



The Influence of Nursing Student Patient Safety Course (Nurse-PSC) in Increasing Patient Safety Competence in Nursing Students

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Abstract

Patient safety in hospitals cannot be separated from the role of nurses in providing nursing care. Nursing students who practice in the room are part of the system and are required to have patient safety competencies. Therefore, increasing safety competence is needed to support the quality of service by students during clinical practice. The purpose of the study was to determine the effect of the Nursing Student Patient Safety Course (Nurse-PSC) on safety competence (knowledge, skills and attitudes) before and after the course. The study was a quantitative study with a quasi-experimental design with a one-group pretest-posttest design approach. The number of respondents was 46 students who attended the course for eight weeks using e-learning collaboration and face-to-face meetings. Student competence was measured by Quality and Safety Competence (QSC) for bachelor nursing students (QSC-BNS) with 42 questions. The results showed that the respondents' patient safety competence increased significantly after the intervention ($p < 0.001$), all sub-variables of knowledge, skills, and attitude also showed significant improvement ($p < 0.001$). Therefore, the patient safety course model can be used as an effective form of learning to improve safety competence in nursing students.

INTRODUCTION

Patient safety is a major focus in the delivery of care to patients. Patient safety is one of the indicators of improved quality of care worldwide and is a global health priority (WHO, 2017). Patient safety in hospitals is inseparable from the role of nurses in providing nursing care (Rizany et al., 2021). Patient safety education in nursing education programmes is the first step to ensuring patient safety and improving the quality of care in hospital clinical practice (Sümen et al., 2021). Students who practice in the room are part of the system and are required to have patient safety competencies (Iswati, 2015). Therefore, increasing safety competence is needed to support the quality of service by students during clinical practice.

Safety incidents can occur to students who are practising clinics in hospitals. The results of the study showed that 49-53% of newly graduated nurses with less than one year of experience experienced medical errors (Kiernan, 2018). In addition, during clinical practice, 28-30% of students experience errors in drug administration (Asensi-Vicente et al., 2018). 39% of nursing students also created non-injury events (NIEs) on patients during clinical practice (Kirwan et al., 2019). Incidents that occur in students are preventable, one of which is by increasing the knowledge, skills and attitudes of students in ensuring patient safety.

In some countries, patient safety education tends to receive less attention in the nursing curriculum (S. E. Lee & Dahinten, 2022). Nursing students reported a lack of understanding of patient safety principles and felt incompetent in patient safety issues. In addition, there is a gap between classroom learning about patient safety and its application in clinical practice (N.-J. Lee et al., 2016). In Indonesia, patient

safety education is included in the DIII and Undergraduate nursing curriculum. However, research shows that only 21% of students have good patient safety knowledge (Iswati, 2015). Research on student competence towards six safety goals showed competence in the good category, with an average of 61.9%. (Riada, 2016). These results indicate that efforts are needed to improve the competence of nursing students.

A preliminary study of student safety competence in 2022 by researchers showed that the average student competence was 79.65%, with details of the average knowledge of 75.46%, skills of 78.93% and attitudes of 82.5%. Safety attitude itself relates to how nurses implement safety (Galleryzki et al., 2021). Knowledge received by nurses affects nurses' safety attitudes (Galleryzki, 2023). Research conducted in several hospitals in Indonesia showed an average implementation score of Patient Safety Goals (PSG) of 159.03 (85.4%). Improving student competence is essential for students because pre-clinical education is fundamental for students in providing safe nursing care for patients in the future.

Several studies have shown that E-Learning and videos on patient safety can effectively improve students' knowledge, skills and attitudes (Anugrahsari et al., 2022). Previous research on patient safety courses in nursing students found that the intervention group had higher scores than the control group who did not get the course. Increased knowledge is the most significant impact in giving courses (S. E. Lee & Dahinten, 2022). This study developed a patient safety learning method, the Nursing Student Patient Safety Course (Nurse-PSC), by utilising e-learning so that students can learn anywhere and anytime. The latest case studies on safety in accordance with the circumstances during clinical practice are added to the course so that the gap between classroom learning about patient safety and its application in clinical practice can be minimised. The purpose of the study was to determine the effect of Nursing Student Patient Safety Course (Nurse-PSC) on safety competence (knowledge, skills and attitudes) before and after the course.

RESEARCH METHODS

The research is a quantitative study with a research design conducted with Pre-experiment with a One-group pre test-post test design approach, where in this design, there is one group that is given intervention, and pre-treatment and post-treatment tests are carried out. The sample was taken by purposive sampling. Purposive Sampling is a sampling technique included in Nonprobability Sampling. Respondents in this study were 46 student who studied in Vocational Nursing students in the second semester.

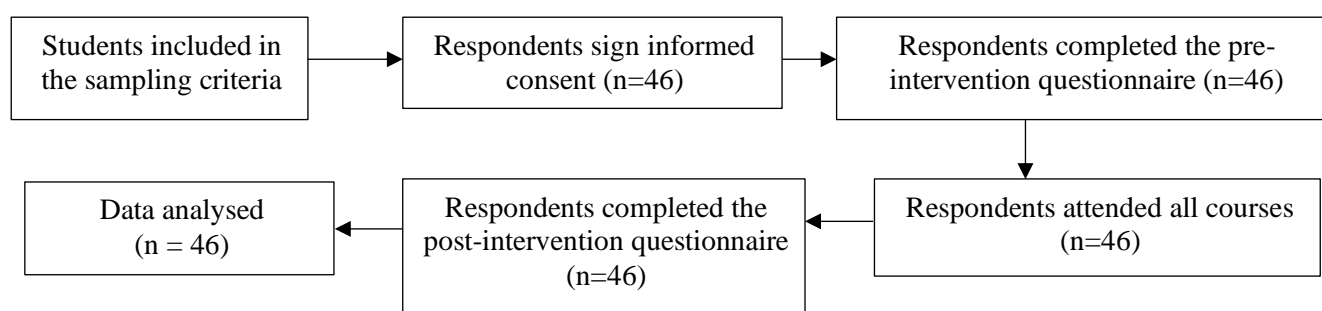


Figure 1. Research process flow chart

The safety competency instrument used in this study is *quality and safety competence (QSC) for bachelor nursing students (QSC-BNS)* developed by (Liu et al., 2021), and modifications have been made according to the needs of researchers in several 42 statements. The validity test results showed the value of $> r$ table, and the reliability was 0.983. The instrument consists of 3 dimensions, namely knowledge, skill and attitude. The knowledge dimension consists of 6 statements. The skill dimension consists of 22 statements divided into several sub-variables, namely the ability to report incidents and respond to incidents eight statements, utilise resources / evidence-based practices 3 statements, safe nursing practice 5 statements, infection prevention 4 statements and appropriate communication skills

during handover consisting of 2 statements. The attitude dimension consists of sub-variables of patient safety promotion and preventive strategies 4 statements, responsibility of health workers in safety culture 4 statements, incident reporting 4 statements and safety culture components 2 statements. The instrument used a Likert scale of 1-5 (1= strongly agree, 2= disagree, 3= undecided, 4= agree and 5= strongly agree).

This research was conducted after obtaining a certificate of ethical review from The Ethical Committee of Medical Research Faculty of Dentistry University of Jember, with the credential ethic number 2242/UN25.8/KEPK/DL/2023. The data collection process was executed after the researcher received permission and passed the ethical review. Data collection used questionnaires using Google Forms for pre and post-intervention questionnaires. The research was conducted in July-September 2023.

Table 1. Topics and learning activities in research

Weeks-	Topik	Aktivitas pembelajaran
1	Fundamental concepts of patient safety	Face-to-face meetings, discussions
2	Nurses' role in patient safety	Face-to-face meetings, discussions case study
3	Communication in support of patient safety	Face-to-face meetings, discussions roleplay
4	Work in teams for patient safety	Learning videos, discussions, case study
5	Safety culture	Learning meetings, discussions, case studies, journal analysis
6	Infection prevention and control	Learning video, discussion, case study, practice, journal analysis
7,8	Patient safety incidents and safety incident reporting	Face-to-face meetings, learning videos, discussions, case studies, journal analysis, role play, and playing educational safety snake- ladder games.

Course description

"Nursing Student-Patient Safety Course (Nurse-PSC)" which consists of an 8-week course using the "Nurse-PSC" application and face-to-face meetings. Nurse-PSC application is an android-mobile based application to support patient safety learning for students. Meanwhile, Nurse-PSC itself consists of lectures and discussions, learning videos, quizzes, and individual and group activities (roleplay, journal analysis and case studies). Group discussions are required to complete assignments. For all activities student small groups contain 3-4 students. Individual or group activities are completed during real-time online classes, using patient safety applications in group discussions, followed by large group discussions involving the whole class. Students are also asked to solve problems from case studies and other materials (journal analysis). Learning videos are videos containing patient safety materials and practices. Students also roleplay activities in improving patient safety. At the end of the session, there will be a face-to-face meeting with nursing practitioners to provide material on how safety incidents are handled in hospitals. In addition to face-to-face meetings, safety snake-ladder games are held as an educational tool.

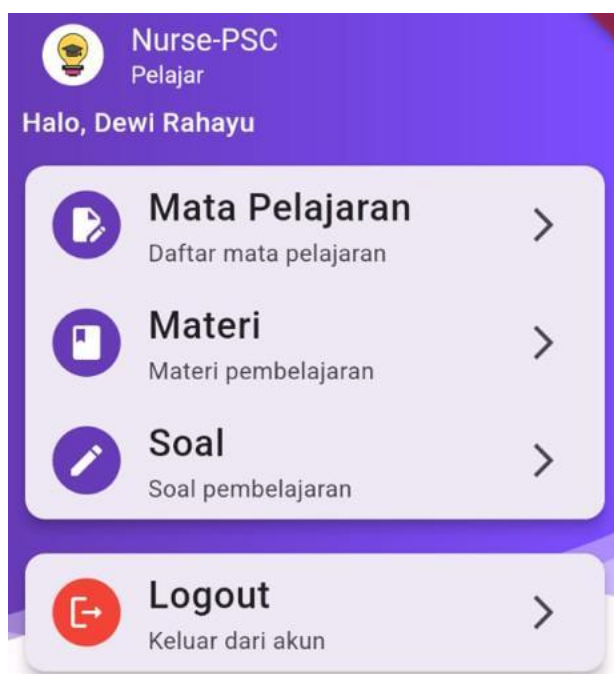


Figure 2. Nurse-PSC Application



Figure 3. Safety Snakes-Ladders Games

RESULT

The results of the analysis in Table 2 show that the age mean of participants are 19,63 years old, and majority of our participants are woman 37 (80.4%).

Table 2. Demographic Characteristic (n=46)

Variable	n	%	Mean (SD)	95% CI
Age			19.63 (1.06)	19.32-19.95
Gender				
Woman	37	80.4		
Man	9	19.6		

Table 3 shows that total patient safety competence increased significantly ($p < 0.001$). The mean difference between pre- and post was 36.08 points. Knowledge, skills, and attitude also showed significant improvement ($p < 0.001$).

Table 3. T-test dependent (n=46)

Variable	Pre intervention		Pos intervention		T	P Value
	Mean	SD	Mean	SD		
Overall competence	120.85	33.52	156.93	22.80	-6.155	<0.001
Knowledge	16.96	5.41	22.59	2.97	-6.934	<0.001
Skill	59.41	20.15	80.11	15.97	-5.801	<0.001
Attitude	44.48	13.41	54.24	8.65	-4.088	<0.001

DISCUSSION

The results showed an increase in patient safety competence in students after the intervention. Patient safety learning at the preclinical stage has a significant impact in the critical aspect of spontaneous event reporting by students (Age, 2014). Patient safety learning can be done at the clinical stage. At this stage, students learn about patient safety as an asset to undergo the clinical practice process (Kirch, 2010). Clinical education is a stage of health professional education that is very important for students to complete in order to become competent. The cornerstone of clinical education is experiential learning, and students are expected to be able to connect academic theory with actual problems addressed in practice. To help students acquire and develop the skills that they need to work safely and effectively as practitioners, clinical practice is essential to the process of cognitive, emotional and skill development (Mrtensson et al., 2016). If patient safety is well implemented, services that prioritise optimal safety and quality will be realised, especially for the community, who will receive services that are of higher quality, safer, and in accordance with their expectations. Health workers can fulfil new values, especially the importance of implementing patient safety in every service activity provided (Yusuf Pratama 2017).

In this study, Nurse-PSC had a significant influence in improving the competence of nursing students. This is in line with research (Lee & Dahinten, 2022) which states that there is a positive impact of patient safety courses on student competence. This finding is supported by other studies that state the use of e-learning methods in the learning process affects student competence (You, 2022). Another study concluded that video education was effective in improving students' ability to learn inhaler use (Lorenza, 2020). Respondents who are given information through audio-visual media or videos are easier to understand because each respondent will look at the images and listen to the sound contained in the educational content. This is considered efficient in providing information to respondents because videos can be shown repeatedly, so that it is effective in changing the views of the target to be intervened. (Igiany, 2016). Other research results show that e-learning collaboration between education and practitioners has a positive impact on improving student competence (Jung et al., 2022). Collaborative learning of nursing management e-learning makes it easier for students to understand and apply nursing management in the scope of clinical practice. After the nursing intervention, there was an increase in competence in students because the implementation of collaboration involved experts in the academic field and practitioners, so that the delivery of nursing management material was easily understood by students. (Yusnaini et al., 2022). The e-learning collaboration learning method in nursing management courses aims to provide a combination of scientific evidence-based management concepts from experts in the field of education and applicable experience from practitioners. (Jung et al., 2022).

The knowledge of respondents after the intervention with Nurse-PSC for 8 weeks of nursing has increased significantly. According to (Roza & Wulandini, 2020) There was a change in the value of knowledge regarding patient safety in the experimental group, while in the control group, there was no change in the value of knowledge given because there was no additional knowledge as obtained by the experimental group. The result of the study (Ningsih & Endang Marlina, 2020) stated that knowledge is related to the implementation of patient safety with a value (p-value 0.013). Knowledge is information that can change a person's actions because knowledge is the basis for taking the right move. The higher one's knowledge, the better one's performance at work. Knowledge is everything that is known that can be used to live one's life. (Mubarak et al., 2012).

Respondents' skills after an 8-week intervention with the e-learning method and face-to-face meetings with nursing practitioners have increased significantly. Other research results showed that at the post-test stage, the average value of respondents' actions regarding the six patient safety goals was higher in the treatment group compared to the control group. The statistical test results obtained on the skill variable mean that there is a significant difference in the actions of respondents between the control group and the treatment group (Kurniasih & Natalia, 2018). The implementation of the six patient safety goals is critical because it can avoid unexpected events, injuries or near misses. In its application, in addition to media in the form of modules, electronic media such as videos are also needed so that

students can practice before practising in the hospital. In addition, nursing supervisors must be an example in applying the six patient safety goals (Kurniasih & Natalia, 2018). The implementation of patient safety is a priority in the aspect of hospital services and has become a demand for needs in health services. Patient safety is the responsibility of the nursing service provider in every care unit, both acute and chronic must focus on patient safety. Patient safety an implementation that is carried out through the establishment of a service system that implements patient safety standards, patient safety goals and steps towards patient safety (Harefa, 2019).

The attitude of respondents after an 8-week intervention with the e-learning method and face-to-face meetings with nursing practitioners has increased significantly. This is in line with research (Lee & Dahinten, 2022), which showed that there were differences in patient safety attitudes before and after the patient safety course in the intervention group. The relationship between attitude and nurse compliance with the application of patient safety culture can be evidenced from the coefficient value β of the attitude variable of 0.294, which means that the better the nurse's attitude towards the importance of patient safety culture to reduce the occurrence of more dangerous incidents or injuries, the more compliant the nurse will be in implementing patient safety culture in every nursing care service activity by 0.294 (Hernawati et al., 2021). The results of another study showed that at the post-test stage, the average value of respondents' attitudes about the six targets of patient safety was higher in the treatment group compared to the control group. The statistical test results obtained on the attitude variable with a value (p-value 0.0001) mean that there is a significant difference in the attitude of respondents between the control group and the treatment group. (Kurniasih & Natalia, 2018).

There are limitations to this study, even though there is an increase in student competence after the intervention. It cannot be generalised because it is only done at one research site. In addition, in this study, there was no comparison group or only carried out in the intervention group, so the competence of students was not known if no intervention was carried out. In addition, one-session training cannot be used as a measuring tool for patient safety competence in students, and an evaluation of student competence must be carried out periodically.

CONCLUSION

Patient safety is a key indicator of improved quality of care and a major focus in the delivery of nursing care to patients. The need for patient safety competence is not only intended for nurses who work in health services but also for nursing students who will later be directly involved in providing services. One of the efforts to improve patient safety competence is by providing training to students. The results of this study indicate that providing training consisting of several learning methods to students can improve student competence at the level of knowledge, skills, and attitudes before and after the intervention. Researchers suggest that training in the implementation of patient safety in hospitals is carried out on an ongoing basis so that the implementation of patient safety in students who are undergoing clinical practice in hospitals can run according to procedures. So that students' knowledge, attitudes, and skills can continue to be improved.

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