Determinants of Patient Safety Culture: The Role of Safety Leadership Interactions

Pembentuk Budaya Keselamatan Pasien: Fungsi Interaksi Kepemimpinan Keselamatan

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ABSTRACT

This research was motivated by several problems related to patient safety in central surgical installations. The aim of this research is to empirically reveal the influence of interprofessional collaboration and implementation of the surgical safety checklist on patient safety culture with safety leadership as a moderating variable. This research is included in quantitative research with a cross sectional study design, the population is health workers in central surgical installations, the sampling technique uses saturated samples so that the sample size is 77 respondents using a purposive sampling method. The analytical method used is three box method analysis and PLS-SEM. The results of the analysis concluded that interprofessional collaboration, the application of the Surgical Safety Checklist and Safety Leadership had a positive and significant effect on patient safety culture. Safety Leadership was not able to moderate interprofessional collaboration but positively moderated the application of the Surgical Safety Checklist to patients. patient safety culture.

Keywords: Implementation of surgical safety checklist, interprofessional collaboration, patient safety culture, safety leadership.

ABSTRAK

Penelitian ini dilatarbelakangi oleh beberapa permasalahan terkait keselamatan pasien di instalasi bedah sentral. Tujuan dari penelitian ini adalah untuk mengungkap secara empiris pengaruh kolaborasi interprofesional dan penerapan *surgical safety checklist* terhadap budaya keselamatan pasien dengan kepemimpinan keselamatan sebagai variabel moderasi. Penelitian ini termasuk dalam penelitian kuantitatif dengan desain cross sectional study, populasinya adalah petugas kesehatan di instalasi bedah sentral, teknik pengambilan sampel menggunakan sampel jenuh sehingga besar sampel sebanyak 77 responden dengan menggunakan metode purposive sampling. Metode analisis yang digunakan adalah analisis metode three box dan PLS-SEM. Hasil analisis menyimpulkan bahwa kolaborasi interprofesional, penerapan *surgical safety checklist* dan kepemimpinan keselamatan berpengaruh positif dan signifikan terhadap budaya keselamatan pasien. Kepemimpinan Keselamatan tidak mampu memoderasi kolaborasi antarprofesional namun secara positif memoderasi penerapan Daftar Periksa Keselamatan Bedah pada pasien. budaya keselamatan pasien.

Kata kunci: Budaya keselamatan pasien, impelemntasi *surgical safety checklist*, kepemimpinan keselamatan, kolaborasi interprofesional.

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INTRODUCTION

The concept of occupational health and safety is explicitly aimed not only at the occupational health and safety of members of the organization, but also at other people who are recipients of services, if the organization is service-based. The occupational health and safety program seeks to create a conducive work environment where occupational health and safety can be realized (Shiri *et al*., 2023), In the health care industry, the effectiveness of occupational health and safety programs is proven by the establishment of health workers' compliance with the patient safety culture system (Wagner *et al.*, 2020), and a culture of patient safety can be achieved through a work system based on interprofessional collaboration (Amarneh & Al Nobani, 2022), and specifically in surgical services, the surgical safety checklist is an interprofessional communication tool as a main part of patient safety culture (Mejia & Fernandes, 2022), Furthermore, the role of a leader who focuses on occupational health and safety programs, plays his leadership function to direct his members to realize a culture of patient safety (Wei & Kuo, 2023).

Patient safety culture is a health service governance system that seeks to minimize the risk of patient injury due to poor quality service processes (Donaldson *et al*., 2020), Patient safety culture is a work guide for health workers to provide services safely with the main focus being patient safety (Azyabi *et al*., 2022), and patient safety culture forms a disciplined work attitude for health workers (Ilaria *et al*., 2022), The culture of patient safety depends on a leader who directs members to work together even though they have different scientific backgrounds (Schmidt *et al*., 2021), and the leader directs his members to use the surgical safety checklist as a communication tool, so that surgery can be carried out safely (Abbott *et al*., 2018), and patient safety culture consists of aspects of a culture of openness, a culture of justice, a culture of reporting, a culture of learning and a culture of information (Khoshakhlagh *et al*., 2019).

Interprofessional collaboration is a system of cooperation between work units with different scientific backgrounds and skills (Slusser *et al*., 2018), This system avoids overlapping nursing tasks carried out by only one work unit (Schot *et al*., 2020), so that nursing tasks will be distributed to each section with linear knowledge and working together so that nursing tasks run effectively (Geese & Schmitt, 2023), and the effectiveness of interprofessional collaboration is proven through the active role of its members, and can be realized if led by a leader who focuses on the concept of occupational health and safety (Ho *et al*., 2023), so that interprofessional collaboration can form health workers who adhere to a culture of patient safety (Schmidt *et al*., 2021), so that patient safety can be realized if the interprofessional collaboration system is implemented effectively (Dinius *et al*., 2020), because interprofessional collaboration is formed through aspects of cooperative partnerships, coordination and joint decision making (McLaney *et al*., 2022).

One way management can prevent patient safety incidents in surgical services is by implementing a surgical safety checklist as an interprofessional inspection and communication tool (Harris *et al*., 2022), *The surgical safety checklist consists of sign in, time out and sign out phases which will form health workers' understanding of their function and purpose* (Gul *et al*., 2022). Basically, the effectiveness of implementing the surgical safety checklist requires a leader who focuses on occupational health and safety (Röhsig *et al*., 2020), so that the implementation of the surgical safety checklist will direct health workers to be disciplined in the principles of patient safety culture (Haugen *et al*., 2020), which will prevent patients from the risk of injury and even death on the

operating table (Rodella *et al*., 2018), and the implementation of the surgical safety checklist is shaped by aspects of communication, resources, disposition and bureaucracy (Dinesh *et al*., 2018).

Leadership is a process of understanding and directing its members to achieve the goals expected by the organization (Yukl, 2019), The role of a leader is very important in directing the work behavior of its members (Tao *et al*., 2020), leaders with a safety concept encourage their members to work together effectively even with different scientific backgrounds (Folkman *et al*., 2019), and leaders who focus on safety will try to form the discipline of their members to maximize the surgical safety checklist so that surgical procedures are carried out safely to avoid patient safety incidents in the operating room (Munthali *et al*., 2022), because basically leadership seeks to encourage the success of its members in achieving organizational goals (Cakir & Adiguzel, 2020), and safety leadership effectively shapes the work behavior of health workers who adhere to a culture of patient safety (Buttigieg *et al*., 2023), because safety leadership is formed by aspects of planning, organizing, directing and controlling (Tao *et al*., 2020).

The phenomenon underlying this research is the occurrence of several patient safety incidents in operating rooms at regional hospitals in Bekasi Regency. Based on information obtained from the head of the hospital quality department in January 2023, several unexpected incidents occurred, namely 6 cases of bracelets not being installed. patient identity, 12 cases of postponement of surgery and 15 cases of not marking the operating side in 2022, and unexpected events in the operating room are forms of weak discipline of health workers towards the patient safety culture system (Nwosu *et al*., 2022). Not having an identity bracelet on will result in surgical procedures that are not in accordance with the patient's medical data and records, and this reflects an ineffective interprofessional collaboration system and leads to patient safety incidents (Arad *et al*., 2022), Marking the surgical site is the most important part before carrying out surgical procedures, if this is not done, it reflects the non-compliance of the doctor responsible for implementing the surgical safety checklist which impacts the risk of patient injury (Hou *et al*., 2021), Delays in operating times cause patients to experience psychological disorders and delays in medical treatment, and this shows a weak supervisory system from the leadership *(Maine et al*., 2019).

Based on the description above, it can be seen that research regarding interprofessional collaboration, the application of surgical safety checklists and safety leadership to patient safety has been widely carried out, but no one has specifically combined these four variables into one complete research, so this research has the novelty of combining all four these variables in one complete study, and using the three box method approach as an analytical tool to describe each research variable. Based on the phenomenon of cases in central surgical installations in 2022, this research aims to empirically prove the influence of interprofessional collaboration, implementation of surgical safety checklists and safety leadership on patient safety culture.
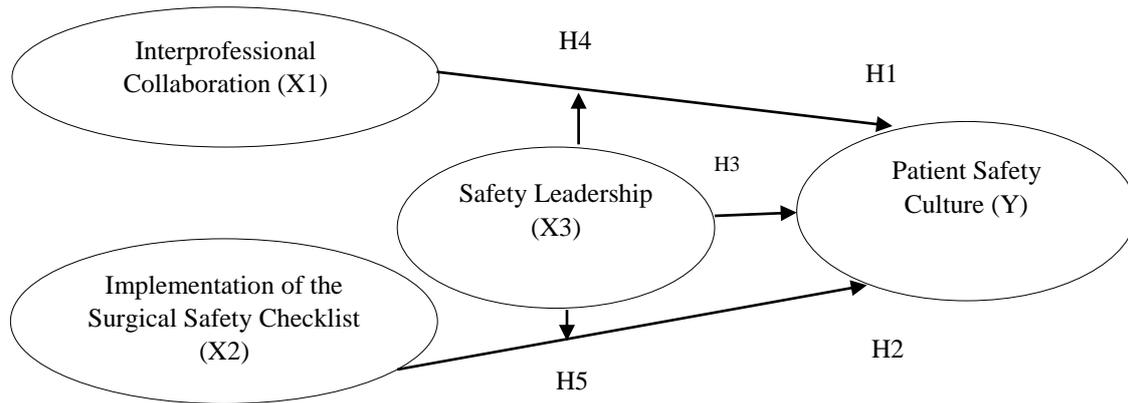
Research Model

Figure 1. Research Constellation

Hypothesis Development
The Influence of Interprofessional Collaboration, Implementation of the Surgical Safety Checklist on Patient Safety Culture

Patient safety culture is a health service governance system that seeks to minimize the risk of patient injury due to poor quality service processes (Donaldson *et al*., 2020), Patient safety culture is a work guide for health workers to provide services safely with the main focus being patient safety (Azyabi *et al.*, 2022), Patient safety culture can be achieved through a work system based on interprofessional collaboration (Amarneh & Al Nobani, 2022), and specifically in surgical services, the surgical safety checklist is an interprofessional communication tool as a main part of patient safety culture (Mejia & Fernandes, 2022), Furthermore, the role of a leader who focuses on occupational health and safety programs, plays his leadership function to direct his members to realize a culture of patient safety (Wei & Kuo, 2023). This description explains that patient safety culture is a system that seeks to shape the way health workers work to pay attention to important aspects in detail so as not to cause patient injury, so the way of work must be carried out with the concept of interprofessional collaboration so that there is no overlapping of work in one work unit. who do not have the overall competence to handle patients, and a surgical safety checklist is implemented to prevent skipping steps before surgery. Apart from that, the importance of a leadership concept that focuses on safety will carry out its function so that its members remain adherent to patient safety culture as a work guideline. Several relevant studies have concluded that interprofessional collaboration can form health workers who adhere to a culture of patient safety (Schmidt *et al*., 2021), Implementation of the surgical safety checklist will direct health workers to be disciplined in the principles of patient safety culture (Haugen *et al*., 2020) and safety leadership effectively shapes the work behavior of health workers who adhere to a culture of patient safety (Buttigieg *et al*., 2023), so that the research hypothesis can be assumed:

H1 : Interprofessional collaboration influences patient safety culture in central surgical installations.

H2 : The implementation of the surgical safety checklist influences patient safety culture in central surgical installations.

H3 : Safety leadership influences patient safety culture in central surgical installations.

The Role of Safety Leadership Moderating Interprofessional Collaboration and Implementation of the Surgical Safety Checklist on Patient Safety Culture

Leadership is a process of understanding and directing its members to achieve the goals expected by the organization (Yukl, 2019), The role of a leader is very important in directing the work behavior of its members (Tao *et al*., 2020), leaders with a safety concept encourage their members to work together effectively even with different scientific backgrounds (Folkman *et al*., 2019), and leaders who focus on safety will try to form the discipline of their members to maximize the surgical safety checklist so that surgical procedures are carried out safely to avoid patient safety incidents in the operating room (Munthali *et al*., 2022), because basically leadership seeks to encourage the success of its members in achieving organizational goals (Cakir & Adiguzel, 2020).

Uraian tersebut menjelaskan bahwa pada prinsipnya fungsi kepemimpinan dilaksanakan untuk mengarahkan setiap anggota untuk mencapai tujuan organisasi melalui efektifitas kerjanya. Efektivitas kerja yang dimaksud adalah terciptanya kolaborasi interprofesional yang efektif dan penggunaan Surgical Safety Checklist sebagai checklist yang bertujuan untuk mencegah terjadinya insiden keselamatan pasien, dan bila berjalan dengan efektif maka konsep kepemimpinan keselamatan akan memperkuat efektivitas kolaborasi interprofesional. dan checklist penerapan keselamatan bedah dalam mewujudkan prinsip kerja yang tepat dengan mematuhi budaya keselamatan pasien. Several relevant studies conclude that the role of a leader who focuses on occupational health and safety programs, plays his leadership function to direct his members to realize a culture of patient safety Efektivitas kolaborasi interprofesional dapat terwujud jika dipimpin oleh pemimpin yang berfoku pada keselamatan kerja (Ho *et al*., 2023) and the effectiveness of the surgical safety checklist can be realized if it is led by someone who focuses on work safety (Röhsig *et al*., 2020), so that the research hypothesis can be assumed:

H4 : Safety leadership moderates the relationship of interprofessional collaboration towards patient safety culture in central surgical installations.

H5 : Safety leadership moderates the relationship between surgical safety checklist implementation and patient safety culture in central surgical installations.

RESEARCH METHODS

Research Design

This research is a quantitative type with a cross sectional study design which aims to analyze temporary issues through data collection, and a descriptive approach is used to describe the actual situation of each variable studied.

Data Collection

The data source was obtained from primary data by collecting data using a survey method through a self-developed questionnaire based on dimensions adopted from previous research on each variable, using a 4 -1-point Likert scale consisting of a score of 4 strongly agree (SA). Score 3 agree (A), score 2 disagree (DA), score 1 strongly disagree (SDA). The middle score is not used to avoid answers that reflect the respondent's hesitation in answering, so a score of 4 – 1 is used.

Research Variable

Interprofessional collaboration (X1) acts as an independent variable which aims to measure the perception of health workers regarding the effectiveness of the interprofessional collaboration they carry out in the central surgical work environment, consisting of the dimensions of collaborative partnership, coordination and joint decision making aspects (McLaney *et al*., 2022) with a total of 8 indicators. The implementation of the surgical safety checklist (X2) acts as an independent variable which aims to measure the level of compliance of health workers to maximize the use of the surgical safety checklist as a checklist so that surgery can be carried out safely and with quality for central surgery patients, consisting of the dimensions of communication, resources, disposition and bureaucracy (Dinesh *et al*., 2018) with a total of 8 indicators.

Safety leadership (X3) acts as a moderating variable consisting of the dimensions of planning, organizing, directing and controlling (Tao *et al*., 2020) with a total of 8 indicators. Patient safety culture (Y) acts as a binding variable consisting of the dimensions of culture of openness, culture of justice, culture of information reporting, culture of learning, and culture of (Khoshakhlagh *et al*., 2019) with a total of 10 indicators. Following are the indicators for each variable in this research:

Table 1. Indicators per variable

Interprofessional Collaboration Variables	
Dimensions	Indicators
Partnership	Interprofessionals carry out pre-surgical studies according to their respective fields
	Interprofessionals discuss the patient's condition before surgery
Cooperation	The interprofessional confirms aloud before the first incision is made
	Interprofessionals ensure that they get to know each other before surgery
Coordination	Interprofessionals validate the correct operation area
	Interprofessionals remind each other of surgery schedules
Joint decision making	Interprofessionals mutually validate patient medical record data before surgery
	Interprofessionals conduct post-operative reviews before providing patient care briefings
Communication	I use SSC to validate the correctness of patient data
	I use the SSC as a patient checklist before surgery
Resource	I use SSC as a means of communication during the surgical process
	I use SSC to avoid operating procedure errors
Disposition	I use SSC because of management policy to avoid patient mishandling
	I use SSC as a form of compliance with management policy
Bureaucracy	I use SSC as a form of obligation to produce secure services
	I use SSC as a professional form of interprofessional work
Planning	Leaders ensure complete equipment and patient logistics before surgery
	Leaders assembles an experienced surgical team before surgery is carried out
Organizing	Leaders delegate tasks by including SPOs for each health worker
	Leaders divide tasks according to the competency of each health worker
Directing	Leaders direct health workers to utilize the surgical patient checklist
	Leaders direct health workers to provide site marking before surgery is carried out
Controling	The leader ensures that the patient's identity has been confirmed
	The leader ensures that prophylactic antibiotics have been given 60 minutes before surgery

Interprofessional Collaboration Variables	
Dimensions	Indicators
Culture of	I convey the patient's medical condition before surgery
Openness	I convey the risks that patients can experience before the surgical process
Justice Culture	I ensure the operating room is ready before surgery
	I prepare patient logistics before surgery
Reporting	I report physical and mental readiness before surgery
Culture	I report patient medical record data before surgery
Learning	I study the patient's medical record data before surgery
Culture	I learn the risks that patients may experience before surgery
Information	I inform you about the exact surgical area before the operation
Culture	I inform the patient of the completeness of the patient's documents before surgery

Population and Sample

The population is 77 health workers from one of the regional hospitals in Bekasi Regency, consisting of 20 surgeons, 5 anesthetists, 25 central surgical installation nurses and 18 maternal nurses and 9 anesthetists. This population was used as the unit of analysis because the work unit was Several problems occurred related to the commitment of health workers to the principles of patient safety culture in providing surgical services to patients. The sampling technique used a saturated sample so that all 77 health workers were used as respondents using the purposive sampling method. The inclusion criteria must be: (1) Health workers with Civil Servant status. (2) Serves in the central surgical installation. Exclusion criteria: (1) Have moved to another installation. (2) Carrying out duties.

Data Analysis

Data quality testing was carried out using a validity test using the product moment correlation approach with an error level of 5 percent, and reliability using the Cronbach's alpha technique with the assumption that if Cronbach's alpha is > 70 then it is declared reliable (Hair *et al*., 2019). Descriptive statistical analysis with a 3 box approach that refers to opinions (Ferdinand, 2014), which divides the score into 3 parts, namely low, medium high with reference to the results of calculating frequency values from the SPSS program output, with quality values of 19,25 – 38,5 low (L), 38,6 – 57,75 middle (M) and 57, 76 – 77 high (H). The hypothesis test uses PLS-SEM with the help of the Smart-PLS program which consists of (1) Outer model test (a) Assessing the load factor with the assumption that if the load factor value is > 0,70 it is declared valid (Hair *et al*., 2019); (b) Construct validity refers to the VE value if > 0.50 then it is declared valid (Hair et al., 2019); (c) The construct reliability test refers to the Cronbach's alpha and CR values if >0,70 is declared reliable (Hair *et al*., 2019); (d) The structural model fit test refers to the SMRM value if <0.1 then the model is declared fit (Hair *et al*., 2019). (2) Inner model test consisting of (a) Assessing the coefficient of determination referring to the R2 value with the assumption that the R^2 value is 0,67 (strong influence), 0,33 (moderate influence) and 0,19 (weak influence); (b) Coefficient analysis direct influence and also interaction; (c) Test the hypothesis with a significance level of 5 percent so that if the t value is > 1,96 the hypothesis is accepted (Hair *et al*., 2019).

RESULTS AND DISCUSSION

Respondent Demographics

Based on the 77 respondents surveyed, it was concluded that among respondents based on gender, the highest was male at 60 percent and the lowest was female at 40 percent. For respondents based on age, the highest was in the age range > 35 years at 44 percent and the lowest was in the age range < 25 years at 1 percent. For respondents based on their last education, the highest was 60 percent with a Bachelor's degree and the lowest was a Doctoral degree at 1 percent. For respondents based on length of service, the highest range was >5 - 10 years at 57 percent and the lowest range was >10 - 15 years at 6 percent.

Analysis Description of Research Variables

Table 2. Research Instrument Analysis Matrix

Variable	Index			Behavior
	L	M	H	
Interprofessional collaboration		*		Quite active
Implementation of the Surgical Safety Checklist		*		That's enough to understand
Safety Leadership			*	Encouraged
Patient Safety Culture		*		Just be disciplined

Interprofessional collaboration is at a moderate level, which shows that the behavior of the health workers involved is quite active (Ho *et al*., 2023) in collaborating with departments to create a culture of patient safety in central surgical installations. The implementation of the surgical safety checklist is at a moderate level, this situation shows the behavior of health workers who are quite knowledgeable (Gul *et al*., 2022) regarding the aims and objectives of implementing the surgical safety checklist in order to create a culture of patient safety in central surgical installations. Safety leadership is at a high level, this situation shows the motivated behavior of health workers (Folkman *et al*., 2019) apply occupational safety and health concepts to create a culture of patient safety in central surgical installations. Patient safety culture is at a moderate level, this situation shows the behavior of health workers who are quite disciplined (Ilaria *et al*., 2022) in preventing patient safety incidents in the handling of patients in central surgical installations.

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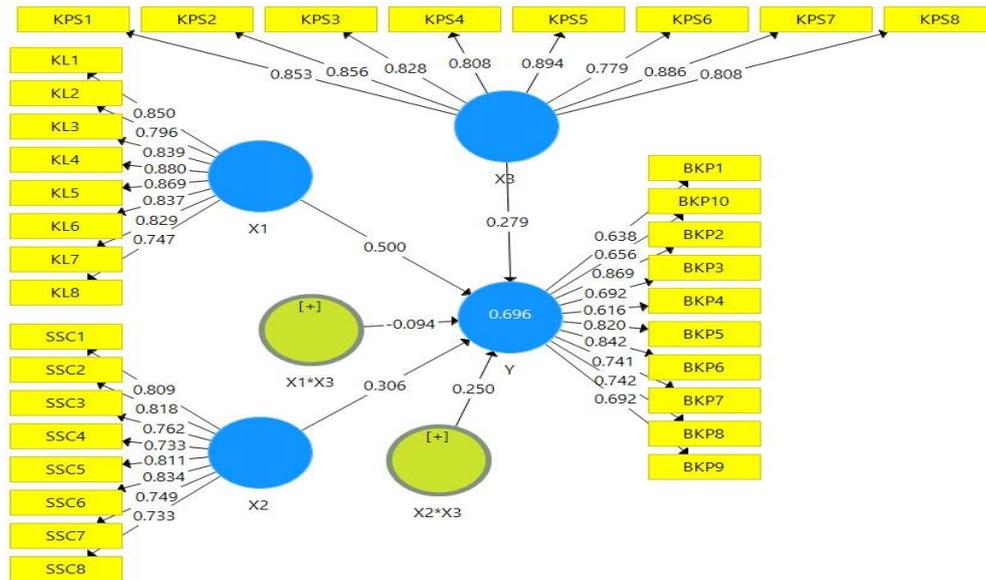
Loading Factor Analysis

Figure 2. Results of Loading Faktor Analysis
Source: Output Smart-PLS, 2023

Based on this Figure 2, it can be seen that the BKP1, 3, 4, 9 and 10 indicators have loading factors <0,70, so these four indicators were not included in further analysis, because they could not describe the relationship between the indicators and the latent variable construct. Henceforth, these four indicators were not included in the inner model test.

Construct Validity and Reliability Test

Table 3. Construct Validity and Reliability Test

Variable	Cronbach's Alpha	CR	AVE
X1	0,936	0,947	0,692
X2	0,909	0,926	0,611
X3	0,940	0,950	0,705
Y	0,904	0,921	0,541

Source: Output SmartPLS, 2023

Based on the table above, it can be seen that all AVE values are > 0,50, in accordance with decision making assumptions, so all indicators in each variable are homogeneous from each research variable (Hair *et al*., 2019). The Cronbach's Alpha value and CR value are > 0.70, so it is concluded that all research variables are reliable and the indicators of all research variables used are good constructs in forming a latent variable (Hair *et al*., 2019).

Model Fit Test

Table 4. Model Fit Test Results

	Saturated Model	Estimation Model
SRMR	0,078	0,078

Sourcer: Output SmartPLS, 2023

Based on the table above, the SRMR value shows a value of <0.1 so these results explain that the research model can be said to be fit for measuring the relationship between latent variables and observed variables. (Hair *et al.*, 2019).
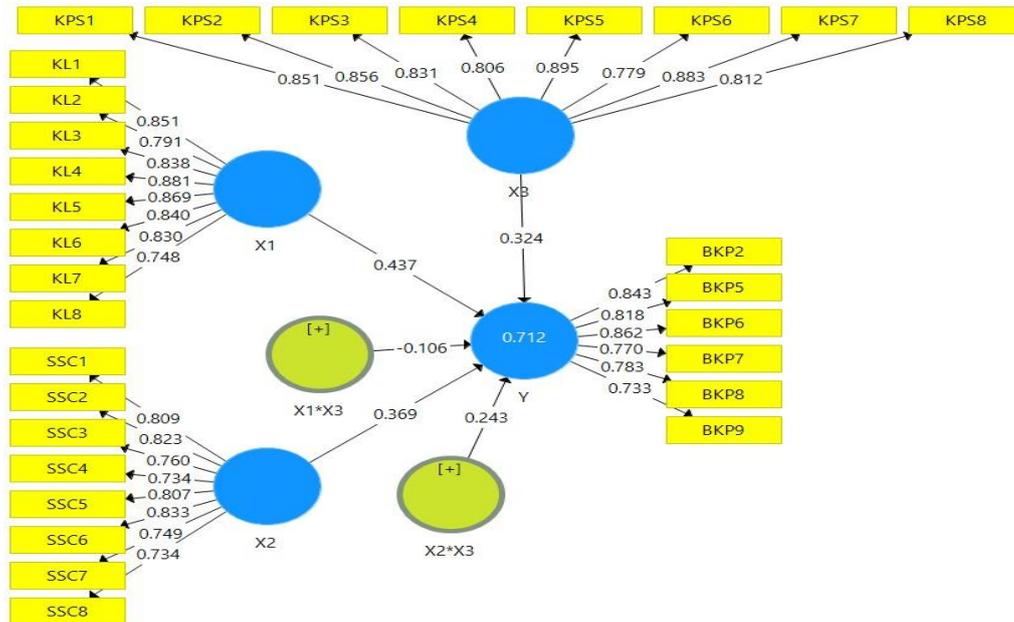
Inner Model Analysis

Figure 3. Coefficient Model Line Diagram
Source: Smart-PLS Output, 2023

The R-square value shown in Figure 3 is 0,712, which means that interprofessional collaboration, implementation of the surgical safety checklist and safety leadership contribute 71,2 percent in creating a patient safety culture with a strong influence. The direct influence of interprofessional collaboration, implementation of the surgical safety checklist and safety leadership on patient safety culture shows the equation function of Y=0,437(X1)+0,369(X2)+0,324(X3), this function explains that if each variable is increased by 1 unit, the patient safety culture will increase by 43,7 percent through interprofessional collaboration, 36,9 percent through the implementation of the surgical safety checklist and 32,4 percent through safety leadership. The interaction coefficient shows that the equation function Y= -0,16 (X1*X3)+0,43(X1*X3), this function explains that safety leadership interacts negatively with the relationship between professional collaboration and patient safety culture by 10,6 percent and interacts positively. The positive relationship between the implementation of the surgical safety checklist and patient safety culture was 24,3 percent.

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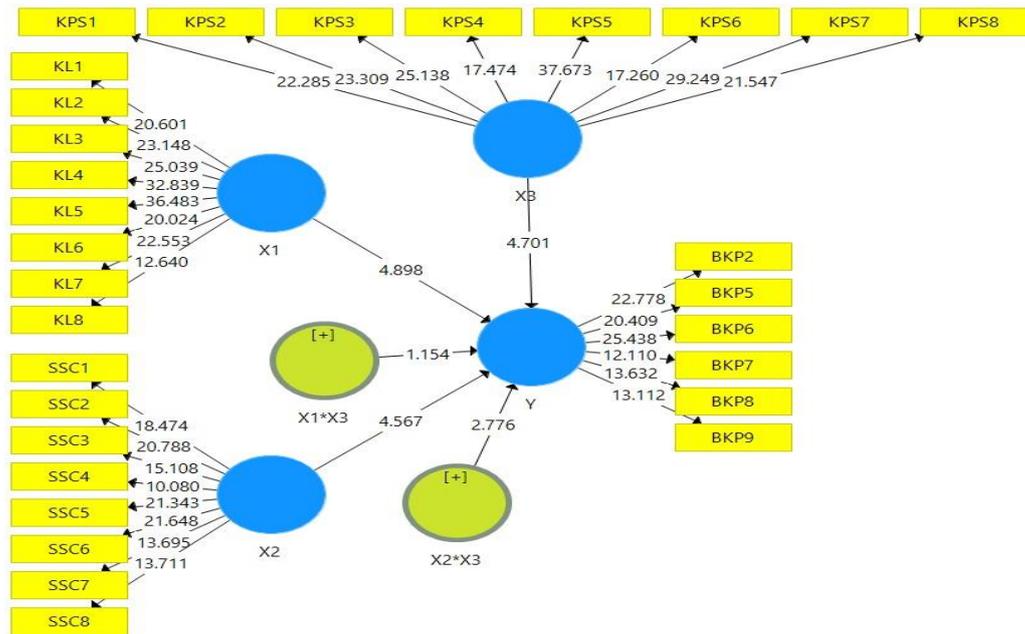Vol. 15 No. 1,
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Hypothesis testing

Figure 4. Line diagram of significance test model
Source: Smart-PLS Output, 2023

Table 5. Summary of Hypothesis Testing

Influence	T$_{value}$	Conclusion
X1 -> Y	4,900	**H1** Accepted
X2 -> Y	4,444	**H2** Accepted
X3 -> Y	4,740	**H3** Accepted
X1*X3 -> Y	1,175	**H4** Rejected
X2*X3 -> Y	2,739	**H5** Accepted

The influence of interprofessional collaboration on patient safety culture shows a comparison of the TV value of 4,900 > 1,96, which means that interprofessional collaboration has a significant effect on patient safety culture, so it is included in the **H1** acceptance category. The influence of the implementation of the surgical safety checklist on patient safety culture shows a comparison of the TV value of 4,444 > 1,96, which means that the implementation of the surgical safety checklist has a significant effect on patient safety culture, so it is included in the **H2** acceptance category. The influence of safety leadership on patient safety culture shows a comparison of the TV value of 4,740 > 1,96, which means that safety leadership has a significant influence on patient safety culture, so it is included in the **H3** acceptance category. The moderating role of safety leadership on the influence of interprofessional collaboration on patient safety culture shows a TV value comparison of 1,175 < 1,96, which means that safety leadership does not moderate the influence of interprofessional collaboration on patient safety culture, so it falls into the **H4** rejection category. The moderating role of safety leadership on the influence of the implementation of the surgical safety checklist on patient safety culture shows a comparison of the TV value of 2,739 > 1,96, which means that safety leadership moderates the influence of the implementation of the surgical safety checklist on patient safety culture, so it is included in the acceptance category **H5**.

The Influence of Interprofessional Collaboration, Implementation of the Surgical Safety Checklist and Safety Leadership on Patient Safety Culture

Interprofessional collaboration, implementation of surgical safety checklists and safety leadership have a strong contribution in shaping the discipline of health workers towards a culture of patient safety in carrying out their duties in central surgical installations. To realize the discipline of health workers in upholding a culture of patient safety, interprofessional collaboration must be carried out actively and interactively through partnerships, cooperation and effective coordination, so that a joint decision can be formed about a safe way to carry out surgery on patients (Dinesh *et al*., 2018), so that interprofessional collaboration can form health workers who adhere to a culture of patient safety (Schmidt *et al*., 2021), so that patient safety can be realized if the interprofessional collaboration system is implemented effectively (Dinius *et al*., 2020), and a culture of patient safety can be achieved through a work system based on interprofessional collaboration (Amarneh & Al Nobani, 2022).

The surgical safety checklist implemented by hospital management as a communication tool for health workers is well understood by health workers that this is a management effort so that surgical services can be carried out safely for patients, especially health workers, with the aim of producing safe services and forming a workforce. professionals who are interprofessional, so that these things dominate the culture of justice adopted by health workers so that surgical services can be provided safely, because basically the safety checklist is intended to provide safe and quality surgery for patients (Abbott *et al*., 2018), and the surgical safety checklist is implemented as a form of patient safety culture to avoid the risk of injury to patients (Ferorelli et al., 2018).

Safety leadership implemented in the surgical unit is perceived by health workers as a function of instruction and delegation, thereby forming a central principle for health workers to pay attention to occupational safety and health, so that they are encouraged to realize a culture of patient safety in the central surgical room, especially the leadership aspect that most dominates health workers. , where health workers feel that leaders always ensure the completeness of patient equipment and logistics before surgery and carry out planning in forming an experienced surgical team before surgery, thereby forming a habit of always maintaining a culture of justice in ensuring the readiness of the operating room before the procedure and preparing patient logistics before the procedure surgery was carried out. This supports the opinion which states that basically the state of safety leadership patterns directs health workers to adhere to patient safety culture as a work guideline so that patient safety accidents can be avoided (Xie *et al*., 2021), an safety leadership style will direct health workers to focus on patient safety (Chioma *et al*., 2021).

The Moderating Role of Safety Leadership in Interprofessional Collaborative Relationships on Patient Safety Culture

The perceived safety leadership of health workers is unable to interact with the influence of interprofessional collaboration on patient safety culture, so that safety leadership cannot strengthen the contribution of interprofessional collaboration in improving patient safety culture in central surgical installations. This problem occurs because of organizational problems which are considered by health workers to be less than optimal in forming coordination patterns between health workers, so that these problems do not allow health workers to effectively coordinate in terms of validating the correct operation area and reminding each other of the operation schedule. This is a

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contradiction with the opinion which states that leadership is a process of understanding and directing its members to achieve the goals expected by the organization (Yukl, 2019), The role of a leader is very important in directing the work behavior of its members (Tao *et al*., 2020). This is predicted to be due to problems in the way leaders organize to encourage health workers to carry out task delegation and carry out tasks according to the competence of each health worker, so that this weakness causes safety leadership to be ineffective in strengthening the interprofessional collaboration system towards patient safety culture, nursing tasks should be distributed to each section with linear knowledge and working together so that nursing tasks run effectively (Geese & Schmitt, 2023), and leaders should play an active role in forming interprofessional collaboration with the aim of forming disciplined health workers who adhere to a culture of patient safety (Schmidt *et al*., 2021).

The Moderating Role of Safety Leadership in the Relationship between Surgical Safety Checklist Implementation and Patient Safety Culture

Safety leadership perceived by health workers is able to interact with the influence of implementing surgical safety guidelines on patient safety culture, so that safety leadership strengthens the contribution of implementing surgical safety guidelines in improving patient safety culture in surgical centers. Installation. This situation is in line with research which proves that effective implementation of the Surgical Safety Checklist requires leaders who focus on occupational health and safety (Röhsig *et al*., 2020), which will prevent patients from the risk of injury and even death on the operating table (Rodella *et al*., 2018).

The behavior shown by health workers shows that they are motivated by leadership that directs them to care about occupational safety and health. This supports research results which state that leaders who focus on safety will try to shape the discipline of their members to maximize the surgical safety checklist so that surgical procedures are carried out safely (Munthali *et al*., 2022), because basically leadership seeks to encourage the success of its members in achieving organizational goals (Cakir & Adiguzel, 2020). Apart from that, this research is also in line with the conclusion which states that safety leadership is effective in shaping the work behavior of health workers who adhere to a patient safety culture (Buttigieg *et al*., 2023), so that the use of the surgical safety checklist can be maximized as a checklist to provide safe and quality surgery to patients (Debas, 2015), with the aim of preventing patients from the risk of injury and even death on the operating table (Rodella *et al*., 2018).

In accordance with the goal to be achieved, namely empirically proving the influence of the implementation of the surgical safety checklist and safety leadership on patient safety culture, it is proven that interprofessional collaboration, implementation of the surgical safety checklist and safety leadership are able to improve the patient safety culture of health workers in central surgical installations. Safety leadership is not able to moderate interprofessional collaboration on patient safety culture, but is able to moderate the implementation of the surgical safety checklist so that with the interaction of safety leadership, the implementation of the surgical safety checklist can be strengthened in improving patient safety culture. The results of the research provide implications for improving coordination patterns so that, especially in terms of validating the correct operation area and reminding each other of the operation schedule, communication patterns must be improved through a surgical safety checklist writing format which will make it easier for health workers to validate the correctness of patient data and as a patient checklist. before surgery. The organizational system needs

to be improved through the concept of coaching so that health workers are encouraged to carry out task delegation and carry out tasks according to the competence of each health worker. The learning culture needs to be improved through a risk management system, by conveying the results of clinical audits about patient safety incidents that occur, so that health workers can study patient medical record data before surgery and learn about the risks that patients may experience before surgery. This research has the limitation of only assessing the interprofessional collaboration system, implementation of the physical safety checklist without assessing the competency of each health worker based on each profession so that for further research it is hoped that it will include the competency of health workers as one of the variables studied, so that it can assess and distinguish between weaknesses and strengths. health workers have in delivering safe services in central surgical installations.

CONCLUSION

The results of the analysis conclude that work motivation provides a positive intervention in the influence of training and utility on intention to use, so that with work motivation, training and utility can increase the intention of health workers to use management information systems higher than without work motivation. Training and utilities have an impact on increasing work motivation and health workers' intentions to use hospital management information systems, and work motivation can increase health workers' intentions to use hospital management information systems. Some implications that management can make are choosing a competent training organization that can deliver material that management information systems provide sufficient information to understand the potential, benefits and value for the hospital, using case example methods and relevant case studies to illustrate the use of the system at home. sick, and instructors who are able to deliver training material in an interesting way and motivate participants to use management information systems. Carrying out outreach and promotion regarding the objectives of implementing the hospital management information system, as well as instilling technology-based work behavior so that health workers are encouraged to use the hospital management information system. The importance of creating a competition system between units using hospital management information systems, so that it can build the perception that using hospital management information systems can increase job satisfaction, improve the quality of service in hospitals and patient welfare, as well as increase work efficiency in hospitals. This research is only limited to assessing the intention of health workers to use it, without assessing the ability to use the hospital management information system, so it is recommended to further research the ability of health workers to use it, so that it becomes a consideration for determining appropriate training in building the ability of health workers to maximize use of hospital management information systems.

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