RESEARCH
www.commprac.com
ISSN 1462 2815

DETERMINANTS OF PATIENT SAFETY CULTURE IN RELATION TO THEIR OUTCOMES FOR HOSPITAL QUALITY IMPROVEMENT

Laksmita Dwana [1]* and Dewi Sri Surya Wuisan [2]

[1,2] Department of Hospital Administration, Graduate School of Medicine,
Pelita Harapan University, Tangerang, Indonesia.
[1] Krida Wacana University Hospital, West Jakarta, Indonesia.
Email: [1]dr.laksmitadwana@gmail.com (*Corresponding Author), [2]dewi.wuisan@uph.edu
ORCID ID: [1]https://orcid.org/0009-0001-2065-0700, [2]https://orcid.org/0000-0001-8550-3659

DOI: 10.5281/zenodo.13469460

Abstract

Patient safety remains a critical concern in healthcare, particularly in developing countries, where millions of adverse events are reported annually. Globally, patient safety incidents are on the rise, with significant disparities in reporting and outcomes across regions, underscoring the urgent need for improved safety protocols, robust reporting systems, to enhance healthcare quality and reduce harm. This study aims to explore the determinants of patient safety culture—specifically structural empowerment, professionalism, and emotional exhaustion—and their influence on patient safety outcomes and incident reporting. Employing a cross-sectional method, quantitative data were collected from digital questionnaires given to 161 health workers. The data was analyzed using the SmartPLS 4.0.9.6. The findings reveal that both structural empowerment and professionalism have a significant positive impact on patient safety culture. However, emotional exhaustion does not substantially affect either incident reporting or patient safety outcomes. Notably, there is evidence that the emphasis on safeguarding patients has a significant mediating effect on structural empowerment and professionalism. These insights contribute to the understanding of how specific factors influence patient safety culture and highlight the need for targeted interventions to enhance safety practices in healthcare settings.

Keywords: Healthcare Workers, Structural Empowerment, Professionalism, Emotional Exhaustion, Incident's Report.

1. INTRODUCTION

One important aspect that is the basis of life in all walks of life is health. The government promotes health protection for all Indonesian people. Following the Law of the Republic of Indonesia (RI) Number 17 of 2023, health is the state of a person physically, mentally, and socially; not only free from disease but also produces a productive life. Based on the Law of the RI Number 44 of 2009, a hospital is a health service provider that has a significant impact on the implementation of comprehensive individual health services in the form of emergency care, outpatient care, and inpatient care. In fulfilling its function as a health service provider, hospitals in Indonesia are growing in quantity and quality. This depicts that the community is in need for hospital benefits which continues to increase.

One of the significant global public health issues is patient safety care. Evidence indicates that approximately 134 million adverse events related to unsafe care take place in hospital in low and middle income countries each year, leading to approximately 2.6 million deaths annually [1]. Acknowledging this fact means that there is an emerging need to explore factors which influence patient safety in healthcare facilities based on reported safety incidents to help healthcare managers to prevent recurrence of similar incidents by implementing strategy that enhances patient safety culture [2]. Some evidence has shown that poor safety culture was identified as a contributory factor in major industrial accidents including in healthcare

settings [3], [4], such as maternity deaths at East Kent, UK [5]. These evidents can be prevented. This has been recorded to as substantial economic costs annually. This preventable medication harm draw attention across health care systems, globally. Recently, several strategies have been developed and socialized by WHO including health worker education, skill and competency improvement and their safety [6]. Within their survey, Indonesia has been reported as a country that has developed patient safety programs, established National Committee of Patient Safety and implemented standard operating procedures that focused on the application of human factor to improve safety of medical procedures

Patient safety culture in South East Asia [7], Taiwan [8], South Korea [9], Iran [10], some European countries [11] and USA [12] have been reported. Yet, a national report on this aspect for Indonesia has not been found as publications are scarce and scattered. In case of patient safety outcome and incidence report of the hospital, patient safety culture is encouraged to be implemented, particularly in a newly established hospital. One of the newly established advance healthcare facilities is Krida Wacana University (UKRIDA) hospital that was opened in December 2020. Previous studies have identified several determinants, including structural empowerment [10], [13], [14], professionalism [15], [16], and emotional exhaustion [17], that contribute to enhancing patient safety culture and improving patient safety outcomes and incident reporting. However, no research has yet examined the relationship between patient safety culture, patient safety outcomes, and incident reporting based on a combination of these determinants. Therefore, main goals of this research are to find out determinants that contribute to a culture of patient safety and how those factors affect the reporting of events and the quality of care of patients in UKRIDA hospital. This research is expected to be an evidence-based model in patient safety research in other hospital in Indonesia especially in the newly established one. Further, this study fills a gap in the existing literature on patient safety culture in developing countries, particularly in Southeast Asia and enhances the global understanding of patient safety issues and offers a benchmark for future research.

2. THE COMPREHENSIVE THEORETICAL BASIS

To achieve a consistent and long-lasting reduction in risk, mistakes, preventable damage, and the consequences of errors, the WHO defines patient safety as an organized framework of activities that develops a culture, process procedures, behaviors, technology, and environment in the healthcare industry [1]. Patient safety is a major component in healthcare facilities' capacity to provide high-quality treatment and avoid adverse consequences [7], [18],[19].

Safety culture tends to be a major concern of hospital activities nowadays. An effective approach to mitigate patient safety incidents in medical services involves cultivating a culture of patient safety. This serves as a crucial foundation for enhancing patient safety initiatives and as a benchmark for hospital performance [20]. Hospital administrators have the authority to measure the culture of patient safety and assess the quality of healthcare service by consistently collecting and analyzing data thoroughly. These efforts will give a favor in reducing adverse events, refining clinical processes, and maximizing resource in order to enhance patient outcomes [21]. Two crucial criteria for enhancing patient care i.e. workplace support and a dedication to patient safety was identified [22]. As a foundational component of effective healthcare policy, healthcare institutions globally are now focusing on developing a culture of

patient safety [12]. In order to enhance quality of care through imporoving the safety on patient treatment, healthcare organizations are increasingly coming to recognize the need to foster a culture of safety. Regardless of these differing viewpoints, healthcare organizations and governments still place a premium on creating a positive patient safety culture. This includes having hospitals be more open and fairer with their staff, as well as encouraging learning from mistakes rather than assigning blame [23].

A patient safety culture is associated with efficient procedures, sufficient human resources, backing from management, and good relationships among staff members [24]. When it comes to systematically improving patient safety, hospitals that are both efficient and open about their operations tend to be the front-runners [23]. Several patient safety outcomes are heavily influenced by the patient safety culture [12], [18]. These include reporting frequency, patient satisfaction, and overall perceptions of patient safety. Strengthening structural empowerment has been reported significantly to improve patient safety culture [13]. It is believed that fostering a supportive social climate is a significant factor in improving the ratings of healthcare facilities [25]. Technically, hospital administrators take the central role of front-line managers in organizing safe care and creating a culture of patient safety [26]. This investigation concluded that work environment that empowers its staff will improve clinical learning in a positive way.

Furthermore, structural empowerment is one of the determinants that has a significant influence on patient safety culture and can increase the effectiveness of patient safety [10]. Based on strengthening structural empowerment, the accuracy and effectiveness of health workers' performance will increase; to enhance patient safety, it is important to ensure that the services offered to patients are made more secure and that the overall quality of patient safety measures is elevated. Notably, this investigation explored specific strategies to improve nurses' access to structural empowerment to achieve a positive patient safety culture.

H (Hypothesis) 1: Structural empowerment influences patient safety culture significantly.

The professionalism of medical professionals has a direct impact on the culture of patient safety [16]. It has been shown that poor quality of care given to the patients may occur due to unprofessional attitudes [27]. Failure on critical aspects of professionalism (eg, adherence to treatment guidelines, behavior of interprofessional communication, and capacity of empathy) affects patient safety [28]. Professionalism necessitates considering individuals, interpersonal relationships, and society as a whole [23]. Because unprofessionalism on the part of medical personnel may generate problems with treatment, unforeseen incidents, and medical mistakes might occur when the door is left open, leading to a decrease in patient satisfaction.

H2: Professionalism influences patient safety culture significantly.

Numerous empirical studies have shown that physicians with burnout are more likely to be involved in patient safety incidents [29]. Therefore, emotional exhaustion is considered to have an impact on patient safety culture. Poor level of well-being and moderate-severe levels of burnout among medical staffs are associated with poor outcome of patient safety such as medical errors [28], [30]. Medical personnel might experience burnout due to prolonged exposure to the mental and physical demands of their patients. One of the three signs of burnout is emotional fatigue. Medical errors, absenteeism, and depression may result from this consequence [17], [31]. The culture

of patient safety is often affected by emotional exhaustion. The psychological health of medical personnel and patient safety should be managed simultaneously to overcome the emotional exhaustion [32], [33].

H3: Emotional exhaustion influences patient safety culture significantly.

The outcomes of patient safety are favorably affected by patient safety cultures [23]. A number of studies have shown a range of predictors that influence patient safety culture such as teamwork, staffing and work pace, effectiveness of handoffs, job satisfaction, management support for patient safety culture, leadership, training and learning opportunities, reporting system, and a non-punitive response to error [34]. In addition, the perception of overall patient safety outcomes is favorably impacted by patient safety culture [12]. Staff position, teaching status, and geographic location were also shown to have varied influences on patient safety culture, perspectives of overall patient safety outcomes, and the frequency of reported occurrences [12]. However, in the context of developing countries, there is certain relunctance to report errors that results a culture of underreporting. This poses significant barriers to understand the influence of patient safety culture and their impact on patient outcomes [34]. Therefore, there is an emergent need of exploration to dive in the depth of current issue.

H4: Patient safety culture influences patient safety outcomes significantly.

The organizational factors related to incident reporting include a supportive and compassionate environment, a culture of patient safety that does not blame, the availability of a patient safety team, the existence of guidelines and safety incident report formats [24]. Moreover, a culture focused on patient safety had the positive effect on the reporting frequency of events [12]. Patient safety culture, general opinions of patient safety results, and incident reporting frequency were all shown to be diversely affected by characteristics such as staff position, teaching status, and geographic location [12].

H5: Patient safety culture influences incident reports significantly.

3. METHOD

3.1 Study design

Using a digital survey as its primary data collection tool, this investigation adheres to the selected research technique. A non-interventional study means that the subject received no interventions while the research was underway. The period of data collection dictated the adoption of a cross-sectional technique in this investigation. The study was conducted from April 02 – May 22, 2024, at UKRIDA (Krida Wacana University) Hospital, West Jakarta, Indonesia. The total number of healthcare workers was 196 consisting of general practitioners (21), nurses and midwives (114), specialized doctors (55), and physiotherapists (*6).*

3.2 Sampling

The sample of this investigation was healthcare workers with registered licenses as general practitioners, midwives, nurses, specialized doctors, or physiotherapists who have been working at UKRIDA Hospital for at least a month. The required sample size was calculated using Slovin formula as follows:

$$n = \frac{N}{1 + N\,(e)^2}$$

Assumptions: n = required sample size, N = population size, e = margin of error at 0.05.

The final calculated minimum sample size for this investigation was 132. However, a minimum number of 160 sample size was recommended to be utilized if the conducted research using Partial Least Square-Structural Equation Modeling (PLS-SEM) approach. The researchers selected volunteers using a purposive sampling as sampling approach.

3.3 Data collection

Data were collected using a digital questionnaire administered to 161 healthcare workers at UKRIDA Hospital on April 02 – May 22, 2024. The questionnaire was adapted from Condition for Work Effectiveness-II (CWEQ-II) to measure structural empowerment, Penn State Questionnaire on Professionalism to measure professionalism among medical professionals, Emotional exhaustion was measured by the Maslach Burnout Inventory-Human Surfaces Survey (MBI-HSS), while patient safety outcome, incidents reported, and patient safety culture were assessed by the Survey on Patient Safety Culture (SPOS) Hospital Survey 2.0, and Hospital Survey on Patient Safety Culture (HSOPSC). These instruments were developed by the Agency for Health and Research Quality (AHRQ). The study participants were asked to rate each aspect on a Likert scale. An exit interview was carried out to obtain qualitative data to support the result. To ensure the data quality, intensive supervision was done by principal investigators throughout the data collection period.

3.4 Ethical clearance

Ethical approval was obtained from Pelita Harapan Univesity (003/M/EC-Mrt/III/2024).

3.5 Measures

A total of 161 samples were found to meet the basic criteria for the Partial Least Square- Structural Equation Modeling (PLS-SEM) analytical guideline after removing incorrect replies and proceeding with elimination. This investigation used a data analysis technique in conjunction with a multivariate analytic methodology selected for its complexity. This conceptual framework aimed to examine the relationship between three independent variables—Structural Empowerment (SE), Professionalism (PRO), and Emotional Exhaustion (EE)—and the dependent variables, Incidents Report (IR) and Patient Safety Outcome (PSO). The goal was to establish a Patient Safety Culture (PSC). Both the outer (measurement) and inner (structural) models were evaluated in the PLS-SEM analysis using SmartPLS version 4.0.6.9. The external model measures the related components and also determines the reliability and of validity each indication. After that, the inner model will demonstrate how each hypothesis is relevant. To acquire more detailed management implications, it is also recommended to utilize the Importance-Performance Map Analysis (IPMA) menu.

4. RESULTS AND DISCUSSION

4.1. Results

The 161 valid responses from healthcare workers (Table 1) with their characteristics are described. The majority of healthcare workers at UKRIDA Hospital are female (68.32%) born in 1980-2000 (91.31%) and have been working for more than a year (65.22%). Among all the professions available in hospitals, the largest composition is nurses (55.90%). Therefore, female nurses born in 1980-2000 with more than one year experience became the major respodents of this study. The valid responses were higher than the final calculated minimum sample size for this investigation, i.e., 132.

Table 1: Characteristics of Respondents

Description	Category	Number	Percentage (%)
Gender	Male	51	31.68
	Female	110	68.32
Year of Birth	1946 - 1964	1	0.62
	1965 - 1979	4	2.48
	1980 - 2000	147	91.31
	> 2000	9	5.59
Year of Work Experience	< 1 tahun	56	34.78
	≥ 1 year	105	65.22
Profession	General practitioner	21	13.04
	Midwife	23	14.29
	Nurse	90	55.90
	Specialized doctor	21	13.04
	Physiotherapist	6	3.73
	Total	161	100

The relationship between the variables and their dimensions (outer model) is measured by the outer loading and Average Variance Extracted (AVE) values. In general, the six construct variables with 32 dimensions have an outer loading value > 0.70, except for the SE variable in the Opportunity dimension and the PSC variable in the Communication Openness, Hospital Management Support, and Reporting Patient Safety Events dimensions have outer loading values of 0.683, 0.650, 0.698 and 0.683 respectively (Table 2). Although these four dimensions have an outer loading value < 0.70, in the reality the values are still > 0.400. This shows that all dimensions are reliable as parameters of the variables in the study. Furthermore, the AVE values of all variable are > 0.5 (Table 2). Thus, this means that the dimensions in the study representes one variable, or the dimensions are valid for the respective variable.

Table 2: Reliability and Validity

Variables/Construct	Dimension/Parameter	Outer Loading*	Average Variance Extracted (AVE)*
Structural Empowerment	Opportunity	0.683	0.604
	Information	0.753	
	Support	0.871	
	Resource	0.774	
	Formal Power	0.806	
	Informal Power	0.762	
Professionalism	Accountability	0.861	0.721
	Altruism	0.858	
	Duty	0.884	
	Excellence	0.856	
	Honor & Integrity	0.793	

	Respect	0.837	
Emotional Exhaustion	EE1	0.778	0.663
	EE2	0.833	
	EE3	0.815	
	EE4	0.901	
	EE5	0.799	
	EE6	0.853	
	EE7	0.847	
	EE8	0.784	
	EE9	0.708	
Patient Safety Culture	Continuous Improvement	0.707	0.528
	Clinical Leader Support	0.812	
	Communication about Error	0.782	
	Communication Openness	0.650	
	Reporting Patient Safety Events	0.698	
	Hospital Management Support	0.698	
Patient Safety Outcome	PSO1	0.906	0.831
	PSO2	0.917	
Incidents Report	IR1	0.953	0.888
	IR2	0.950	
	IR3	0.924	

*Outer loading represents for the reliability and AVE represents for the validity of the data in the outer model

The inner model analysis is done to test how well the model predicts the connections between the variables using 3 parameters Variance Inflating Factor (VIF), R^2, and Q^2. The inner VIF test is used to look for signs of multicollinearity across all of the variables used in this study. The VIF values indicates there were no issues with collinearity since all of the VIF values were < 5. The results of multicollinearity analysis indicate that each parameter VIF value is <5 (Table 3). This means that each parameter of the associated variable is constructed properly. The proposed research model's parameters are all confirmed to be reliable and valid. Consequently, the structural (inner) model analysis could go forward.

Table 3: Multicollinearity of the Studied Variables*

Variables	Emotional Exhaustion	Incidents Report	Patient Safety Culture	Patient Safety Outcome	Professionalism	Structural Empowerment
Emotional Exhaustion			1.025			
Incidents Report						
Patient Safety Culture		1.000		1.000		
Patient Safety Outcome						
Professionalism			1.297			
Structural Empowerment			1.318			

*Result is based on Variance Inflating Factor (VIF) value.

R^2 value needs to be explored in order to measure the quality of research model. This value shows determinants' coefficient that represents the power of independent variables in explaining dependent variables. Practically, the higher the R^2 value, the stronger the explanatory power. In summary, R^2 value $\geq$ 0.75 determines strong explanatory power, R^2 value $\geq$ 0.50 determines moderate explanatory power, and R^2 value $\geq$ 0.25 determines weak explanatory power.

As mediating variable, PSC was observed with weak explanatory power in the R^2 value result, which is > 0.25. The results of determinants' coefficient indicate that each parameter R^2 value is < 0.50 (Table 4). This means that each dependent variable has weak explanatory power.

Table 4: Determinants' Coefficient of the Studied Variables*

Dependent Variables	R^2	R^2 adjusted	Explanatory Power
Patient Safety Culture	0.375	0.363	Weak
Patient Safety Outcome	0.362	0.358	Weak
Incidents Report	0.399	0.396	Weak

*Result is based on R^2 value.

Furthermore, Q^2 is explored to measure the capability of independent variables to predict the outcomes of dependent variables. Practically, the higher the Q^2 value, the larger the predictive relevance. In summary, Q^2 value $\geq$ 0.50 determines large predictive relevance, Q^2 value $\geq$ 0.25 determines medium predictive relevance, and Q^2 value $\geq$ 0.00 determines small predictive relevance.

The proposed model's predictive power was assessed using the PLSpredict procedure by computing the model's out-of-sample predictive value (Table 5). This research model successfully predicted PSO and IR in different samples, as shown by the substantial Q^2 construct predict value and medium predictive relevance (>0.25) of PSC (0.345).

Table 5: Predictive Relevance of the Studied Variables*

Dependent Variables	Q^2	Predictive Relevance
Patient Safety Culture	0.345	Medium
Patient Safety Outcome	0.222	Small
Incidents Report	0.233	Small

*Result is based on Q^2 value.

To ensure that the model was correct and to determine how important each variable was, the bootstrapping procedure was used. If the p-value is less than 0.05 and the T-statistic is > 1.645 (one-tailed hypothesis testing 0.05) with a confidence interval, then the hypothesis may be considered significant.

All hypotheses, except for the third one, are supported by a T-statistic > 1.645 and a p-value less than 0.05 (Table 6). Positive outcomes for the standardized coefficient were found, lending credence to the predictions. With a standardized coefficient value of 0.354, the PRO outperformed the other factors as a predictor of PSC.

Table 6: Hypotheses Result

No	Path	Standard Coefficient	T-statistics	P-values	Conclusion
H1	*Structural Empowerment -> Patient Safety Culture*	0.347	4.733	0.000	Supported
H2	*Professionalism ->Patient Safety Culture*	0.354	4.499	0.000	Supported
H3	*Emotional Exhaustion -> Patient Safety Culture*	0.055	0.467	0.320	Not supported
H4	*Patient Safety Culture -> Patient Safety Outcome*	0.602	9.805	0.000	Supported
H5	*Patient Safety Culture -> Incidents Report*	0.632	12.363	0.000	Supported

Prioritization of improvement areas was determined by hospital administration using importance-performance map analysis (IPMA). An effective tool, IPMA, was born out of the synergy between effects and mean-value performance. IPMA (Figure 1) may be divided into four quadrants to identify the indications that need maintenance or enhancement. Independent variables PRO, SE, and EE fall in the first, second, and fourth quadrants respectively (Figure 1).

Since PRO falls ine first quadrant, it means that PRO is considered to be an important variable which has already performed well. Therefore, PRO must be maintained to promote patient safety. On the other hand, SE falls in the second quadrant, which means that SE is considered to be important, but has not performed well. Therefore, the hospital management should prioritize this SE due to its perceived importance for healthcare professionals and its underwhelming performance. Meanwhile, EE is considered to be not as important to influence PSC as compared to SE and PRO. Even though EE shows an insignificant influence on safety patient outcomes, professionalism is considered to exist in the daily operations of the hospital.

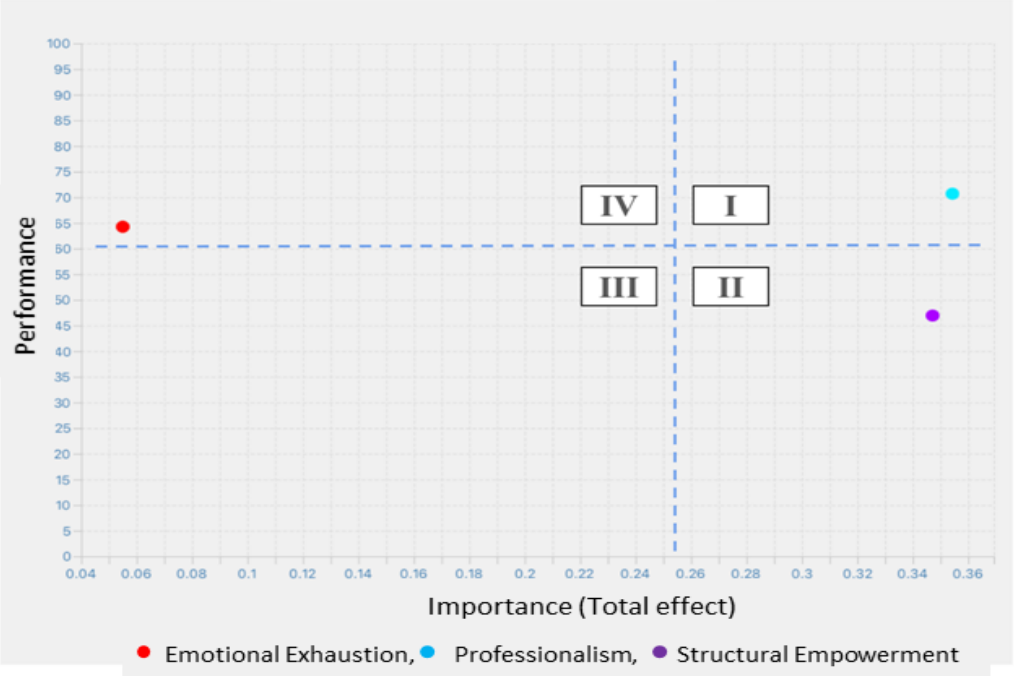

Figure 1: Importance-Performance Map Analysis of Variables Influencing Patient Safety Culture

When a construct intervenes in two related constructs, this construct is referred to as mediation. Mediation analysis with the specific indirect effect test is needed in this study because there are mediating variables. In this study, the bootstrapping method was carried out using SmartPLS™ software followed by looking at the specific indirect effect value. The T-statistics value and P-value are used as a reference in this test. If the P-value < 0.05 and T-statistics > 1.645, then the mediating variable is considered statistically significant. The first four paths are significant, while the last two paths are insignificant (Table 7). It can be concluded that PSC can significantly mediate between SE and PRO to the PSO and IR, but cannot significantly mediate the EE to PSO and IR.

Table 7: Specific Indirect Effect of the Proposed Model

Path	Original Sample	T-statistics	P-values
Structural Empowerment -> Patient Safety Culture -> Patient Safety Outcome	0.209	4.548	0.000
Structural Empowerment -> Patient Safety Culture -> Incidents Report	0.219	4.551	0.000
Professionalism -> Patient Safety Culture -> Patient Safety Outcome	0.213	3.669	0.000
Professionalism -> Patient Safety Culture -> Incidents Report	0.224	3.686	0.000
Emotional Exhaustion -> Patient Safety Culture -> Patient Safety Outcome	0.033	0.460	0.323
Emotional Exhaustion -> Patient Safety Culture -> Incidents Report	0.035	0.470	0.319

The proposed model for the hospital management framework is presented (Figure 2). The outer loading value and P-values (in bracket) of outer model, and the standard coefficient and P-values (in bracket) of the paths in the inner model are presented in the figure. All variables in the proposed model (Figure 2), except EE, are validated by the analysis under the SmartPLS™. Thus, the proposed model may be able to provide reasonable predictions of PSO and IR within the framework of hospital management.

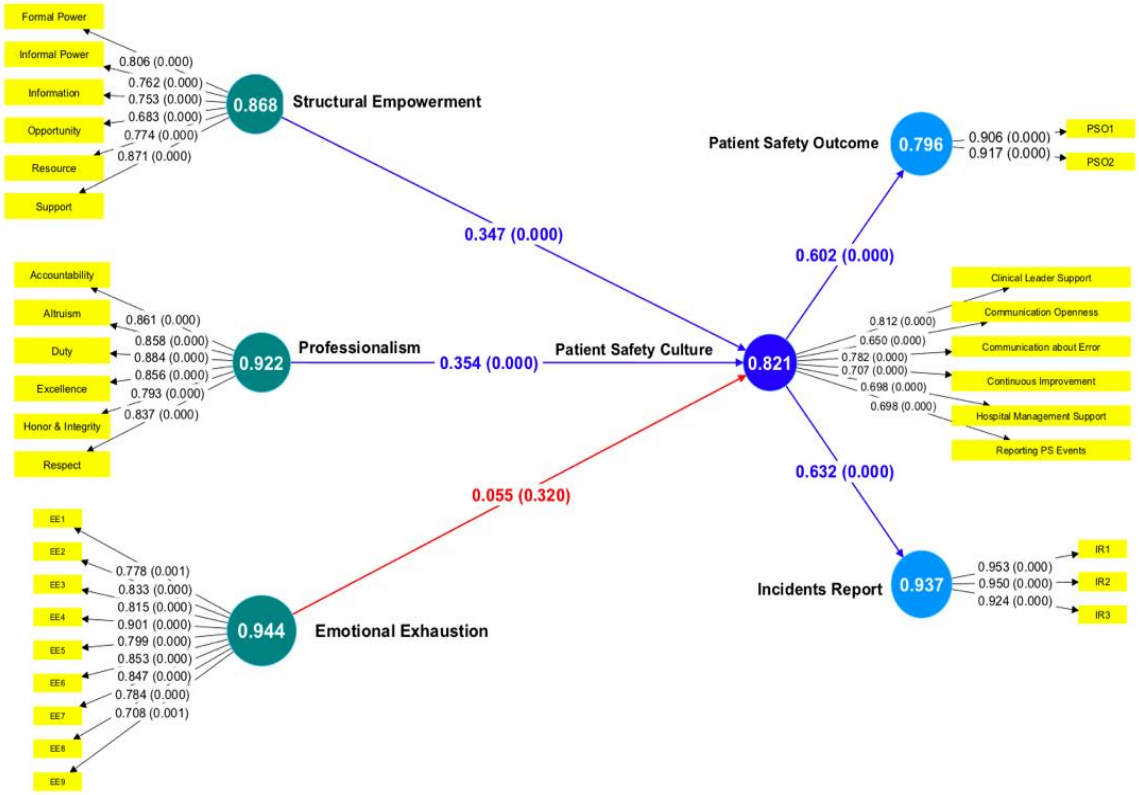

Figure 2: Proposed Model for the Hospital Management Framework

4.2. Discussion

A scientific review of 66 articles from 2006-2020 [35] indicated that PSC in healthcare sectors plays a primary role in enhancing the overall quality, efficiency, and productivity of hospitals. Following previous empirical studies, this investigation found that PSC significantly affected PSO and IR in a healthcare setting. Findings that

pointed to the amount of PSC antecedents in the study were in line with those of previous studies. By investigating both internal (PRO and EE) and external (SE) elements, this investigation contributes to our understanding of health management. This means it might be useful for making health and safety strategies.

This investigation also found that PRO is the most significant factor that could influence PSC. Compared to the other independent variables, the standardized coefficient value of PRO to PSC was the highest at 0.354. Moreover, based on IPMA, it has been proven that healthcare workers view professionalism as the most essential aspect in giving healthcare service and it has already performed very well. A profession itself is an occupation whose essence lies in the mastery of complex knowledge and skills that require the use of knowledge from multiple disciplines of science, learning, or arts practice that is constructed to serve others [36]. The term "professionalism" is derived from the word "professus" which is defined as a set of values, behaviors, and relationships that form the basis of public trust in health workers [15]. Positive relationship between professionalism and patient safety culture was proven and in line with the previous studies conducted in South Korea [16]. The professional attitude of medical personnel has a role that influences patient safety culture. It has been understood that a lack of professional attitude will cause problems in patient care management, allow adverse events and medical errors to occur, and ultimately reduce patient experiential satisfaction [12]. Therefore, it is believed that the PRO among healthcare workers acts as the primary role in patient safety.

On the other hand, EE had been shown to not influence significantly PSC, PSO, and IR respectively. The insignificance of EE may occur due to two theories which were concluded based on IPMA dan another series of interviews, which are (1) The rate of EE among healthcare workers at UKRIDA Hospital is low and (2) PRO helps mitigate EE by fostering a positive work environment, supporting mental well-being, and reducing burnout.

> *"Emotional exhaustion occurred during the Covid-19 pandemic, as a result, it can be said that burnout occurred due to patient volume. Now, the volume of patients with healthcare workers is currently comparable, most colleagues are still relatively young, and the work environment is supportive and positive; even though the volume of patients increases from time to time, it does not feel emotionally draining. After our shifts, we also get a full break without having to bring our work home. In addition, we have been trained to maximize our service to patients in any situation since the very beginning. Therefore, even though the situation is full of challenges, we still strive to provide optimal medical services and are open to helping each other."* – A general practitioner with three years of experience at UKRIDA Hospital, Indonesia.
>
> *"The majority of the nursing workforce consists of millennials and Generation Z. As a result, the style of communication tends to be more informal, and the approach to interpersonal relations tends to be more unique. By implementing a suitable workforce environment, we work together and back each other up even though the number of patients sometimes suddenly spikes*." – A nurse with three years of experience at UKRIDA Hospital, Indonesia.

Evidence also suggests that SE plays a significant role could influence PSC. In line with previous study, this finding confirms that structural empowerment is significantly related to patient safety culture. In order to support the betterment of patient safety, it

is recommended that hospital managers establish a reinforcing work environment regarding the fact that structural empowerment promotes higher commitment to the organization. It has been acknowledged that healthcare facility as an organization which support and embody empowerment are also more successful in retaining employees [14]. However, according to IPMA, healthcare workers view structural empowerment as an important aspect in sustaining patient safety culture, but they tend to presume that the structural empowerment brought by the hospital management has not been performed very well. To support this result, a series of interviews was carried out to obtain more primary data on structural empowerment at the hospital.

> *"Sometimes the feedback conveyed by health workers is not heard by hospital managers. Moreover, when we have obstacles that require further direction, hospital managers have also not been able to provide solutive suggestions for these obstacles."* – A general practitioner with one year of experience at UKRIDA Hospital, Indonesia.
>
> *"Unfortunately, there is still no available platform for work performance evaluation. Thus, there are quite an amount of employees who do not know whether the things they do are good or still need to be improved. It is recommended to settle a standardized operational procedure that practically gives them directions in doing their job."* – Head of Hospital Quality with three years of experience at UKRIDA Hospital, Indonesia.

Based on these findings, it can be concluded that this result may occur due to the high rate of PRO among healthcare workers at UKRIDA Hospital that significantly enhances PSC by promoting adherence to ethical standards, continuous improvement to excel at their job, honor and integrity, accountability, and altruism. These elements ensure high-quality patient care and reduce medical errors. In addition, PRO helps the healthcare worker to foster a positive work environment and manage their emotional state. Overall, PRO creates a safer and more effective healthcare system by maintaining a focus on patient safety and provider well-being. In addition, external factors such as SE have been proven to influence patient safety culture significantly. Furthermore, it is recommended to strengthen the professionalism among healthcare workers in the hospital to sustain an excellent patient safety culture to attain better patient safety outcomes and incident reporting. It is also recommended to strengthen the structural empowerment carried out by the hospital management as expected to leverage the performance of patient safety culture.

5. CONCLUSION

This investigation emphasizes the fact that emotional exhaustion does not influence patient safety culture. This finding may occur due to the high rate of professionalism among healthcare workers or the distinctive features of the organizational culture. Moreover, this investigation shows a novelty in hospital management strategy that patient safety culture has a significant mediating role in structural empowerment and professionalism toward patient safety outcomes and incident reports. Therefore, in terms of enhancing patient safety and incident reports in hospital settings, it is recommended to strengthen structural empowerment, sustain professionalism among healthcare workers, and create a positive and supportive workplace environment at the hospital.

6. LIMITATION

This research still has several limitations that cannot be avoided in writing, supporting data, collecting research data, and analyzing data that can affect the outcomes of the study. Limitations found during this research include:

1. The theoretical literature that supports the hypothesis is relatively minimum, especially the Patient Safety Culture variable as a mediating variable between Structural Empowerment and Professionalism on Patient Safety Outcome and Incidents Report because these findings are new things that have never been studied before.
2. Emotional Exhaustion has no influence on Patient Safety Culture at UKRIDA Hospital. However, the conclusions of this investigation cannot be generalized because UKRIDA Hospital has its own culture and works in accordance with the hospital's vision and mission.
3. The research subjects used were health workers at UKRIDA Hospital predominantly born in 1980-2000, so there might be differences in respondent characteristics when compared to research subjects in more heterogeneous groups.

The limitations found in this investigation can be a lesson for further research. The suggestions for future research include to ensure the availability of secondary data needed to compile the background, deepen the search for other literature that supports the research hypothesis and involving other independent variables that may be antecedents of patient safety culture in hospitals, such as leadership, organizational support, workplace environment, and so on; or using non-private hospitals or hospitals that consist of more heterogeneous healthcare workers as research area.

References

1) W. H. O. WHO, *Global Patient Safety Action Plan 2021–2030: Towards eliminating avoidable harm in health care*. Geneva: World Health Organisation, 2021.

2) I. Dhamanti, S. Leggat, S. Barraclough, and T. Rachman, “Factors contributing to under-reporting of patient safety incidents in Indonesia: leaders’ perspectives,” *F1000Research*, vol. 10, p. 367, 2022.

3) M. R. N. Danielsson, P. Nilsen, H. M. D. Rutberg, and K. R. N. Årestedt, “A National Study of Patient Safety Culture in Hospitals in Sweden,” *J. Patient Saf.*, vol. 15, no. 4, pp. 328–333, 2019.

4) M. Aburumman, S. Newnam, and B. N. Fildes, “Evaluating the effectiveness of workplace interventions in improving safety culture: A systematic review.,” *Saf. Sci.*, vol. 15, pp. 376–392, 2019.

5) M. Dixon-Woods, “Learning from maternity service failures at East Kent Hospitals,” *Br. Med. J.*, vol. 379, no. o2755, 2022.

6) N. P. Gupta, N. Dhingra, and I. Papieva, *Global patient safety report 2024*. Geneva: World Health Organization, 2024.

7) S. Kang, T. T. T. Ho, and N.-J. Lee, “Comparative Studies on Patient Safety Culture to Strengthen Health Systems Among Southeast Asian Countries,” *Front. Public Heal.*, vol. 8, no. 600216, 2021.

8) B. Yu, C.-F. Wen, H.-L. Lo, H.-H. Liao, and P.-C. Wang, “Improvements in patient safety culture: A national Taiwanese survey, 2009–16,” *Int. J. Qual. Heal. Care,* vol. 32, no. 1, pp. A9–A17, 2020.

9) S. Lee, “Current Status and Future Challenges of Patient Safety Improvement in Korea,” *Yakhak Hoeji*, vol. 64, pp. 179–184, 2020.

10) S. Parizadeh and K. Beshlideh, “Determination of the Relationship between Structural Empowerment and Patient’s Safety Culture among the Employees of a Public Hospital in Ahvaz,” *J. Heal. Saf. Work*, vol. 10, no. 2, pp. 19–23, 2020.

11) N. Granel-Giménez, P. A. Palmieri, C. E. Watson-Badia, R. Gómez-Ibáñez, J. M. Leyva-Moral, and M. D. Bernabeu-Tamayo, “Patient Safety Culture in European Hospitals: AComparative Mixed Methods Study,” *Int. J. Environ. Res. Public Heal.*, vol. 19, no. 939, 2022. DOI: 10.3390/ijerph19020939

12) A. Azyabi, W. Karwowski, P. Hancock, T. T. H. Wan, and A. Elshennawy, “Assessing Patient Safety Culture in United States Hospitals.,” *Int. J. Environ. Res. Public Heal.*, vol. 19, p. 2353, 2022. DOI 10.3390ijerph19042353.

13) L. N. Moura, S. Camponogara, J. L. G. D. Santos, R. C. Gasparino, R. M. D. Silva, and E. O. Freitas, “Structural empowerment of nurses in the hospital setting,” *Rev Lat Am Enferm.*, vol. 28, p. e3373, 2020. DOI: 10.1590/1518-8345.3915.3373.

14) D. Cinar and T. Kutlu, “The Effect of Structural Empowerment and Psychological Empowerment of Surgical Nurses on Patient and Employee Safety Culture,” *Gevher Nesibe J. Med. Heal. Sci.*, vol. 6, no. 11, pp. 20–28, 2021. DOI: 10.46648/gnj.175

15) N. S. Alharbi, A. M. Alassaf, A. R. AlZamil, B. M. Alqarni, F. A. Alzahrani, and F. B. Alsaif, “Studying the Association Between Knowledge of Professionalism and Demographic Characteristics in King Saud University Medical Students,” *Cureus*, vol. 15, no. 8, p. e44241, 2023. DOI: 10.7759/cureus.44241.

16) W. Lee and I. Jan, “Effect of Nurses’ Professionalism, Work Environment, and Communication with Health Professionals on Patient Safety Culture (AHRQ 2.0.): A Cross-Sectional Multicenter Study,” *J. Nurs. Manag.*, no. 1591128, p. 11 pages, 2023. DOI: 10.1155/2023/1591128

17) C. Panari, L. Caricati, A. Pelosi, and C. Rossi, “Emotional exhaustion among healthcare professionals: the effects of role ambiguity, work engagement and professional commitment. , 90(6-S), 60–67.,” *Acta bio-medica Atenei Parm.*, vol. 90, no. 6-S, pp. 60–67, 2019. DOI: 10.23750/abm.v90i6-S.

18) J. O. Sarfo, J. Ocloo, E. Ansah, and M. Amoadu, “Safety culture and patient safety outcomes in developing countries: A narrative review,” *Integr. Heal. Res. J.*, vol. 1, pp. 43–53, 2023. DOI: 10.47963/ihrj.v1i2.1373.

19) I. U. Mistri, A. Badge, and S. Shahu, “Enhancing Patient Safety Culture in Hospitals.,” *Cureus*, vol. 15, no. 12, p. e51159., 2023. DOI: 10.7759/cureus.51159.

20) D. Bhati, M. S. Deogade, and D. Kanyal, “Improving Patient Outcomes Through Effective Hospital Administration: A Comprehensive Review,” *Cureus*, vol. 15, no. 10, p. e47731, 2023.DOI: 10.7759/cureus.47731

21) W. Quentin, V.-M. Partanen, I. Brownwood, and N. Klazinga, “Improving healthcare quality in Europe,” in *Improving healthcare quality in Europe*, R. Busse, N. Klazinga, D. Panteli, and W. Quentin, Eds. Copenhagen: WHO and OECD, 2019, pp. 31–62.

22) B. Hesgrove, K. Zebrak, N. Yount, J. Sorra, and C. Ginsberg, “Associations between patient safety culture and workplace safety culture in hospital settings,” *BMC Heal. Serv Res*, vol. 24, no. 1, p. 568, 2024. DOI: 10.1186/s12913-024-10984-3.

23) I. C. Chen, N.-L. Peng, N.-H. Fuang, and K. L. Sin, “Impacts of job-related stress and patient safety culture on patient safety outcomes among nurses in Taiwan,” *Int. J. Healthc. Manag.*, pp. 1–9, 2019. DOI: 10.1080/20479700.2019.1603419.

24) G. K. Kaya, S. Ustebay, J. Nixon, C. Pilbeam, and M. Sujan, “Exploring the impact of safety culture on incident reporting: Lessons learned from machine learning analysis of NHS England staff survey and incident data,” *Saf. Sci.*, vol. 166, no. 106260, 2023. DOI: 10.1016/j.ssci.2023.106260.

25) N. Jankelová, Z. Joniaková, Z. Skorková, and H. G. Adamková, “Impact of Structural Employee Empowerment on Hospital Ratings: Mediating Role of Social Climate and First-Line Managers’ Resilience,” *Risk Manag. Healthc. Policy*, vol. 17, pp. 883–901, 2024. DOI: 10.2147/RMHP.S453351.

26) M. Hedsköld, A. Sachs, M, T. Rosander, M. von Knorring, and P. K. Härenstam, “Acting between guidelines and reality- an interview study exploring the strategies of first line managers in patient safety work,” *BMC Heal. Serv Res.*, vol. 21, p. 48, 2021. DOI: 10.1186/s12913-020-06042-3

27) A. F. Hannawa, A. W. Wu, A. Kolyada, A. Potemkina, and L. J. Donaldson, “The aspects of healthcare quality that are important to health professionals and patients: A qualitative study,” *Patient Educ. Couns.*, vol. 105, no. 6, pp. 1561–1570, 2022. . DOI: 10.1016/j.pec.2021.10.016.

28) J. P. McNulty and Y. Politis, “Empathy, emotional intelligence and interprofessional skills in healthcare education,” *J. Med. Imaging Radiat. Sci.*, vol. 54, no. 2, pp. 238–246, 2023. DOI: 10.1016/j.jmir.2023.02.014.

29) A. Hodkinson *et al.*, “Associations of physician burnout with career engagement and quality of patient care: systematic review and meta-analysis,” *Br. Med. J.*, vol. 378, p. e070442, 2022. DOI: 10.1136/ bmj-2022-070442.

30) A. Bhardwaj, “Medical Professionalism in the Provision of Clinical Care in Healthcare Organizations,” *J Heal. Leadersh*, vol. 14, pp. 183–189, 2022. DOI: 10.2147/JHL.S383069.

31) J. Kang, S. S. Kwon, and Y. Lee, “Clinical nurses’ work-life balance prediction due to patient safety incidents using classification and regression tree analysis: a secondary data analysis,” *BMC Nurs*, vol. 23, no. 70, 2024. DOI: 10.1186/s12912-024-01719-0.

32) H. Cheng, H. Yang, Y. Ding, and B. Wang, “Nurses’ mental health and patient safety: An extension of the Job Demands-Resources model.,” *J. Nurs. Manag.*, vol. 28, pp. 653–663, 2020. 10.1111/jonm.12971.

33) L. E. Søvold *et al.*, “Prioritizing the Mental Health and Well-Being of Healthcare Workers: An Urgent Global Public Health Priority doi:,” *Front. Public Heal.*, vol. 9, 2021. DOI: 10.3389/fpubh.2021.679397.

34) J. O. Sarfo, J. E. Y. Ocloo, E. W. Ansah, and M. Amoadu, “Safety Culture and Patient Safety Outcomes in Developing Countries: A Narrative Review,” *Integr. Heal. Res. J.*, vol. 1, no. 2, pp. 43–53, 2023. DOI: 10.47963/ihrj.v1i2.1373.

35) A. Azyabi, W. Karwowski, and M. R. Davahli, “Assessing Patient Safety Culture in Hospital Settings,” *Int. J. Environ. Res. Public Heal.*, vol. 18, p. 2466, 2021. DOI: 10.3390/ijerph18052466.

36) O. ten Cate, N. Khursigara-Slattery, R. L. Cruess, S. J. Hamstra, Y. Steinert, and R. Sternszus, “Medical competence as a multilayered construct,” *Med Educ.*, vol. 58, no. 1, pp. 93–104, 2024. DOI: 10.1111/medu.15162.