

# The relationship between clinical education and nursing students' patient safety competencies

Dyah Wiji Puspita Sari,<sup>1,2</sup> Yuni Sufyanti Arief,<sup>3</sup> Ahsan Ahsan<sup>4</sup>

<sup>1</sup>Doctoral Program in Nursing, Department of Nursing Management, Faculty of Nursing, Universitas Airlangga, Surabaya; <sup>2</sup>Department of Nursing Management, Faculty of Nursing, Universitas Islam Sultan Agung, Semarang; <sup>3</sup>Department of Pediatric Nursing, Faculty of Nursing, Universitas Airlangga, Surabaya; <sup>4</sup>Department of Nursing Management, Faculty of Nursing, Universitas Brawijaya, Malang, Indonesia

Correspondence: Yuni Sufyanti Arief, Department of Pediatric Nursing, Faculty of Nursing, Universitas Airlangga, Surabaya, 60115 Indonesia. Tel.: +62.8123106365. E-mail: yuni\_sa@fkn.unair.ac.id

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## Abstract

Students play a crucial role in contributing to patient safety issues, a contribution that is significantly influenced by the implementation of clinical education. This study aimed to investigate the impact of clinical education on the achievement of patient safety goal competencies among nursing students. A cross-sectional study was conducted among 125 students in a nursing professional program at Sultan Agung Hospital in Semarang, Central Java, Indonesia. A total sampling technique was employed for sample recruitment. Data for the dependent variable were collected using an observation sheet, while data for the independent variable were collected using a structured questionnaire. Bivariate data analysis was performed using the Chi-square test. The bivariate analysis revealed a significant relationship between the implementation of clinical education and the achievement of patient safety goal competencies, with a p-value of 0.000 ( $p < 0.05$ ) and a correlation coefficient of 0.609. The achievement of patient safety goal competencies can be facilitated through the implementation of optimal clinical education. Therefore, the implementation of clinical education must include a clinical education model based on the community of practice, making it easier for students to implement patient safety goals.

## Introduction

Patient safety incidents remain a prominent global concern in the delivery of healthcare services.<sup>1</sup> Students contribute to patient safety issues, which can have various impacts on patients.<sup>2</sup> Previous research results indicate that students' knowledge of patient safety concepts, including infection prevention and control, as well as medication safety, is still inadequate.<sup>3</sup> Dauphinee's research results show that this low level of knowledge results in students' limited ability to apply patient safety skills, thereby increasing the risk of patient safety incidents occurring.<sup>4</sup> As many as 44.7% of a total of 889 final-year nursing students showed that their level of knowledge regarding the patient safety domain was declared competent, which means that more than half or 55.3% were not competent.<sup>3</sup> In addition, almost 60% of 829 students had an average level of knowledge about patient safety in the moderate and poor categories.<sup>1</sup>

The research results showed that there were 113 reports of medication errors made by nursing students, and 40% were not

reported because they hid the errors, thus hindering the learning process.<sup>2</sup> Postgraduate students' competence in implementing patient safety protection in six domains is at a score below 55%.<sup>5</sup> This condition encourages educational institutions and students to play a role in reducing patient safety incidents through a good clinical education process.<sup>2</sup> Clinical education allows students to directly practice the provision of professional and comprehensive nursing care services.<sup>6</sup> Clinical education teaches students to apply skills and standard operational procedures with patients directly. The clinical education process prioritizes the integration of knowledge-based and skill-based learning, as well as the reorganization of existing knowledge to solve clinical problems effectively.<sup>7</sup>

In Indonesia, the educational curriculum does not provide special emphasis on clinical education for the implementation of patient safety; instead, it focuses more on theory and practicum, so that it is less than optimal in achieving patient safety goal competency in nursing students.<sup>8</sup> The research results showed that as many as 32.10% of professional students stated that patient safety education was provided in a small portion of the educational curriculum.<sup>1</sup> However, the current application of clinical education does not make it easy for students to understand the application of patient safety.<sup>9</sup> Research results found that clinical education does not discuss patient safety in-depth, so there is a need for the integration of theory and practice into clinical care education.<sup>10</sup> Research results show that most students prefer learning strategies through real examples in the field of clinical education and problem-based learning approaches because they are easier to understand.<sup>1</sup>

The research results show that several strategies have been used to achieve patient safety competency targets in nursing students, such as training,<sup>11</sup> increasing the role of clinical educators, and developing a patient safety model based on socialization, externalization, and combination knowledge management internalization (SECI).<sup>12</sup> The current situation highlights a gap between the quality of the implementation of the clinical education process and the efforts to increase the achievement of patient safety goal competencies by nursing students. Therefore, this study aimed to determine the relationship between the implementation of clinical education and the achievement of patient safety goal competencies by nursing students.

## Materials and Methods

### Design

This study employed an explanatory research design with a cross-sectional approach. During this stage, data were collected from the population samples simultaneously at one time without any intervention. After acquiring the data, an analysis was conducted to elucidate the relationship between the studied variables. This stage utilized a quantitative research method, involving the presentation of numbers, data collection, data discovery, and the presentation of research findings to establish the relationship between the prevalence of a phenomenon and its potential causes.

### Population, sample, sampling

Data were collected from February to April 2023 from nursing professional students engaged in clinical practice at Sultan Agung Hospital in Semarang, Central Java, Indonesia. The study population and sample size included 125 nursing students. The inclusion criteria encompassed nursing students who had completed the

undergraduate program, passed the patient safety management course, and engaged in clinical practice at Sultan Agung Hospital. Excluded students were those with prior work experience at the hospital or who had dropped out. This study employed a non-probability sampling method with total sampling.

### Variable

In this research, there are two variables. The independent variable is the implementation of clinical education, and the dependent variable is the achievement of patient safety goals competencies among nursing students. The indicators in clinical education consist of guidelines, regulations, application of methods, case management, and evaluation. The indicators of the achievement of patient safety goals competencies consist of: i) identifying patients correctly; ii) improving effective communication; iii) improving the safety of high-alert medication; iv) ensuring the correct site, correct procedures, and correct patient surgery; v) reducing the risk of healthcare-associated infection, and vi) reducing the risk of patient harm resulting from falls.

### Instrument

This study used two instruments: a clinical education questionnaire and an observation sheet for assessing the achievement of patient safety goal competencies. The instruments were adapted from previous research.<sup>11</sup> The observation sheet consists of 22 items assessing skills in implementing six patient safety goals, namely: i) identifying patients correctly; ii) improving effective communication; iii) improving the safety of high-alert medication; iv) ensuring the correct site, correct procedures, and correct patients' surgery; and v) reducing the risk of healthcare-associated infection, and vi) reducing the risk of patient harm resulting from falls. The observation sheet employs a Guttman scale with "yes" and "no" answer choices. Based on their answers, respondents are classified into competent and incompetent individuals. Respondents are deemed competent if they score over 75% in performing patient safety goal skills.

The clinical education questionnaire instrument consists of 24 statements, including five clinical education indicators. The indicators in the clinical education questionnaire include guidelines, regulations, application of methods, case management, and evaluation. The observation sheet employs a Guttman scale with "yes" and "no" answer choices. The validity of this instrument was tested using Pearson product-moment correlation with a p-value <0.05. The reliability test result of this instrument, using Cronbach's alpha, ranged between 0.743 and 0.877. The results of the validity and reliability tests for this instrument indicate its validity and reliability.

### Data collection process

Data collection was conducted by the researchers, who provided the respondents with an information sheet explaining the benefits and objectives of the research. Subsequently, the researchers explained the procedure for filling out the instruments to the respondents. Prospective respondents willing to participate signed an informed consent form as proof of their agreement. After completing the instruments, the researchers rechecked the data for completeness. All collected data were processed and analyzed.

For the assessment of the achievement of patient safety goal competencies by nursing students, data collection was done using an observation sheet. Researchers observed respondents during their clinical education at the teaching hospital to evaluate their achievement of patient safety goal competencies.

### Analysis

In this study, data for the dependent variable were collected using an observation sheet, while data for the independent variable were collected using a structured questionnaire. The data collection period spanned from December 2022 to March 2023. To ensure anonymity, no names were included in the questionnaire and observation sheet. The collected data were tabulated and analyzed using the IBM Statistical Package for Social Sciences (SPSS) Version 21.0. Bivariate analysis was conducted using the Spearman correlation test. The Spearman correlation test was employed to determine the level of relationship between the implementation of clinical education and the achievement of patient safety goals competencies since each variable to which the data is linked is in ordinal form.

### Ethical clearance

This study received approval from the Research Ethics Committee of the University Hospital in Semarang City, Indonesia (reference number: 85/KEPK-RSISA/VIII/2022). Before participating in the study, all respondents provided written informed consent after receiving an explanation regarding the procedures, rights, and obligations during the research. Research ethics in this study adhered to the principles of justice, beneficence, confidentiality, anonymity, privacy, self-determination, and respect for individuals.

## Results

### Respondents' characteristics

Table 1 displays the characteristics of the respondents, including their demographic data. The majority of students were female, accounting for 114 students (91.3%), and all students were in the 21-25 years age group (100%). Additionally, all 125 students (100%) had completed hospital orientation and had exposure to patient safety.

### Univariate analysis

#### Description of clinical education variable

Table 2 describes the clinical education variable. The majority of respondents demonstrated "good" performance in the indicators of orientation, regulation, case management, application of the method, and evaluation. Based on the category in the operational definition, the score in this variable is 24-48, which is categorized into 24-31 in the bad category, 32-40 in the fair category, and 41-48 in the good category. Based on this category, in the clinical education category, most of the respondents were categorized as "good."

#### Description of patient safety goal competency achievements

Table 3 presents a description of the achievement of patient safety goal competencies. Most of the respondents demonstrated competence in patient identification, effective communication, safe use of high-vigilance drugs, correctness of the procedure, surgical sites, and patients to be operated on, prevention of infection risks, and prevention of patient falls. The score in this variable is 22-44, which is categorized into 22-32 in the incompetent category, and 33-44 in the competent category. Based on this category, in the competency achievement category for patient safety goals, most respondents were in the competent category.

### Bivariate analysis

Table 4 displays the relationship between clinical education and the achievement of patient safety goal competencies. In the crosstab, it can be seen that the majority of respondents with "incompetent" patient safety goal competency achievement had "sufficient" clinical education. Almost all respondents with "competent" patient safety goal competency achievement had "good" clinical education. The Spearman correlation test resulted in a significance value of 0.000, which is less than 0.05, indicating a significant relationship between clinical education and the achievement of patient safety goal competencies. The positive coefficient value suggests that better clinical education is more likely to increase the achievement of patient safety goal competencies. A coefficient value of 0.609 indicates a strong relationship between clinical education and the achievement of patient safety goal competencies.

**Table 1.** Frequency distribution of respondents' characteristics based on gender at a Sultan Agung Hospital in Semarang (n=125).

Variable	Frequency (f)	Percentage (%)
Gender		
Male	11	8.7
Female	114	91.3
Age		
21-25	125	100
25-30	0	0
Hospital orientation		
Yes	125	100
No	0	0
Exposure to patient safety		
Yes	125	100
No	0	0

**Table 2.** The description of the clinical education variable (n=125).

Indicator	Category	Frequency (f)	Percentage (%)
Orientation	Poor	6	4.8
	Sufficient	14	11.2
	Good	105	84.0
Regulation	Poor	14	11.2
	Sufficient	25	20.0
	Good	86	68.8
Case management	Poor	6	4.8
	Sufficient	14	11.2
	Good	105	84.0
Application of the method	Poor	4	3.2
	Sufficient	12	9.6
	Good	109	87.2
Evaluation	Poor	5	4.0
	Sufficient	15	12.0
	Good	105	84.0
Clinical education	Poor	3	2.4
	Sufficient	17	13.6
	Good	105	84.0

## Discussion

The process of implementing clinical education influences the achievement of competency goals for patient safety. This is in line with research results which state that clinical education allows students to practice directly in implementing patient safety targets.<sup>13</sup> The research results found that the more direct exposure students have to clinical settings during clinical education, the more skilled they become in applying clinical skills.<sup>14</sup> Clinical practice facilitates students in providing direct nursing care services.<sup>6</sup>

This research shows that one of the factors for increasing competency in patient safety targets by nursing students can be achieved through the implementation of clinical education. Optimizing the implementation of clinical education can be done in various ways, including through the development of learning strategies. One innovation in learning could involve a problem-based learning approach in a real-life clinical education setting or developing a clinical education model for patient safety in hospitals.<sup>1</sup> The results of this research are in line with findings that show that patient safety based on SECI knowledge management can increase patient safety target competency in nursing students.<sup>15</sup> Other research results indicate that the development of a clinical

education model can be used as an effort to improve competency outcomes.<sup>16</sup>

The research results show that the implementation of clinical education can be used as an effort to increase student competence.<sup>16</sup> Carrying out appropriate clinical education can enhance students' achievement of clinical practice competency.<sup>17</sup> This competency includes patient safety target competencies that must be possessed by students undergoing clinical education.<sup>18</sup> Basic knowledge, skills, behavior, and attitudes that are relevant to the scientific field of patient safety need to be innovated in the educational process to equip students with competent skills.<sup>3</sup> Knowledge, skills, behavior, and attitudes are factors that influence the implementation of patient safety.<sup>19</sup> Ultimately, students will be able to maintain patient safety when undergoing clinical practice and avoid being the cause of patient safety incidents.

This research shows that nursing education institutions must be able to improve the quality of clinical education. Nursing educational institutions must equip nursing students with patient safety competencies while undergoing clinical education.<sup>20</sup> The Nursing Education Association in Indonesia issued a policy to provide learning credit units for patient safety clinical practice and develop clinical education models.<sup>13</sup>

**Table 3.** The achievement of patient safety goal competencies.

Indicator	Category	Frequency (f)	Percentage (%)
Correctly identifying patients	Not competent	11	8.8
	Competent	114	91.2
Effective Communication	Not competent	56	44.8
	Competent	69	55.2
Increasing the safety of using drugs that require high vigilance	Not competent	23	18.4
	Competent	102	81.6
Ensuring the correctness of procedures, operating sites, and patients to be operated	Not competent	32	25.6
	Competent	93	74.4
Prevents the risk of infection	Not competent	22	17.6
	Competent	103	82.4
Prevents the risk of patient falls	Not competent	9	7.2
	Competent	116	92.8
Achievement of Patient Safety Goal Competencies	Not competent	14	11.2
	Competent	111	88.8

**Table 4.** The relationship between clinical education and achievement of patient safety goal competencies.

Variable	Achievement of patient safety goal competencies		Correlation coefficient	p
	Not competent	Competent		
Clinical education				
Poor			0.609	0.000
Count	2	1		
%	14.3%	0.9%		
Sufficient				
Count	9	8		
%	64.3%	7.2%		
Good				
Count	3	102		
%	21.4%	91.9%		

## Conclusions

The implementation of clinical education has proven to be effective in increasing the achievement of competency goals for patient safety in nursing students. Therefore, to improve the ability to implement patient safety goals, nursing education institutions and education hospitals need to collaborate to create a clinical education model that can support the achievement of patient safety target competencies by nursing students. One of these clinical education models is a clinical education model based on the community of practice. Community of practice-based clinical education is a learning strategy in the area of clinical practice that involves students sharing solutions about a particular area of knowledge or competency, such as patient safety goals, and learning together to deepen their knowledge, expertise, skills, and create innovations regarding the implementation of patient safety goals.

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