

## Original Research Article

# ANALYSIS OF FACTORS RELATING TO NURSES' COMPLIANCE IN THE IMPLEMENTATION OF SURGICAL SAFETY CHECKLIST IN WEST KALIMANTAN

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## Abstract

**Background:** Hospitals as health institutions play an important role in providing optimal health services, including surgical procedures, which are susceptible to the risk of complications and death. The World Health Organization (WHO) has promoted the Surgical Safety Checklist (SSC) as a tool to improve patient safety and reduce post-operative complications, with implementation proven to be effective in reducing mortality and morbidity. However, in several hospitals in West Kalimantan, the level of compliance with SSC is still not optimal, with implementation only reaching around 50-52%. Several factors that influence this compliance include teamwork, motivation, attitudes, perceptions, knowledge, and nurse training

**Objectives:** The aim of this study to analyze the factors that are related and most dominant to nurse compliance in implementing SSC in hospitals in West Kalimantan Province

**Methods:** This type of research is quantitative correlational with a cross-sectional approach. The research was conducted at three hospitals in West Kalimantan province in 2024 using a total sampling technique, namely 105 operating room nurse respondents. The chi-square test and logistic regression were used to analyze this data.

**Results:** Based on the research results, it is known that there is a relationship between teamwork  $p=0.009$ , perception  $p=0.004$ , attitude  $p=0.005$ , knowledge  $p=0.001$ , motivation  $p=0.002$ , training  $p=0.001$ , age  $p=0.008$ , education  $p=0.007$ , with compliance with SSC implementation while gender  $p=0.491$  has no relationship with compliance with SSC implementation. The most dominant factor is Teamwork OR=21.64, which means nurses with good teamwork will be 21.64 times more likely to comply compared to those with poor teamwork.

**Conclusion:** It was concluded that the factors related to nurse compliance in implementing SSC were teamwork, perception, attitude, knowledge, motivation, training, age, and education. There is no influence on the gender factor. The most dominant factor is teamwork.

**Keywords:** *Perioperative, Surgical Incidents, SSC, Compliance*

## INTRODUCTION

A hospital is a health institution that provides maximum health services to individuals, in the form of inpatient, outpatient and emergency care (Marbun, 2022). The hospital was founded based on Pancasila and is based on values such as humanity, ethics, professionalism, justice, equal rights, anti-discrimination, protection and safety of sufferers, and social benefits (Arimbawa & amp 2015; Nugraha, 2018). Surgery or surgery is an invasive medical treatment. Generally, this action is carried out by opening an incision, which is intended to diagnose or treat disease, injury, or abnormalities in the body that will damage tissue, which can cause physiological changes in the patient and also affect the body's organs (Sendi, 2019). However, the surgery performed can also cause complications that can endanger lives (Murdiman et al., 2019). One of the hospital areas that most often experience patient safety problems is medical errors in the operating room (Budi, 2019). Studies on medical errors in hospitals in the United States recorded approximately 44,000 to 98,000 incidents per year, with the highest proportion of incidents occurring in the operating room (Tirzaningrum et al., 2022).

Non-compliance with SSC implementation, such as the verbal sign-in procedure, is often missed in some patients. Such as checking the patient's identity, the correct procedure and side of the operation, the side to be operated on has been marked, consent for the operation has been given, the oxygen saturation device on the patient is working, confirming whether the patient is at risk of blood loss, difficulty breathing, and the presence of allergic reactions.

Non-compliance during the implementation of SSC in the operating room is a problem that often occurs if operations are carried out simultaneously so the implementation of SSC is often missed. Compliance is the level at which a person carries out a method or behaves in accordance with what is recommended or imposed on him

(Susanthy, 2022). The indicator of the success of the surgical team in the hospital when treating patients in every health service setting and providing services cannot be separated from the team's compliance. Team compliance is defined as professional nurse behavior regarding recommendations, procedures, or rules that must be carried out and obeyed so that SSC can be carried out well; compliance is required (Astuti, 2022).

The resulting compliance cannot be separated from the factors that influence it. Compliance issues are problems that company management, including hospitals, will always face. Therefore, nurses and management need to know the factors that influence nurse compliance so they can take various policies required to improve nurse performance (Dekriat, 2021).

Based on the results of the preliminary study, research has never been conducted on the factors that can influence nurses' compliance in implementing SSC in the two hospitals. The factor based on initial data from the preliminary study is teamwork; this is proven in research by Röhsig et al. (2020), explaining that one of the quality improvement strategies to increase compliance with the SSC sheet is focusing on teamwork. This is also in line with research conducted by Schmutz et al (2019) which states that teamwork has quite a big influence on nurse compliance. Apart from that, nurses' motivation factors can influence nurses' compliance in implementing SSC; this is proven by research by Risanti et al. (2021), which states that motivation influences nurses' compliance in implementing SSC with research results of  $p = 0.000$  ( $p < 0.05$ ).

Furthermore, attitude and perception factors can influence nurses' implementation of SSC. Setiyajati (2018) stated that there is an influence between nurses' attitudes and compliance in implementing patient safety standards for nurses at the Intensive Care Installation at Dr Moewardi Hospital. Wango (2016) stated that the better the nurse's

perception of the SSC sheet, the better the nurse's compliance.

A person's compliance cannot be separated from a person's knowledge factor because the more knowledgeable a person is, the more likely they are to comply with an action. This is proven by research by Yeni et al (2020) that knowledge is the factor that has the strongest relationship in influencing nurse compliance. in the application of SSC in the operating room.

Non-compliance in implementing SSC for patient safety can occur due to non-implementation of training factors such as the use of Standard Operating Procedures (SOP). This was also stated in research by Astuti et al. (2019), which states that training influences a nurse's compliance. This is also in line with Notoatmodjo (2016), who said that the education and training that nurses participate in are expected to increase compliance so it can also improve the ability of a good nurse. The above factors are adapted to the theory of Lawrence Green (1980) in Notoatmodjo (2014), which states that compliance is influenced by three factors, namely predisposing factors, supporting factors, and driving factors. Predisposing factors include perception, motivation, knowledge, and attitudes; supporting factors include facilities with training, and driving factors include teamwork support.

**Objective(s):** The general objective of this research is to determine "Factors related to nurse compliance in implementing SSC in West Kalimantan province".

## METHODS

### *Study Design*

This research was quantitative correlational research with a cross-sectional approach. The study was conducted at three hospitals in West Kalimantan province in 2024 using a total sampling technique, namely 105 operating room nurse respondents. To analyze this data, the chi-square test and logistic regression were used.

### *Setting*

The research was conducted at three hospitals in West Kalimantan province in 2024

### *Research Subject*

In this study, nonprobability sampling with total sampling was used, which is a sampling technique that does not provide equal opportunities or chances for each element or member of the population to be selected as a sample and the overall sampling amounted to 105 respondents from three hospitals.

The inclusion criteria in this study were all operating room nurses at Pemandangan Hospital, Rubini Hospital, and Abdul Aziz Hospital, all operating room nurses at Pemandangan Hospital, Rubini Hospital, and Abdul Aziz Hospital, nurses who were willing to fill out the SSC questionnaire during surgery and were willing to be respondents and sign the informed consent.

The exclusion criteria in this study are nurses who were sick and not on duty during the study. Nurses in the operating room of Pemandangan Hospital, Rubini Hospital and Abdul Aziz Hospital who were not willing to participate in the study.

The sample size used total sampling in the three hospitals, because in one hospital it was taken from one operating room for Pemandangan Hospital, the total number of operating nurses was 28 people, Rubini Hospital, Mempawah with a total of 25 operating nurses, and Abdul Aziz Hospital with a total of 52 people, so the total from the three hospitals using total sampling was 105 people.

### *Instruments*

The data collection tool consists of 8 parts, a questionnaire on respondent characteristics, a questionnaire on teamwork, a questionnaire on perception, a questionnaire on attitudes, a questionnaire on knowledge, a questionnaire on motivation, and SSC sheet questionnaire.

To measure the teamwork of nurses the Safety Attitudes Questionnaire (SAQ)

questionnaire is a validated instrument used to measure Teamwork (Jietan, 2021). It has been developed for use in the operating room where six items related to teamwork and safety climate are relevant

To measure nurses' perceptions using a validated questionnaire adopted from previous research through international articles (Sharma et al., 2020). There are 8 questions to assess patient perceptions. Perception assessment with dimensions of nurses' views on safety culture, communication, and teamwork.

To measure attitude, a questionnaire was adopted from previous researchers through international articles that have been tested valid and published (Sharma et al., 2020). The questionnaire is designed to be about attitudes, with dimensions of awareness, acceptance, and trust. The questionnaire consists of 8 questions.

To measure Knowledge using a questionnaire adapted from Uprety et al.'s research (2021) through published and validated international articles, the questionnaire focuses on assessing objective knowledge about SSC. The questionnaire includes 10 questions in a true/false format.

Observation Checklist Sheet of SSC compliance sheet according to the World Health Organization (WHO) standards that have been used by previous researchers (Pauldi, 2021). Observations were carried out by the researchers themselves to assess nurses' compliance in implementing SSC. There are 22 questions consisting of 3 phases, namely the Sign In Phase 9 questions, the Time Out phase 6 questions, and the Sign Out Phase 7 questions assessed using the Guttman scale

#### *Data Analysis*

Univariate analysis is mainly to see the proportion of each variable, both independent variables and dependent variables, namely the implementation of therapeutic communication by nurses. Respondent characteristics include teamwork, perception, attitude, knowledge, motivation, training, age, education, gender, compliance.

Bivariate analysis was conducted to identify whether there is a relationship between two variables, namely between the dependent variable and the independent variable and the dependent variable includes teamwork, perception, attitude, knowledge, motivation, training, age, education, gender with the independent variable, namely compliance. Using SPSS with the Chi-square test, Confidence Interval (CI) 95%. The significance in this study was determined by a p value <0.05, thus if the results of the study show a p-value less than p-alpha, it is said that the two variables are related.

Multivariate analysis in this study used a binary logistic regression test with a 95% confidence level to see which factors had the most dominant influence on nurse compliance in implementing SSC.

#### *Ethical Consideration*

This study has gone through a two-time ethical review process by the relevant Research Ethics Committee in West Kalimantan with ethics number 21/II.I.AU/KET.ETIK/I/2024 and with ethics number 08/KEPK/2024. Based on the results of the review, this study was declared to have met all applicable ethical standards, including protection of participant rights and privacy and safety in conducting the study. Thus, this study has received approval to be carried out in accordance with the established ethical guidelines. number should be stated in the title page.

## **RESULTS**

### **Respondent Characteristics**

Based on the data in Table 1, the results were obtained from a total of 105 respondents, most of whom had a level of non-compliance of 62 respondents (59%), who had team collaboration in the poor category of 62 respondents (59%), with the majority in the positive perception category of 56 respondents. (53.3%), followed by attitude data in the supporting category of 59 respondents (56.2%), then knowledge data in the good category of 61

respondents (58.1%), most of whom had less motivation, 60 responde(57.1%). %), have not attended training by 63 respondents (60%), have the largest age category of 20-39 years by 55 respondents (52.4%), with the majority of education in the D3 category by 60 respondents (57.1%), have a type of 67 respondents (63.8%) were categorized as male, with the majority of 69 respondents (65.7%) working years >5 years.

**Table 1. Distribution of Respondent Characteristics (n=105)**

Variable	f	%
<b>Teamwork</b>		
Not enough	62	59%
Good	43	41%
Total	105	100%
<b>Perception</b>		
Negatives	49	46,7%
Positif	56	53,3%
Total	105	100%
<b>Attitude</b>		
Not support	46	43,8%
Support	59	56,2%
Total	105	100%
<b>Knowledge</b>		
Not enough	44	41,9%
Good	61	58,1%
Total	105	100%
<b>Motivation</b>		
Not enough	60	57,1%
Good	45	42,9%
Total	105	100%
<b>Training</b>		
Haven't followed	63	60%
Already following	42	40%
Total	105	100%
<b>Age</b>		
20-39 year	50	47,6%
40-60 year	55	52,4%
<b>Education</b>		
D3	60	57,1%
S1	45	42,9%
Total	105	100%
<b>Gender</b>		
Female	38	36,2%
Male	67	63,8%
Total	105	100%
<b>Work Period</b>		
≤5 Year	36	34,3%
>5 Year	69	65,7%

<b>Compliance</b>		
Non-adherent	62	59%
adherent	43	41%
Total	105	100%

Source: Primary data in 2024

### **Bivariate analysis of factors related to nurse compliance in implementing SSC**

#### *Teamwork factors on compliance*

Based on the data in table 2, the data shows that the majority of respondents in the teamwork category have a poor level of compliance in the non-compliant category, 43 respondents (41%), while the majority of respondents in the good teamwork category are in the compliant category, 24 people (22.9%). Based on the results of the Chi-square statistical test, the result was  $p = 0.009$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between motivation and nurse compliance in implementing SSC. The estimation test results found a value of  $OR=2.86$  ( $OR>1$ , 95% CI 1.27-6.41), meaning that teamwork with less risk is 2.86 times less likely to comply than with good teamwork.

#### *Perception factors towards compliance*

Based on the data in table 2, data shows that the majority of respondents in the negative perception category have a level of compliance in the non-compliant category of 36 respondents (34.3%) while the majority of positive perception respondents are in the compliant category of 30 people (28.6%). Based on the results of the Chi-square statistical test, the result was  $p = 0.004$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between perception and nurse compliance in implementing SSC. The estimation test results found a value of  $OR=3.82$  ( $OR>1$ , 95% CI 1.65-8.83), meaning that negative perceptions have a 3.82 times risk of non-compliance compared to negative perceptions.

**Table 2. Bivariate Analysis of Factors Related to Nurse Compliance in Implementing SSC in West Kalimantan**

Variable	Compliance (n=105)				X <sup>2</sup>	p	OR	95% CI
	Non-adherent		adherent					
	f	%	f	%				
<b>Teamwork</b>								
Not Enough	43	41%	19	18.1%	6,65	0.009	2,86 1	1,27-6,41
Good	19	18.1%	24	22.9%				
<b>Perception</b>								
Negatif	36	34.3%	13	12.4%	10,29	0.004	1 3,82	1,65-8,83
Positif	26	24.8%	30	28.6%				
<b>Attitude</b>								
Not support	34	32.4%	12	11.4%	23,81	0.005	1 8,55	3,43-21,7
Support	28	26.7%	31	29.5%				
<b>Knowledge</b>								
Not Enough	34	32.4%	10	9.5%	29	0.001	13,81 1	4,75-40,19
Good	28	26.7%	33	31,4%				
<b>Motivation</b>								
Not Enough	43	41.0%	17	18.1%	9,21	0.002	3,46 1	1,53-7,82
Good	19	16.2%	26	24.8%				
<b>Training</b>								
Haven't followed	46	43.8%	18	17.1%	11,15	0.001	1 3,99	1,73-9,16
Already following	16	15.2%	25	23.8%				
<b>Age</b>								
20-39 years old	36	34.3%	14	13.3%	6,62	0.008	1 0,34	0,15-0,78
40-60 years old	26	24,8%	29	27.9%				
<b>Education</b>								
D3	52	49,52%	13	12.38%	30,9	0.007	1 12,00	4,69-30,68
S1/D4	10	9,52%	30	28.57%				
<b>Gender</b>								
Female	23	21.9%	15	14.3%	0,54	0.491	1,1 1	0.48-2.47
Male	39	37.1%	28	26.7%				

Source: Primary data in 2024

### *Perception factors towards compliance*

Based on the data in table 2, it was found that the majority of respondents in the non-supportive attitude category had a level of compliance in the non-compliant category of 34 respondents (32.4%) while the majority of respondents in the supportive attitude category were in the obedient category, 31 people (29.5%). Based on the results of the Chi-square statistical test, the result was  $p = 0.005$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between attitudes and nurse compliance in implementing SSC. The estimation test results found an OR value of 8.55 ( $OR > 1$ , 95% CI 3.43-21.7), meaning that an unsupportive attitude carries a risk of non-compliance 8.55 times compared to a supportive attitude.

### *Knowledge factor on compliance*

Based on the data in table 2, it was found that the majority of respondents in the poor knowledge category had a level of compliance in the non-compliant category of 34 respondents (32.4%) while the majority of respondents in the good knowledge category were in the compliant category of 33 people (31.4%). Based on the results of the Chi-square statistical test, the result was  $p = 0.001$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between knowledge and nurse compliance in implementing SSC. The estimation test results found a value of  $OR=13.81$  ( $OR > 1$ , 95% CI 4.75-40.19), meaning that knowledge is 13.81 times less risky for non-compliance than good knowledge.

### *Motivational factors for compliance*

Based on the data in table 2, it was found that the majority of respondents in the poor knowledge category had a level of compliance in the non-compliant category of 34 respondents (32.4%) while the majority of respondents in the good knowledge category

were in the compliant category of 33 people (31.4%). Based on the results of the Chi-square statistical test, the result was  $p = 0.001$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between knowledge and nurse compliance in implementing SSC. The estimation test results found a value of  $OR=13.81$  ( $OR > 1$ , 95% CI 4.75-40.19), meaning that knowledge is 13.81 times less risky for non-compliance than good knowledge.

### *Training factors on obedience*

Based on the data in table 2, data shows that the majority of respondents in the category who have not participated in training have a level of compliance in the non-compliant category of 46 respondents (43.8%) while the majority of respondents in the category who have participated in training are in the compliant category of 25 people (23.8%). Based on the results of the Chi-square statistical test, the result was  $p = 0.001$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between whether or not they have attended training and nurses' compliance in implementing SSC. The estimation test results found a value of  $OR=3.99$  ( $OR > 1$ , 95% CI 1.73-9.16), meaning that nurses who have not participated in training are at 3.99 times the risk of non-compliance compared to those who have participated in training.

### *Age factor on compliance*

Based on the data in table 2, the data shows that the majority of respondents aged 40-60 years had a level of compliance in the compliant category of 29 respondents (27.9%) while the majority of respondents aged 20-39 years showed the non-compliant category of 36 people (34.3%). Based on the results of the Chi-square statistical test, the result was  $p = 0.008$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between age and nurse

compliance in implementing SSC. The estimation test results found a value of OR=0.34 (OR>1, 95% CI 0.15-0.78), meaning that nurses aged 40-60 years were 0.34 times more likely to comply than nurses aged 20 -39 Years.

#### *Educational factors on compliance*

Based on the data in table 2, data shows that the majority of respondents with D3 education have a level of compliance in the non-compliant category of 42 respondents (40%) while the majority of respondents with S1/D4 education show the compliance category, 25 people (23.8%). Based on the results of the Chi-square statistical test, the result was  $p = 0.008$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected, this means that there is a relationship between education and nurse compliance in implementing SSC. The estimation test results found a value of OR=12.00 (OR>1, 95% CI 4.69-30.68), meaning that nurses with a D3 education were at 12.00 times the risk of non-compliance compared with those with an S1/D4 education.

#### *Gender factors on compliance*

Based on the data in Table 2, data shows that the majority of male respondents had a level of compliance in the non-compliant category of 39 respondents (37.1%), followed by female respondents, most of whom showed the non-compliant category of 21.9 people (23.8%). Based on the results of the Chi-square statistical test, the result was  $p = 0.491$  ( $p > 0.05$ ), indicating that  $H_a$  was rejected and  $H_o$  was accepted. This means that there is no relationship between gender and nurse compliance in implementing SSC, so it was not continued to the multivariate test stage.

#### **Multivariate analysis of factors related to nurse compliance in implementing SSC**

Based on the logistic regression model, there are still variables that do not have a significant effect on the model, because the p-

value is >5%. So, variables that have no effect must be eliminated. The independent variable elimination process uses the backward method by eliminating one by one the independent variables that have the largest p-value until all independent variables have a p-value < 5%.

**Table 3. Initial Modeling of Logistic Regression Analysis**

Variable	Coefficient	Odd Ratio (OR)	P Value	95 % CI
Teamwork	-2.3789	10.793	0.0420	1.090-106.824
perception	0.9924	2.698	0.1417	0.718-10.135
attitude	1.5192	4.568	0.0223	1.241-16.821
knowledge	-1.4070	4.084	0.0410	0.874-19.087
motivation	-1.0525	2.865	0.1269	0.742-11.065
Training	0.4282	1.534	0.5706	0.349-6.738
Age	1.3966	0.067	0.0165	0.007-0.611
education	1.1549	3.174	0.1501	0.658-15.297
gender	-2.3789	0.622	0.4868	0.163-2.373

Source: Primary data in 2024

After retesting, the following model was obtained where all independent variables had a p-value <5%.

The odds ratio value for the 'Support' attitude variable is 6.75. This means that respondents who feel a 'positive' attitude are 6.75 times more likely to comply than respondents who feel an 'unsupportive' attitude. The higher the attitude value, the better the level of compliance.

The odds ratio value for the 'less' cooperation variable is 21.64. This means that respondents who feel that cooperation is 'not enough' have a 21.64 times tendency to disobey compared to respondents who feel that cooperation is 'good'. The higher the cooperation value, the better the level of compliance.

The odds ratio value for the 'less' knowledge variable is 10.37. This means that respondents who feel their knowledge is 'poor'

have a 10.37 times tendency to disobey compared to respondents who feel their knowledge is 'good'. The higher the knowledge value, the better the level of compliance.

The odds ratio value for the age variable '40-60 years' is 0.05. This means that respondents aged '40-60 years' are 0.051 times more likely to comply than respondents aged '20-39 years'. The higher the age value, the better the level of compliance.

**Table 4. Final Modeling of Logistic Regression Analysis**

Variable	Coefficient	Odds Ratio (OR)	P Value	95 % Ci
Attitude	1.9104	6.75	0.001	0.004-0.561
Attitude	-3.0748	21.64	0.005	2.525-185.53
knowledge	-2.3394	10.37	0.000	2.913-36.942
Age	2.9831	0.05	0.006	0.05-0.429

Source: Primary data in 2024

**DISCUSSION**

**Relationship between teamwork factors and nurse compliance in implementing SSC**

There is a relationship between the teamwork factor and nurses' compliance in implementing the Surgica Safety Checklist (SSC), respondents who felt cooperation was 'poor' had a tendency of 21.6466 times to disobey compared to respondents who felt cooperation was 'good'. The higher the cooperation value, the better the level of compliance.

Teamwork is a collaboration between members of the nursing team and other professional teams, aimed at providing the best health services to patients (Sinubu et al., 2021). Teamwork involves sharing information, working together in planning care, and supporting each other to achieve set care goals (Danarti et al., 2021). Nursing teamwork is very important because each team member has different knowledge and skills, and by working together, they can provide good and comprehensive care to patients (Manuaba,

2023). In addition, nursing teamwork also includes effective communication, task coordination, and division of responsibilities to ensure that patients receive optimal care.

The results of this research are in line with the research results of Gokcen et al (2023) which stated that one of the obstacles in complying with the implementation of SSC is the lack of good team collaboration, when each individual in the team has to take responsibility for each task to implement SSC it will cause mental tension and fear results in non-compliance, but it is different when all personnel in the surgical team collaborate, support each other and remind each other of the importance of implementing SSC. Support from other team members, including the surgeon and other staff, can strengthen the nurse's compliance. When nurses feel supported by the team, they are more likely to comply with established procedures. Then compliance is created, and they can implement SSC together safely and in a standardized manner.

The opinion of good teamwork researchers can reflect the same understanding and vision regarding safety issues so that when there are team members who don't understand, team members who need help in implementing SSC, or team members who are disobedient, here the role of teamwork is embracing together. With the same goal so that compliance with the SSC continues to be carried out well in order to reduce or avoid the number of incidents that we don't want. Relationship between attitude factors and nurse compliance in implementing SSC

**Relationship between attitude factors and nurse compliance in implementing SSC**

There is a relationship between attitude factors and nurses' compliance in implementing SSC; respondents who feel a 'positive' attitude have a 6.75 times tendency to comply compared to respondents who feel an 'unsupportive' attitude. The higher the attitude value, the better the level of compliance.

Attitude is the way a person responds or reacts to a situation, object or person (Adibah, 2022). In the context of compliance with SSC sheets, attitude can play an important role. People who have a positive attitude towards safety and medical protocols tend to be more compliant with the use of the checklist. This research shows that nurses who have a good attitude also have a good level of compliance. This is in line with research conducted by Kilbane (2020), which states that there is a relationship between attitude and a person's compliance in implementing SSC. The supportive attitude of the operating nurse toward the SSC is fundamental to the success and sustainability of compliance with the implementation of the SSC, which has been proven to have very important benefits and benefits for patient safety only when the checklist is used correctly.

Nurses' attitudes have an important role in determining their level of compliance with the implementation of the Surgical Safety Checklist (SSC). Based on the findings in this study, a positive attitude towards SSC was proven to increase nurse compliance significantly. A person's attitude, which is influenced by knowledge, experience, and understanding of a guideline, can determine their behavior. Thus, efforts to increase nurses' compliance with SSC must begin by building a positive attitude through training, education, and emphasizing the importance of patient safety. A good attitude not only reflects a good intention to comply with procedures but also forms the foundation for ensuring that SSC is implemented consistently and effectively, ultimately contributing to improved patient safety. Relationship between knowledge factors and nurse compliance in implementing SSC.

### **Relationship between knowledge factors and nurse compliance in implementing SSC**

Knowledge is the result of "knowing" and this occurs after people sense a particular object. Sensing occurs through the five senses,

namely the senses of sight, hearing, smell, taste, and touch. Most human knowledge is obtained by the eyes and ears (Haryani, 2021).

Good knowledge is due to a person's level of work experience. This research is in line with research by Allen (2021), which states that work experience is related to length of service; the longer a person works in an organization, the more experienced the person is, so their work skills are better. A person's knowledge can change along with everything a person experiences over the years, where knowledge is obtained from one's own or other people's experiences, which involve what is experienced by the five senses (Pane, 2023). Knowledge about patient safety is very important for health workers, especially nurses in operating rooms so that they can reduce the occurrence of errors or work accidents. This is in accordance with data obtained by researchers from the human resources (HR) department that the majority of nurses have received training on patient safety and effective communication.

Researchers believe that knowledge is a key factor that determines nurse compliance in implementing the Surgical Safety Checklist (SSC). The findings of this study indicate that nurses with good knowledge have a higher tendency to comply with SSC procedures than those with less knowledge. Knowledge is not only obtained through formal education but also through work experience, training, and outreach activities carried out by hospitals. Relevant work experience and training contribute significantly to increasing nurses' understanding of the importance of patient safety, which in turn strengthens their compliance with the SSC. Efforts to increase nurses' knowledge should be a priority in professional development programs in hospitals, especially for those who work in operating rooms. Ongoing training and effective outreach can help strengthen nurses' knowledge and ensure that they have the skills necessary to properly implement SSC.

### **Relationship between age Factors and nurse Compliance in Implementing SSC**

Respondents aged '40-60 years' have a 0.051 times tendency to comply compared to respondents aged '20-39 years'. The higher the age value, the better the level of compliance. The older the nurse, the more responsible and experienced the nurse will be when accepting a job. As age increases, the wisdom of a person's ability to make decisions, reason, control emotions, and tolerate other people's views will also increase, thus influencing performance. Age is closely related to a person's level of maturity. The increasing age of a person will show the maturity of his soul, which has implications for his increasing wisdom in making decisions, thinking rationally, being tolerant of existing policies, being able to control emotions, and being more open to other people's views, (Firnanda, 2022).

It is the researcher's opinion that older nurses tend to show higher levels of compliance compared to younger nurses. This can be explained by several factors, including maturity, work experience, and the wisdom that develops with age. With increasing age, a person usually becomes more mature in making decisions, better able to control emotions, and wiser in responding to various situations at work. The ability to think rationally and be tolerant of other people's views also tends to increase with age, which ultimately has a positive impact on the quality of their performance, including in compliance with SSC procedures. Additionally, older nurses often have a better Quality Of Work Life (QNWL), as they are better able to balance the demands of work and personal life. This allows them to work with greater motivation and responsibility, which in turn increases compliance with the SSC.

### **Relationship between team perception factors and nurse compliance in implementing SSC**

Based on the research, it was found that the majority of respondents in the negative

perception category had a level of compliance in the non-compliant category of 36 respondents (34.3%), while the majority of positive perception respondents were in the compliant category of 30 people (28.6%). Based on the results of the Chi-square statistical test, the result was  $p = 0.004$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between perception and nurse compliance in implementing SSC.

This research shows that respondents who have a positive perception of the SSC sheet tend to be categorized as compliant and vice versa. Surgical personnel interpret whether SSC improves patient safety in the operating room. Nurses' perceptions of the importance of patient safety influence their compliance with SSC. If nurses believe that the use of this checklist is an important step to reduce the risk of errors and complications during surgical procedures, they are likely to be more compliant in implementing it.

Researchers' opinions of positive perceptions tend to be formed from previous experiences showing real benefits of SSC, such as the prevention of complications or adverse events during surgical procedures. When nurses understand and believe that SSC is an effective tool for maintaining patient safety, they will be more motivated to comply with the procedure. On the other hand, negative perceptions that may arise from criticism or lack of support from other professionals can be a barrier to compliance. This research underscores the importance of building positive perceptions among nurses and the entire surgical team through education, training, and ongoing professional support. The involvement of the entire surgical team, including surgeons, in understanding and supporting the importance of SSC is also crucial. Thus, positive perceptions will not only increase nurse compliance but also strengthen the safety culture in the surgical environment, which will ultimately reduce risks and improve overall patient safety.

### **Relationship Between Motivational Factors and Nurse Compliance in Implementing SSC**

Based on the results, the majority of respondents in the teamwork category had a low level of compliance, in the disobedient category, 43 people (41%), while the majority of respondents in the good motivation category had the compliance category, 26 people (24.8%). Based on the results of the Chi-square statistical test, the result was  $p = 0.002$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between teamwork and nurse compliance in implementing SSC.

According to Zoeldan (2012) in Manurung (2023), motivation is one of the factors that influences a person's compliance with work. Motivation can be formed from a person's attitude in facing work situations and is a condition that directs oneself to achieve organizational goals. Maximum working conditions can be achieved due to encouragement from a person's good mental attitude. People who are motivated at work will work as well as possible according to the standards that have been set. This means the work can be completed correctly and to the correct standards.

Researchers believe that motivation plays a crucial role in determining the level of nurse compliance with the implementation of the Surgical Safety Checklist (SSC). The research results showed that there was a significant relationship between good motivation and high levels of nurse compliance. This indicates that nurses who have strong internal drives, such as the desire to achieve high work standards, feel valued, and understand the importance of SSC in improving patient safety, tend to be more compliant in carrying out these procedures. Motivation is the energy that moves individuals to work with sincerity and responsibility. A motivated nurse will be more likely to comply with established procedures, including SSC, because they understand that this compliance is part of an effort to achieve better outcomes for

patients and the organization. High motivation is also related to a positive attitude towards work, which in turn encourages obedient behavior and is oriented towards achieving organizational goals.

### **Relationship Between Training Factors and Nurse Compliance in Implementing SSC**

Based on the results, the majority of respondents in the category who have not participated in the training have a level of compliance in the non-compliant category of 46 respondents (43.8%), while the majority of respondents in the category who have participated in the training are in the compliant category of 25 people (23.8%). Based on the results of the Chi-square statistical test, the result was  $p = 0.001$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected. This means that there is a relationship between whether or not they have attended training and nurses' compliance in implementing SSC.

Training is a process in which a person or group of people acquires additional knowledge, skills, or understanding about a particular subject or expertise (Ahyakudin, 2019). Training can be carried out through various methods, such as formal courses, workshops, online training, direct training, and direct work experience. Training objectives can vary, from increasing productivity and performance, improving certain skills, to preparing individuals for certain tasks or roles in the workplace (Saefuloh, 2021).

SSC training is a training program designed to teach medical practitioners, including doctors, nurses and other medical staff, about the use of safety checklists when performing surgical procedures (Nurprilinda, 2024). The SSC is a checklist used before, during, and after surgery to ensure that important safety measures have been taken to reduce the risk of complications and improve patient safety. This training usually includes an understanding of how to properly use a checklist, the importance of team collaboration, identification of potential risks, and steps to

prevent errors during surgical procedures. The goal is to increase awareness of patient safety and ensure that surgical procedures are performed to the highest safety standards.

Researchers argue that training not only increases nurses' technical knowledge but also builds their awareness of the importance of each step in SSC. With proper training, nurses become more confident and motivated to carry out their duties according to safety standards. Therefore, ongoing training and regular evaluations are necessary to ensure that compliance with SSC remains high and patient safety is always a top priority. Basic surgical training teaches nurses how to prepare, surgical activities, effective communication, as well as Relationship between educational factors and nurse compliance in implementing SSC

### **Relationship Between Education Factors and Nurse Compliance in Implementing SSC**

Based on the results, the majority of respondents with D3 education had a level of compliance in the non-compliant category of 42 respondents (40%) while the majority of respondents with S1/D4 education showed the compliance category, 25 people (23.8%). Based on the results of the Chi-square statistical test, the result was  $p = 0.008$  ( $p < 0.05$ ), indicating that  $H_a$  was accepted and  $H_o$  was rejected, this means that there is a relationship between education and nurse compliance in implementing SSC.

This research is in line with research by Nipa (2024) which states that one of the internal factors that influences knowledge is education. It cannot be denied that the higher a person's education, the easier it is for them to receive information, and ultimately the more knowledge they have.

Education is a process in a series of influences and thus will lead to changes in behavior in oneself, because it cannot be denied that the higher a person's education, the easier it is for a person to receive health information and vice versa, if a person's education is low, it

cannot be denied that it will hinder a person's development or receipt of information about health. Health, along with the new values introduced. Individuals with higher education will also have broader knowledge, making decision-making easier. However, a person's knowledge cannot always prevent them from undesirable events, for example nurses who have good knowledge do not always carry out patient safety well because every action they take carries the risk of errors (Saputra et al., 2022).

The opinion of educational researchers not only increases technical knowledge but also broadens nurses' horizons in understanding risks and their responsibilities in maintaining patient safety. Nurses who are more educated tend to be more critical in their thinking and are better able to integrate the knowledge they have into daily practice. Therefore, increasing the educational level of nurses is an effective way to increase their compliance with safety procedures such as SSC, which will ultimately improve safety and quality of service to patients.

### **Relationship Between Gender Factors and Nurse Compliance in Implementing SSC**

Based on the results, the majority of male respondents had a level of compliance in the non-compliant category of 39 respondents (37.1%), followed by female respondents who mostly showed the non-compliant category of 21.9 people (23.8%). Based on the results of the Chi-square statistical test, the result was  $p = 0.491$  ( $p > 0.05$ ), indicating that  $H_a$  was rejected and  $H_o$  was accepted, this means that there is no relationship between gender and nurse compliance in implementing SSC.

A person's gender does not directly determine their level of compliance. Compliance can be influenced by various factors such as culture, personal values, education, social environment, and life experiences. For example, one person may have a high level of compliance with certain social rules and norms, whereas another may have a

more flexible approach.

However, there is research showing that in certain contexts, such as health care, gender can influence levels of compliance. For example, several studies have found that in some cases, women tend to be more compliant in following medical treatment and doctor's instructions compared to men. However, this can vary greatly depending on many factors including health conditions, culture, and other individual factors.

Although there is no direct relationship between gender and level of compliance, certain factors related to gender can influence a person's level of compliance in certain situations. A person's gender does not directly determine how compliant they will be in implementing SSC guidelines. Compliance is the result of a complex set of factors involving experience, training, and attitudes toward patient safety. For example, someone with good training and knowledge will be more likely to comply with procedures regardless of their gender. Although some research suggests that women may tend to be more compliant in certain contexts, such as following medical instructions, this is not necessarily true in all situations. In the context of SSC implementation, compliance is more influenced by how well a person understands the importance of these procedures and how motivated they are to comply with safety standards. Factors such as organizational culture, support from colleagues, and available training play a greater role in determining the level of compliance. If the work environment is supportive and provides adequate training, both men and women can demonstrate high levels of compliance with the SSC.

### **The Most Dominant Factors Associated with Nurse Compliance in Implementing SSC**

The most dominant factor related to nurse compliance in implementing SSC (SSC) is teamwork, respondents who felt cooperation was 'poor' had a tendency of 21.6466 times to disobey compared to respondents who felt

cooperation was 'good'.

Good team collaboration requires open and clear communication between team members. In the context of SSC implementation, effective communication ensures that each step in the checklist is understood and followed correctly by all team members, including nurses, surgeons and other staff (Trihandayani, 2020). Teamwork in SSC implementation involves many steps in coordination between various members of the surgical team. Good teamwork helps ensure that each team member knows their roles and responsibilities, so they can work in sync to ensure each step in the checklist is carried out correctly and on time (Muzakki, 2022).

Strong teamwork often reflects a good safety culture in the organization. When all team members understand the importance of SSC for patient safety and are committed to adhering to the procedures, compliance with the checklist tends to be higher. A strong safety culture also encourages team members to support each other and reminds them of the importance of following checklists. Teamwork is also an indicator of the success of the training and education that has been carried out, because teamwork is supported by training that involves all members of the surgical team helping to ensure that everyone has the same understanding of the importance of SSC and how to carry it out correctly, joint education also strengthens commitment collective compliance with safety procedures (Mangindara, 2022). In a solid team, support and collaboration between members is very important, when team members feel supported and can collaborate well, they are more likely to comply with procedures such as SSC because they feel part of a collective effort to ensure patient safety (Qusaeri, 2022).

### **Implication**

This research shows that good teamwork is the dominant factor that can increase nurse compliance in implementing (SSC). Therefore, hospitals need to improve teamwork by holding

training, workshops and activities that strengthen the culture of collaboration between surgical team members. To improve patient safety and compliance with SSC, hospitals invest time and resources in developing training programs and activities that support teamwork. Thus, the results of this study provide a basis for health care institutions to develop more effective strategies in increasing compliance with safety procedures through strengthening teamwork.

## CONCLUSION

There is a significant relationship between teamwork factors, attitudes, knowledge, age, perception, motivation, training, education, in the implementation of SSC. The most dominant factor related to nurse compliance in the implementation of SSC is teamwork.

## SUGGESTIONS

It is expected that educational institutions can develop specific learning modules on SSC that are more comprehensive and practice-based in courses related to patient safety and operations management. This can involve SSC simulation exercises that emphasize the importance of medical team collaboration. It is expected that further researchers will examine specific interventions that can improve teamwork in the implementation of SSC, such as the implementation of special training programs for collaboration or technology-based teamwork evaluation models. The results of this study can be used to develop guidelines for improving teamwork in various hospitals.

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Nothing conflict

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## AUTHOR CONTRIBUTION

**Putra Ardhana :** Design and execute the entire research from start to finish

**Suriadi Jais:** As a supervising lecturer who provides input.

**Lidia Hastuti:** As a supervising lecturer who provides input.

**Haryanto:** As an examining lecturer who provides input.

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