapy, 18% from Nursing, 11% from Occupational Therapy, 6% from Medicines (medical doctors), and 30% from other departments. Frequencies may not total to 133 responses because of the non-responses. Table 2 shows the basic profile of the respondents.

Table 2. Respondents Profile

Attributes	Description	Frequency	%
Gender	Female	94	72
	Male	37	28
Age	30 years and below	61	47
	31-40 years	44	34
	41 years and above	25	19
Education	SPM or Equivalent	15	13
	STPM or Equivalent	30	26
	Bachelor Degree	53	46
	Postgraduate Degree	17	15
Department / Position	Medical Officer	8	6
	Nursing	23	18
	Occupational Therapy	14	11
	Pharmacy	6	5
	Physiotherapy	39	30
	Others	39	30
Years of Working Experience	5 years and below	50	38
	6-10 years	34	26
	11-15 years	24	18
	16-20 years	10	8
	21-25 years	10	8
	26 years and above	2	2

Table 3 shows the analysis of the average scores of the safety climate variables. The means are 3.92 for safety performance and 3.89 for the quality of care. Safety management (mean=4.06) has the highest score.

Table 3. Descriptive Statistics

Safety Climate Variables	Mean
Safety Management	4.06
Safety Performance	3.92
Quality of Care	3.89
Safety Practice	3.89

Table 4 shows moderate safety management and safety performance relationship where (R^2 = 0.227, Adj. R^2 = 0.177) and safety practice and safety performance relationship (R^2 = 0.245, Adj. R^2 = 0.177). Consistently, F-Statistics (4.547) and Sig-F (0.000) and F-Statistics (3.576) and Sig-F (0.000) also supported the decision where the relationships are significant, respectively.

Table 4. Safety Management or Safety Practice → Safety Performance Regression Analysis

Dependent Variable	Independent Variable	R^2	Adj. R^2	F-Statistics	Sig-F
Safety Performance	Safety Management	0.227	0.177	4.547	< 0.001
Safety Performance	Safety Practice	0.245	0.177	3.576	< 0.001

From Table 5, the figures in the table (R^2 = 0.298, Adj. R^2 = 0.271) supports the H3 where safety performance is a mediating variable that significantly affects the quality of care. Consistent with the results, F-Statistics (10.805) and Sig-F (0.000) also supports H3. Safety performance mediates between safety management and safety practice with the quality of care.

Table 5. Safety performance → Quality of care Mediation Analysis

Dependent Variable	Independent Variable	R^2	Adj. R^2	F-Statistics	Sig-F
Quality of Care	Safety Performance	0.298	0.271	10.805	<0.001

A. Model Fit of the Structural Model

Referring to Table 5, the model computes on two latent variables: safety performance with an R2 of 0.288 and quality of care (R2: 0.539). The value of R2 of the quality of care was 0.539 representing the fact that 53.9% of the variance in the quality of care was explained by safety performance. Taken together, these results support the 'safety management & safety practice-safety performance-quality of care' approach.

Table 6. Model Evaluation Results

Endogenous Latent Variable	Coefficient of Determination, R^2 Value
Safety Performance	0.288
Quality of Care	0.539

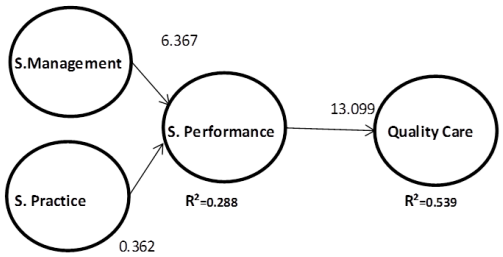

Figure 3. Outcome Model

IV. DISCUSSION

Consistent with the previous studies such as Ali, Chew Abdullah and Subramaniam (2009), Khdair *et al.* (2011), and Chew *et al.* (2009), our findings showed that safety management and safety practice contributed positively to safety performance. Safety management in turn, mediated the quality of care.

Nevertheless, the quality of care is still very much management-driven that leaders of health facilities have the tendency to face many challenges. The importance of improving the quality of care lies in its ability to reduce medical errors, waste and inefficiency in healthcare. However, the quality of care may be strained by the non-practice of safety principles. Improvement could be achieved by reinforcing the change to decrease errors. In other words, safety performance information can be used to improve the quality of care. Training programmes prior to entry into the general practice, orientation and a continuous professional development programme alone are not effective to change practices. Leaders of health facilities should transform work environments to a learning culture, as learning is essential to create positive and healthy work environments. Education and training are important by providing skills to healthcare professionals so that they can be more patient-centred, thus satisfying patients' expectations, and improving the quality of care.

This paper has several limitations. Firstly, the number of hospitals participating in this survey was small. Secondly, our response rate was relatively low, 33%, and the purposive sampling was used. Results, therefore, might not necessarily represent the practices and experiences of all health care providers. However, given that our findings were consistent with those from the previous literature, this indicates that safety management and quality of care in Malaysia can be enhanced through programmes and initiatives that seek to improve safety practices and safety management among health care providers.

Health care providers such as doctors, nurses and medical assistants who are better trained and equipped with knowledge and skills in safety management are more likely to offer a greater quality of care to patients. Future researches may need to focus on larger-scale studies on safety management in health facilities, patient-centred care, and possible workplace interventions that can reduce the likelihood of mistakes and accidents.

V. CONCLUSION

Based on the results, the higher the healthcare professionals' safety performance, the more they contribute to the patient's quality of care. This is compatible with self-determination theory. Healthcare professionals who perform well in safety, tend to offer better patient care. It is recommended that safety programmes should be implemented as it is essential to enable healthcare professionals to witness the safety performance benefits. The key future directions in safety research should be focused to increase patient-centredness, which consist of job design, training, and workplace interventions to improve safety of care and patients' safety.

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