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Patient safety culture as a mediator between healthcare personnel's psychological empowerment and patient outcome

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ABSTRACT

Preventing healthcare errors and reducing damage are becoming the basic concepts of patient safety development. Healthcare personnel need to be more careful and minimize complications that can occur during patient care. Psychological empowerment is important to support a safety culture and patient outcomes. This study investigates the relationship between psychological empowerment (PE) and patient outcome (PO) mediated by patient safety culture (PSC). A cross-sectional survey study was conducted in private hospitals accredited by Joint Commission International. A total of 150 healthcare personnel as participants who met the requirements were obtained by distributing the questionnaires in March 2023. Significant results in mediating patient safety culture have been analyzed using partial least square-structural equation modeling (SEM). The dimensionality of PE and PSC was assessed by a new method that is a disjoint two-stage approach. The role of PSC was found to fully mediate the positive relationship between psychological empowerment and patient outcome (β=0.436, p-value <0.05, CI 95%). The direct relation between PE with PO cannot be established (p-value>0.05). This study contributes to growing the value of developing a safety culture and the function of psychological empowerment in healthcare staff to enhance patient outcomes.

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1. INTRODUCTION

Patient safety is the main goal in developing healthcare systems worldwide, especially in developing countries with inadequate healthcare facilities [1], [2]. Patient safety is very important to be implemented in hospitals, as health facilities handle the most patients with various complex cases where the possibility of medical errors is greater. Therefore, one of the hospital's duties is to make patient safety a hospital organizational behavior. Implementing a patient safety culture in hospitals can improve the quality of service and patient outcomes [3], [4]. Healthcare management today is more accountable, financially and socially, for adverse events within their healthcare organization and the overall patient experience. The government and public sentiment have changed from tolerating human error as inevitable to challenging hospital management to improve healthcare systems that result in error and/or a negative patient experience. The shifting of this understanding makes it important to realize the essence of patient safety culture and its impact on patient outcomes [5].

The World Health Organization (WHO) notes that approximately 10 million people worldwide get preventable injuries or death yearly due to medical intervention. Preventing healthcare errors and reducing

damage are becoming the basic concepts of patient safety development [6]. In Indonesia, national reporting data of Patient Incidents in hospitals have yet to be fully reported routinely by hospitals. Hence, data related to patient safety incidents are still not widely available [7], [8]. The last incident reported by the Indonesian Ministry of Health, which the reporting of patient safety events has increment from 2018 to 2019, from 1,489 cases to 7,465 cases.

Patient safety must be understood and not limited to avoiding hazards such as infection, malfunction of medical devices, trauma or accidents, and fire risk, and must also pay attention to the human factor working in the hospital. The human factor of concern is healthcare personnel who directly interact with patients. Healthcare personnel play a very important role if they can minimize complications in patient care, for example, postoperative bleeding or fetal distress during labor. Secondary infections during treatment are hazards or complications also associated with patient care. This complication can not only be prevented by giving advice and warnings to healthcare personnel to be more careful. However, it is necessary to build a concept that is holistically expected to prevent medical errors from occurring, which is focused on the healthcare personnel [9].

Managing healthcare personnel in hospitals is not easy because healthcare personnel have different backgrounds, including differences in background, experience, and skills. In addition, there are intrinsic factors such as attitude, beliefs, and personality that can influence behavior. Therefore, a more humane approach is needed to motivate health personnel so they can make patient safety a work culture. One relatively new approach used in hospital organizations is psychological empowerment.

Empowerment is defined as the ability of an individual to benefit from the resources available to achieve goals and to make decisions independently [7]. Psychological empowerment, the perception of the degree of empowerment at work, is a motivational construct manifested in four cognitions: meaning, competence, self-determination, and impact [10], [11]. Meaning leads to an individual's importance in his or her work role. Competence refers to self-efficacy, the extent to which an individual believes they can undertake their work role successfully. Impact refers to the extent to which an individual perceives that he or she has some impact in their immediate work environment. Self-determination refers to self-directing one's work [8]. Based on the explanation of these dimensions, studies related to psychological empowerment must be carried out using multidimensional methods.

Psychological empowerment of health workers is an efficient approach and is rarely discussed in current studies, especially concerning it as a factor that can influence patient safety culture [8], [12]. Many studies on psychology in the non-health sector have discussed its benefits, while studies and implementation of psychological empowerment in the health sector still need to be completed [10]. Even though this method is an effective and efficient approach to influencing the quality of service in hospitals by increasing awareness about patient safety culture and improving patient outcomes [13]. Therefore, it is important to see how psychological empowerment (PE) can relate to patient safety culture (PSC) and impact patient outcomes. Unfortunately, the study of this concept is still underdeveloped and needs to be reinforced [14].

Several studies on patient safety culture have been conducted in government and private hospitals [15]. The results show that comparing survey results regarding patient safety culture behavior among health workers in these two types of hospitals is higher in public hospitals than in private hospitals [16]. This can be identified because the workload is bigger in private hospitals [17], [18]. A blame culture also contributes to lowering the intention to report patient safety-related events. Previous studies suggested that private hospitals should also pay more attention to patient safety culture and focus their investment on increasing PSC [16], [19]. Accordingly, studies on PE and PSC in private hospitals still need to be carried out and can contribute to improving patient outcomes.

This study's purpose to evaluate the concept of positive relation from the dimensions of patient safety culture is supported by the development of psychological empowerment provided in healthcare facilities. The expected result of this mediating patient safety culture role is positively related to psychological empowerment and patient outcomes [20]. This study can contribute by identifying the mediating role of PSC in private hospitals from a healthcare personnel psychological approach that improves the quality of care for patients [1], [21].

2. METHOD

2.1. Study design, participants, and ethics approval

The data for this cross-sectional study was obtained online among the healthcare personnel in a private hospital in Tangerang that has already operated for 30 years, with above 200 beds capacity, which has already been accredited by Joint Commission International (JCI). This hospital is the first private hospital in Tangerang and is one of the primary healthcare referral hospitals with a total of approximately 240,000 patients treated per year. The research population is all healthcare personnel who have worked in the hospital for three years or more. The research sample in this study used the census sampling method. Data were collected for 14 days during March 2023. There was a consent form at the beginning of the survey. Participants were allowed to

drop him/herself from the survey at any time without any explanation, and no personal information was recorded. A total of 150 people provided informed consent and completed the questionnaire, which constituted our study sample. The Institutional Review Board of the Pelita Harapan University Medical Research Council provided ethical approval for the study (003M/EC-Mrt/III/2023).

Data were collected using a web-based survey form which was self-administered and included 51 questions, consisting of ten filter questions [22] and three standardized, valid, and reliable Likert-scale instruments for; i) psychological empowerment survey [11], ii) safety climate questionnaire [23], and iii) patient outcome [24]. The psychological empowerment was assessed using 12 questions on four dimensions of psychological empowerment, such as; i) meaning (three items), ii) competence (three items), iii) self-determination (three items), and iv) impact (three items). The safety climate questionnaire was assessed using five dimensions of patient safety climate, such as; i) teamwork climate (five items), ii) safety climate (five items), iii) job satisfaction (five items), iv) perception of management (four items), v) working condition (four items), and the patient outcome was assessed using six questions adapted from the previous study [23].

Psychological empowerment is a human capital approach widely used in organizations [25], [26]. Many studies regarding the results of the relationship between PE and patient outcome (PO) have been carried out. However, psychological empowerment commonly acts as a mediating variable [12]. Therefore, this study attempts to deploy psychological empowerment as an independent variable. In this study, psychological empowerment was analyzed using dimensional analysis in partial least squares structural equation modeling (PLS-SEM) and predicted further the role of this independent variable and indicator to support PSC [12]. Within the healthcare sector, some studies have found psychological empowerment to be an important antecedent of the quality of patient care safety [27], [28].

Patient safety culture is defined as "the values shared among organization members about what is important, their beliefs about how things operate in the organization, and the interaction of these with the working unit and organizational structures and systems, which together produce behavioral norms in the healthcare that promotes safety" [29]. Patient safety should be a top strategic priority for healthcare organizations and their leaders. There should be a blame-free system for identifying threats to patient safety, sharing information, and learning from events. In addition, there should be a collaborative environment so that all health personnel in the healthcare organization can share and exchange information about patient safety [30]. The role of PSC as a mediator in PE and PO can be depicted in a conceptual framework as in Figure 1. Further, the four dimensions of PE and the five dimensions of PSC are also described in the conceptual framework. The study of healthcare personnel is also related to the length of service. So that the length of service (LOS) can be considered a moderator of the relationship between variables in the framework. Therefore, LOS is included as a moderating variable in this conceptual framework [31].

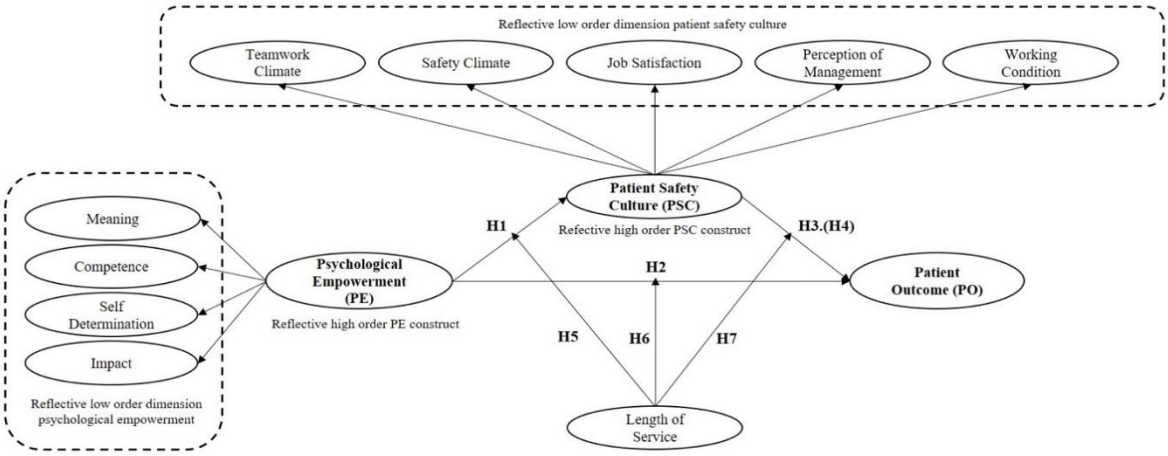

Figure 1. Conceptual framework

Data analysis using the latest analysis method in PLS-SEM, namely the disjoint two-stage method instead of the traditional method, repeated indicators. The advantage of this new method is to test the reliability and validity of the HOC directly. Structural equation modeling (SEM) analysis tests prior hypotheses between latent variable correlation and covariance matrixes to determine and analyze relationships between theoretical concepts [32], [33]. The conceptual framework consists of low-order construct (LOC) and high-order construct (HOC) variables to extend the standard construct conceptualization of the framework instead of

relying on a single layer of abstraction. High-order construct estimated by using the disjoint two-stage approach [34]. The latent variable (LV) scores from the first stage are used as input for the second stage HOC indicators, while all the other (nonhierarchical) constructs, the patient outcome, are measured with their original indicators. All the construct measures in the second stage, not only those of the HOC, then the model's predictive power on an indicator level was analyzed by calculating the cross-validated predictive ability test (CVPAT) procedure [35], [36].

3. RESULTS AND DISCUSSION

3.1. Result

3.1.1. Characteristics of respondents

There were one hundred and fifty healthcare personnel joined this study and the demographic data are presented in Table 1. Medical personnel in this study were dominated by women (79%) compared to men, and 77% of respondents were married. Based on the age group, the majority of medical personnel aged 35-45 years were found in this study (39%). As much as 61% of respondents have the last diploma education and most of the work positions in this study are nurses (59%). As many as 59% of respondents in this study had worked as health workers for 10 years or more, with the highest proportion of working duration (81%), namely >40 hours per week. As many as 88% of respondents in this study made direct contact with patients. Most of the employment status of the respondents in this study were also employees with permanent status.

Table 1. Respondents profile

Category	Description	Sample (n)	Percentage
Gender	Female	119	79%
	Male	31	21%
Marital status	Married	116	77%
	Single	34	23%
Age (years old)	18–<25	18	12%
	25–<35	50	33%
	35–<45	58	39%
	45–55	21	14%
	>55	3	2%
Education	Bachelor	19	13%
	Diploma	92	61%
	Postgraduate	3	2%
	Professional (doctor, radiographer, physiotherapist, and nurse)	36	24%
Working position	Biomedical engineering staff (radiographers, electromedical, medical laboratories, medical physicists, radiotherapists)	21	14%
	Medical personnel (general practitioner, dentist, and specialist)	12	8%
	Medical technicians (medical records and health information, cardiovascular technician, anesthesiologist assistant)	8	5%
	Nurse	88	59%
	Nutritionist and dietitian	7	5%
	Pharmaceutical staff (pharmacists and pharmaceutical technical personnel)	3	2%
	Rehabilitation physicist, therapy personnel (physiotherapist, occupational therapist, speech therapist)	11	7%
Length of service (year)	3–5	31	21%
	5–<10	30	20%
	≥10	89	59%
Working hours (per week)	>40 hours	121	81%
	≤40 hours	29	19%
Direct contact with patient	No	18	12%
	Yes	132	88%
Employment status	Contract	13	9%
	Permanent	137	91%

3.1.2. Measurement model

To establish the reliability indicator, the outer loading was measured, and one indicator (WCN1) was eliminated that was not in accordance with the recommended indicator loading value limit. There're 40 indicators that meet the requirements that consisting of 38 indicators having an outer loading value above 0.708 and 2 (SEL1, POC1) indicators having a value below 0.708 but still above 0.60, which is still acceptable [33]. In this study, most averaging Cronbach's alpha values are 0.85, and composite reliability ranges between 0.7 and 0.95 in the first stage of reliability & validity analysis. Convergent validity is determined by measuring the average variance extracted (AVE) value above or equal to 0.50. The AVE measurement result in Table 2 indicates that all constructs can explain at least 50% of item variance in the model, thus establishing convergent validity.

Table 2. First stage reliability and validity analysis

High order construct	Low order construct (dimension)	Indicators		Outer loading	CA	CR	AVE
PE	MEA	MEA1	The work I do is very important to me	0.865	0.859	0.914	0.78
		MEA2	My job activities are personally meaningful to me	0.885			
		MEA3	The work I do is meaningful to me	0.899			
	COM	COM1	I am confident about my ability to do my job	0.916	0.914	0.946	0.853
		COM2	I am self-assured about my capabilities to perform my work activities	0.943			
		COM3	I have mastered the skills necessary for my job	0.912			
	SEL	SEL1	I have significant autonomy in determining how I do my job	0.653	0.745	0.848	0.655
		SEL2	I can decide on my own how to go about doing my work	0.891			
		SEL3	I have considerable opportunity for independence and freedom in how I do my job	0.863			
	IMP	IMP1	My impact on what happens in my department is large	0.875	0.829	0.897	0.743
		IMP2	I have great deal of control over what happens in my department	0.851			
		IMP2	I have significant influence over what happens in my department	0.860			
PSC	TCL	TCL1	Employees' input well received in this clinical area	0.798	0.867	0.903	0.652
		TCL2	Disagreements in this clinical area are resolved appropriately	0.846			
		TCL3	I Have the support I need from other personnel to care for patient	0.806			
		TCL4	It is easy for personnel here to ask questions when there is something that they do not understand	0.782			
		TCL5	The physicians and nurses here work together as a well-coordinated team	0.804			
	SCL	SCL1	I would feel safe being treated here as a patient	0.836	0.745	0.848	0.787
		SCL2	Medical errors are handled appropriately in this clinical area	0.903			
		SCL3	I know the proper channels to direct questions regarding patient safety in this clinical area	0.87			
		SCL4	I receive appropriate feedback about my performance	0.912			
		SCL5	I am encouraged by my colleagues to report any patient safety concerns I may have	0.913			
	JST	JST1	I like my job	0.814	0.912	0.935	0.741
		JST2	Working here is like being part of a family	0.867			
		JST3	This is a good place to work	0.919			
		JST4	I am proud to work in this clinical area	0.875			
		JST5	Morale in this clinical area is high	0.825			
	PMN	PMN1	Management in this working setting fully supports my daily efforts	0.899	0.911	0.938	0.79
		PMN2	Management is doing a good job	0.936			
		PMN3	The management unit in this work setting deals with problem personnel constructively	0.877			
		PMN4	I get adequate, timely information about events in this working setting that might affect my work	0.840			
	WCN	WCN2	This hospital does a good job of training new personnel	0.890	0.876	0.924	0.802
		WCN3	All the necessary information for diagnostics and therapeutic decision is routinely available to me	0.872			
		WCN4	Trainees in my discipline are adequately supervised	0.923			
POC		POC1	I have never get complains from the patients and their relatives	0.688	0.872	0.908	0.665
		POC2	I ensure to provide service would meet patient's satisfaction criteria	0.823			
		POC3	I ensure to provide safety service to patient	0.843			
		POC4	I can avoid patient physical damage (such as fall, burn, and pressure sore)	0.857			
		POC5	I can avoid patient chemical damage (such as drug misuse, drug incompatibility, and wrong medication)	0.856			
		POC6	I can avoid patient biological damage (such as bacterium, virus, and fungus infection)	0.775			

AVE: Average variance extracted, CA: Cronbach's alpha, CR: Composite reliability, MEA: Meaning, COM: Competence, SEL: Self-determination, IMP: Impact, TCL: Teamwork climate, SCL: Safety climate, JST: Job satisfaction, PMN: Perception of management, WCN: Working condition, POC: Patient outcome, PE: Psychological Empowerment, PSC: Patient Safety Culture, PO: Patient outcome

The final evaluation of measurement model analysis is to test the discriminant validity by calculating the heterotrait-monotrait (HT/MT) ratio, as this ratio is known to be more accurate in detecting

discriminant problems. Dimensional analysis in PE and PSC was analyzed in the first stage of HT/MT calculation. The recommended value for HT/MT ratio is <0.9 to differentiate the indicator's concept [33]. The calculation results of first stage discriminant validity with HT/MT ratio are presented in Table 3, where all indicators are specified to measure their respective construct, it was concluded that all the indicators in this research model had been well discriminated against, so they could measure their respective constructs.

Table 3. First stage discriminant validity with HT/MT ratio

	COM	IMP	JST	MEA	POC	PMN	SCL	SEL	TCL	WCN
COM										
IMP	0.603									
JST	0.546	0.602								
MEA	0.694	0.534	0.528							
POC	0.474	0.393	0.518	0.383						
PMN	0.567	0.604	0.711	0.511	0.497					
SCL	0.470	0.576	0.706	0.477	0.559	0.644				
SEL	0.435	0.729	0.421	0.299	0.405	0.438	0.312			
TCL	0.547	0.704	0.757	0.557	0.636	0.720	0.726	0.460		
WCN	0.516	0.536	0.659	0.442	0.692	0.633	0.611	0.416	0.708	

MEA: Meaning, COM: Competence, SEL: Self-determination, IMP: Impact, TCL: Teamwork climate, SCL: Safety climate, JST: Job satisfaction, PMN: Perception of management, WCN: Working condition, POC: Patient outcome

In accordance with the two-stage method, it is also necessary to report the reliability and validity analysis of the HOC and LOC. The results of the HOC assessment can be assessed in Table 4, where it can be ascertained that the HOC construct has satisfactory reliability and validity (AVE>0.5, CA>0.60). The valid result of the first stage of HT/MT is calculated. The second stage of discriminant validity with HT/MT analysis was calculated using the latent variable score of PE, PSC, and PO. The calculation results of second stage discriminant validity with HT/MT ratio are presented in Table 5, where all indicators are specified to measure their respective construct, it was concluded that all the indicators in this research model had been well discriminated against, so they could measure their respective constructs.

Table 4. Second stage reliability and validity analysis

Variables (high order constructs)	CA	CR	AVE
Patient outcome	0.887	0.915	0.646
Patient safety culture	0.891	0.920	0.697
Psychological empowerment	0.787	0.863	0.612

AVE: Average variance extracted, CA: Cronbach's alpha, CR: Composite reliability

Table 5. Second stage discriminant validity with HT/MT ratio

Variables (high order constructs)	Patient outcome	Patient safety culture	Psychological empowerment
Patient outcome			
Patient safety culture	0.689 (CI 0.598–0.772)		
Psychological empowerment	0.546 (CI 0.381–0.696)	0.826 (CI 0.750–0.895)	

The inner model analysis is the second part analysis to evaluate the quality of the model in this research by predicting the relation between variables/parameters in the inner model consisting of R-square (R^2), Q-square (Q^2), and variance inflation factor (VIF). R^2 to measure predictive accuracy, Q^2 to measure predictive relevance and the significance and coefficient of the variable are to decide whether the hypothesis can be supported or not. Previously, common method bias arising from errors or biases in measurement methodology was evaluated using the inner VIF.

The importance of conducting the inner VIF test is to check multicollinearity issues. The findings showed all the constructs had inner VIF below five as suggested [33], [37]; thus, it can be concluded that there is no multicollinearity issue found in this model. The R^2 value of patient safety culture=0.512, which is categorized as moderate predictive accuracy and patient outcome has R^2=0.400, which is categorized as moderate predictive accuracy. Blue and green boxes indicate the dimensions of the construct. The yellow box indicates the dependent variable indicators. All the Q^2 are found>0 with the highest Q^2 in teamwork climate (Q^2=0.389), which was categorized as medium predictive value (0.25–0.50), see Figure 2. Therefore, it can be explained that constructs in the out-of-sample model approach have sufficient cross-validated redundancy.

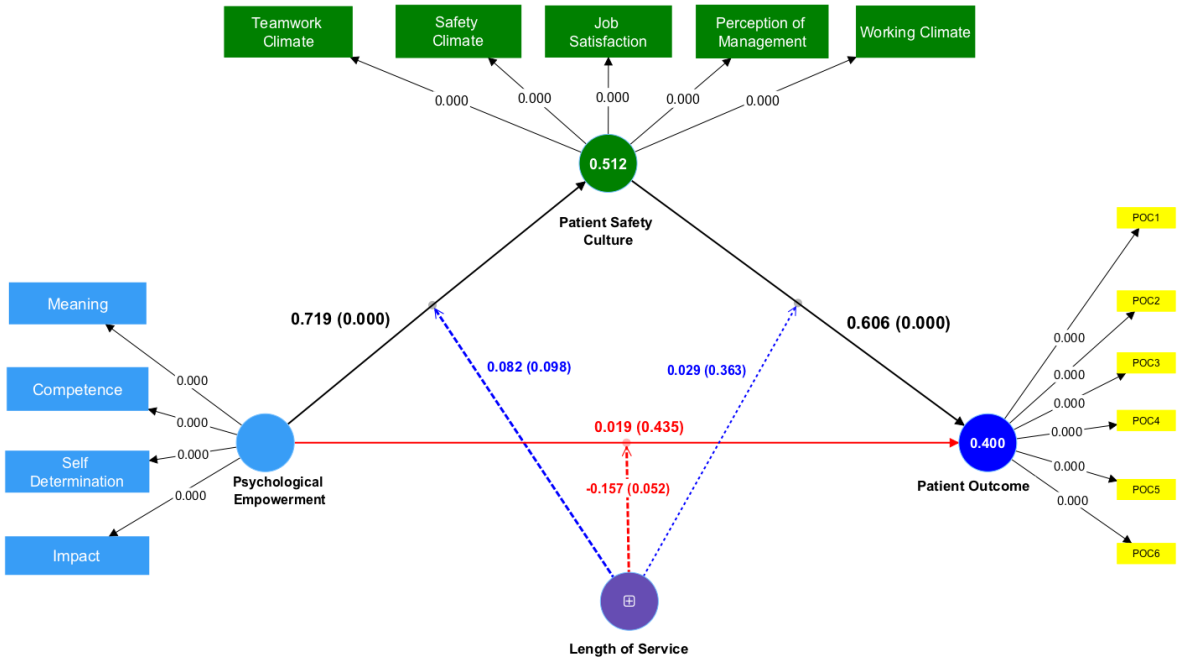

Figure 2. Structural model

In models that have multiple paths, it is recommended to assess the p-value using the corrected p-value, Bonferroni. The calculated p-value is divided by the observed path, with a result of 0.007. Based on the result of hypothesis testing with the bootstrapping feature, see Table 6. It was shown that there were three supported hypotheses which are H1, H3, and H4 (with p<0.05, corrected p-value<0.007, and no zero-value found between interval CI 5% and CI 95%). On the other side, the standardized coefficient was positive and in accordance with the purpose hypothesis (directional hypothesis). These findings show that PE has a significantly positive relationship with PSC, and PSC has a significantly positive relationship with PO. However, the relation between PE and PO (H2) cannot be established since the p-value<0.05 and the finding of zero in the range of confidence interval. Therefore, this study demonstrated that the mediating by PSC is full mediation.

Table 6. Hypothesis test results

	Hypothesis	Standardized coefficient	P values (0.05)	Corrected P-value (0.007)	Confidence interval 5.0%	95.0%	Result	f^2
H1	PE → PSC	0.719	0.000*	0.000**	0.652	0.787	Supported	1.043
H2	PE → PO	0.019	0.435^{ns}	0.435^{ns}	-0.163	0.224	Not supported	0.000
H3	PSC → PO	0.606	0.000*	0.000**	0.444	0.747	Supported	0.296
H4	PE → PSC → PO	0.436	0.000*	0.000**	0.324	0.545	Supported	-
H5	LS x PE → PSC	0.082	0.098^{ns}	0.098^{ns}	-0.03	0.177	Not supported	0.015
H6	LS x PE → PO	-0.157	0.052^{ns}	0.052^{ns}	-0.321	-0.007	Not supported	0.025
H7	LS x PSC → PO	0.029	0.363^{ns}	0.363^{ns}	-0.102	0.169	Not supported	0.001

Note= ns: not significance, *: significance at p-value (0.05), **: significance at corrected p-value 0.007), PSC: patient safety culture, PO: patient outcome, PE: psychological empowerment, LS: length of service

There are three moderation hypotheses, H5, H6, and H7 (p-value>0.05), that assess the moderating role of length of service, which needs more evidence to support the hypotheses. However, at the sample level, the length of service weakens the relationship between PE and PO. Meanwhile, length of service can strengthen PE and PSC, as well as PSC-to-PO relationships.

In addition, to interpret the hypotheses, it's recommended to consider effect size. The results of the hypotheses analysis, it was found that large effect size (f^2=1.043), from PE to PSC, while the patient safety culture also has a medium effect on patient outcome (f^2=0.296). So, the relationship between PE and PSC can be said to have a strong relationship. If the respondent has obtained psychological empowerment from the hospital, then the patient safety culture will also increase.

CVPAT becoming a recent appropriate method for measuring the predictive ability of the model in PLS-SEM. The CVPAT also recommended measuring the prediction-oriented model comparison in PLS-SEM. CVPAT ensures that the overall model can predict the dependent variable [36]. The first comparison in CVPAT aims to compare PLS-SEM with the indicator average (IA). By resulting negative value, the IA indicates a smaller error in this model and shows predictive value, Then, the second comparison aims to compare PLS-SEM with the linear model (LM) and by resulting in a negative value in PLS-SEM indicating strong predictive ability in this model. Based on these findings, it concludes that the model has strong predictive relevance and can be replicated in other healthcare personnel-related study [37]. See Table 7 for details.

Table 7. Cross-validated predictive ability test result

Variables	PLS SEM vs IA		PLS SEM vs LM	
	Average loss difference	p-value	Average loss difference	p-value
Patient outcome	-0.040	0.018	-0.008	0.072
Patient safety culture	-0.332	0.000	-0.014	0.211
Overall	-0.173	0.000	-0.011	0.062

The heterogenicity analysis was done using finite mixture (FIMIX) analysis. Resulting in two comparable segments that have significant differences showing heterogenicity among respondents. Further analysis in patient outcome segmentation, the dependent variable, that shows the R^2 results in 0.379 in segment 1 and 0.997 in segment 2 indicates that additional analysis needs to be performed to ascertain the attributes of study respondents, causing the unobserved heterogenicity, see Table 8.

Table 8. FIMIX results

Variables	R^2	Segment 1 (n=131)	Segment 2 (n=19)
Patient outcome	0.379	0.379	0.997
Patient safety culture	0.488	0.525	0.128

Importance-performance map (IPMA) analysis was used to identify indicators and provide suggestions to managers in prioritizing their improvement activities [38]. It has resulted from the total effect and performance based on the mean value. Importance-performance map analysis is divided into 4 quadrants, whereas the focus is more on the quadrant which is important and performed. Figure 3 shows the mapping of indicators that need to be maintained respectively. This study shows that Impact followed by competence indicators need to be focused on to be maintained to be more performed in supporting Patient Outcomes. One of the lowest scores in the reflective indicator of Impact is the participant's control over what happens in my department.

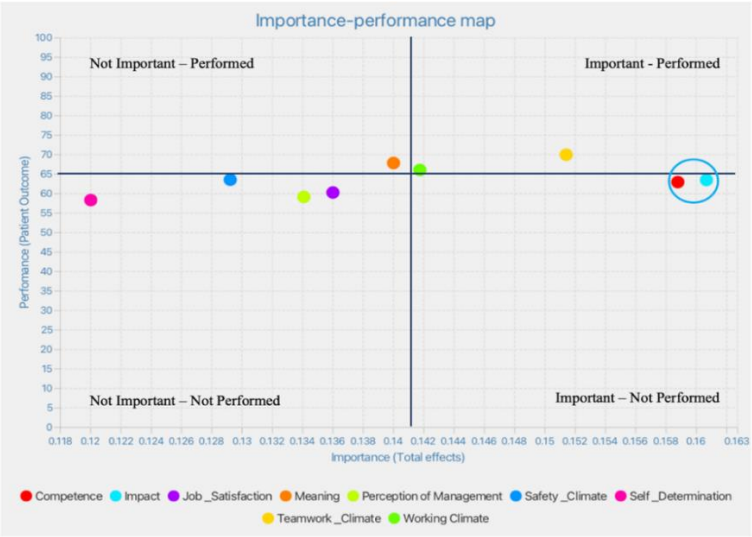

Figure 3. Importance-performance map analysis of indicators

3.2. Discussion

This study aimed to analyze the role of patient safety culture as a mediator from psychological empowerment to patient outcome. A positive relation from the dimensions of patient safety culture is also supported by the development of psychological empowerment provided in healthcare facilities. As expected, the result demonstrated patient safety culture role has a positive relationship between psychological empowerment and patient outcomes.

This study highlights that empowerment is important in human resources and management practice since it can directly improve subordinate performance, as in a previous study [10]. This study found that PE in healthcare personnel has a positive relationship with the patient safety culture in the context of private hospitals. These results align with the pre-experimental study about developing psychological empowerment and patient safety culture in Turkey [39]. After receiving a training-based empowerment program to empower the nurses psychologically and improve PSC perceptions in nurses, there were improvements in meaning and competence, teamwork within the units, and the number of reported events after implementing the empowerment program. Unlike the experimental research, this study showed a significant relationship between PSC and patient outcome variables. The results also showed a strong relationship between psychological empowerment and patient safety culture (β=0.719). The findings of this study indicate that the length of service cannot provide strong evidence that the length of service can affect moderation in the structural model.

The implication of this study encourages the hospital management to provide an empowerment program, since it will be beneficial in developing healthcare personnel's perception of Meaning, belief, value, and behavior. Awareness of healthcare personnel's abilities and capabilities to do more in their duty, willingness, and fortitude to work in a job where they can use their abilities when they are sure of their competencies also improve after the empowerment program [40]. Moreover, this study revealed competence has important based on IPMA analysis as shown in Figure 3, which aligns with the previous study that mentions that employee who feels competent in the hospital and perceives their job as meaningful may provide advantages in creating PSC [39], [41].

Whilst PE relates positively to PSC, the relationship between PE and Patient Outcomes in the healthcare setting has no significant direct association. These findings indicate that PE cannot be directly related to certain outcomes. This can be interpreted that PE activities require clear subjects, in the concept of healthcare the subjects focused on PE are one of the subjects related to patient safety. This finding is different from previous research that PE can be directly related to patient outcomes. This difference in results is likely due to the profile of the respondents in this study where the age of the healthcare personnel in this study was younger. These younger personnel are not yet emotionally stable [42].

Thus, the psychological empowerment mediated by Safety Culture can establish a positive relationship to Patient Outcomes. The results of this study can fill the limitations of previous research, which has not explained much about the relationship between the mediating role of patient safety culture in PE and PO. Previous studies have indeed stated that PE is mediating in increasing the significant relationship Emotional Intelligence has on quality of service and work system performance with quality patient care. However, studies on the direct relationship between psychological empowerment and patient outcomes have not been conducted before [20], [43].

In terms of the dimensional analysis of PSC, this study's findings exhibit the same result as previous studies where job satisfaction is the second most important component as a dimension of patient safety culture. Psychological empowerment is one of the well-known important predictors of job satisfaction. This study aligns with a previous study done in Saudi Arabian ICU Safety Culture in 2012, which found job satisfaction also became the highest score in contributing to Safety Culture in ICU [2], [12]. There are emerging trends that relate to connections between patient safety culture and specific patient outcomes. This information from previous studies guides researchers in this study to construct the recent validation of the importance of a positive patient safety culture [29]. The results that yielded a significant relationship between patient safety culture and patient outcomes are outlined in Figure 2.

Teamwork climate is the dimensional analysis of PSC, which has the most performance variable in IPMA analysis. On the other side, the working climate, one of the dimensional analyses of PSC, still must be focused on and developed to become more performed in the IPMA performance indicator in Figure 3. This result can perhaps be explained by nonexistent team training in hospitals [25], [28], [44]. This study is consistent with the finding from a previous study in Austria that has shown the relationship between teamwork within units and clinical patient outcomes, including error rates and patient mortality therefore, hospital management should implement team training to improve teamwork within units. The teamwork climate consists of the indicators of communication and feedback in the healthcare unit; the high score of this study can be described as a safe environment for opinions and a low blaming culture in the hospital [3], [45]. Patient safety is a critical component of improving patient outcomes. As healthcare facilities continually

strive to improve, there is a growing recognition of the importance of establishing a safety culture and the role of psychological empowerment in healthcare personnel [7], [17].

This study has several limitations, firstly a small sample size of this study which is only one private hospital. Secondly, the heterogenicity; therefore, post hoc analysis should be done to analyze the attribute or characteristic respondent that affects the heterogenicity of data. Thirdly, the data collection used online self-administered questionnaires prone to bias. Therefore, in the future, the study is recommended to use direct interviews to collect data from participants. Lastly, the respondents were not classified based on personality. Psychological empowerment is known to become more effective for people with certain personalities; therefore, in future studies, personality traits could be deployed as a moderating variable.

4. CONCLUSION

This study concludes that patient safety culture plays an essential role in mediating the positive relationship between the psychological empowerment of medical personnel with patient outcomes. This is reinforced by the findings, which show the type of mediation is full mediation. This study indicates that healthcare personnel who feel empowered will demonstrate involvement in a patient safety culture. Furthermore, patient safety culture will be related to improving patient outcomes, for example, avoiding patient physical damage such as falls and pressure sores and patient chemical damage such as drug misuse, drug incompatibility, and wrong medication.

This study has offered a new approach to measuring the dimensionality of PE and PSC through the disjoint two-stage approach. Through this method, the result shows the important dimensions that should be prioritized by hospital management which are Impact as a dimension of psychological empowerment and Safety climate as a dimension of patient safety culture. Finally, this study could suggest that hospital management focuses on the psychological empowerment approach, which can support forming a patient safety culture. Specifically, this approach could be implemented by in-house training and motivating healthcare personnel about their important role in improving patient outcomes.

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