The Effect of Peer Learning Method on The Level of Patient Safety Knowledge and Activeness in Nursing Students

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Abstract
Objective: Knowing the effect of peer learning methods on the level of patient safety knowledge and activeness in nursing students
Method: This research is a Quasi Experiment research with a two group pretest-posttest research design with control group design. The number of respondents amounted to 48 people with each group of 24 people. The inclusion criteria in this study were level 1 students who had not been given patient safety material. The instrument used was a knowledge level questionnaire and a learning activeness observation sheet.
Results: In the Wilcoxon test, showed a significant Asymp. Sig value that is significant in the intervention group is 0.000 <0.05, while in the control group 1.000> 0.05. The Mann Whitney test on the level of knowledge showed a significant Asymp. Sig value is 0.000 < 0.05 and the difference in activeness between the intervention and control groups also shows a significant Asymp. Sig value is significant 0.000 (<0.05).
Conclusion: In this study it can be concluded that the peer learning method has an influence on the level of knowledge and activeness of students.

Keywords: Peer learning, nursing students, patient safety, knowledge level, learning activeness, quasi-experimental study, nursing education

INTRODUCTION

Patient safety is a fundamental aspect of healthcare that ensures the delivery of care is not only effective but also free from avoidable harm. According to Suparti (2018), patient safety involves a system where hospitals implement preventive measures to minimize the risk of medical errors and promote safer patient outcomes. Nursing students, as future healthcare professionals, must be equipped early with essential knowledge and competencies to reduce the likelihood of errors in clinical practice. This is crucial given that during clinical education, nursing students are directly involved in providing care under supervision. Data from RSUP Sanglah in 2019 revealed that out of the total patient safety incidents reported, 10% were attributed to students or trainees, often due to inadequate knowledge and understanding of safety protocols. This underscores the importance of enhancing students' comprehension of patient safety principles to reduce such incidents in the clinical environment. Knowledge, formed through experience and learning, plays a key role in shaping behavior. According to Cahyono et al. (2019), actions based on sound knowledge are generally more effective and safer.

In addition to knowledge, student learning activity is also essential. Nur Aini Mail et al. (2020) define learning activity as an expression of individual curiosity, involving both physical and mental engagement. Active participation in learning processes leads to better outcomes. Therefore, instructional approaches must support both cognitive development and active student involvement.

One approach that aligns with this need is Student-Centered Learning (SCL), which encourages learners to take responsibility for their learning through interaction, collaboration, and problem-solving. However, despite the initial use of engaging methods such as presentations or questioning in lectures, many students remain passive in the classroom. This highlights the need for teaching strategies that stimulate deeper engagement.

Peer Learning is one such strategy. It allows students to learn collaboratively, exchanging knowledge, solving problems together, and supporting each other's development. Peer Learning encourages teamwork, critical thinking, and communication—skills essential in clinical practice. Wahyuni et al. (2018) found that this method enhances both the knowledge and practical abilities of nursing students, especially in clinical settings. When students practice skills together, they gain confidence and accuracy, which leads to fewer clinical errors.

Research by Ravanipour (in Wahyuni et al., 2018) showed high student satisfaction with Peer Learning, especially because of improved clinical skills and reduced errors. Similarly, Keppell et al. (2006) found a significant improvement in knowledge and competence among students taught with Peer Learning compared to those taught through conventional methods.

Peer Learning not only promotes academic achievement but also cultivates social responsibility, group cooperation, and self-directed learning. It creates a positive and interactive learning environment that enhances motivation and knowledge retention.

Based on the background above, this study aims to investigate the influence of the Peer Learning method on the level of knowledge and learning activity related to patient safety among nursing students at STIKep PPNI West Java. By identifying the impact of this approach, the findings are expected to contribute to the development of more effective educational strategies in nursing programs, ultimately supporting safer healthcare practices in the future.

METHODS

In this study, the researcher used a quantitative approach with a quasi-experimental pre-post test one group design. There are two groups in this study, namely the intervention group and the control group. Measurements were taken before and after the intervention group was given the Peer Learning method and the control group was given the conventional learning method. Then compare the results between the two groups. The subjects in this study are first-year Nursing students at STIKep PPNI West Java. Inclusion Criteria: First-year Nursing students at STIKep PPNI West Java, able to communicate well, willing to participate in the research.

RESULTS

Table 1 Description of Knowledge Levels Before and After Intervention

Category	Pretest n (%)	Posttest n (%)
Low (< 55%)	0 (0%)	0 (0%)
Medium (55–75%)	19 (79.2%)	0 (0%)
High (76–100%)	5 (20.8%)	24 (100%)
Total	**24 (100%)**	**24 (100%)**

In Table 1 above, it shows the level of patient safety knowledge in the intervention group. The results show that in the category before the intervention, there were 19 (79.2%) students, more than half of whom were in the moderate category. After the intervention, this increased to 24 (100%) students, all of whom were in the high category. Therefore, based on these results, it can be concluded that there was a significant

change in scores before and after the intervention in the interventiongroup.

Table 2 Description of Knowledge Levels Before and After Intervention in the Control Group

Category	Pretest n (%)	Posttest n (%)
Low (< 55%)	4 (16.7%)	4 (16.7%)
Medium (55–75%)	17 (70.8%)	17 (70.8%)
High (76–100%)	3 (12.5%)	3 (12.5%)
Total	**24 (100%)**	**24 (100%)**

In Table 2 above, it shows the overview of patient safety knowledge levels in the control group. The results show that before the intervention, there were 17 (70.8%) students in the control group who were categorized as moderate, which is more than half. After the intervention, the knowledge level category remained the same, with 17 (70.8%) students still in the moderate category, indicating no change. Therefore, based on these results, it can be concluded that there was no significant change in the scores before and after the intervention in the control group.

Table 3 Description of the Level of Learning Activity in the Intervention and Control Groups

Category	Intervension N(%)	Control N(%)
Very Low (≤ 19%)	-	-
Low (20-39%)	-	22 (91.7)
Medium (40-59%)	-	2 (8.3)
High (60-79%)	5 (20.8)	-
Very High (80-100%)	19 (79.2)	-
Total	24 (100)	24 (100)

Table 3 above shows an overview of the level of learning activity in the intervention and control groups. The results show that in the intervention group, there are 19 (79.2%) students, more than half of whom fall into the very high category, whereas in the control group, there are 22 (91.7%) students, almost all of whom fall into the low category. Therefore, based on these results, it can be concluded that there is a significant difference in activity levels between the intervention group and the control group.

Table 4 Wilcoxon Test Results for Pre-Post Knowledge Level Differences in the Intervention Group

Ranks	N	Mean Rank	Sum of Ranks
Negative Ranks	0	0.00	0.00
Positive Ranks	19	10.00	190.00
Ties	5	—	—
Total	**24**	—	—

Based on the Wilcoxon Rank output table above, it can be interpreted as follows:

a) Negative Ranks or the negative difference between the level of patient safety knowledge for Pre-test and Post-Test is 0, indicating no decrease from Pre to Post test values.
b) Positive Ranks or the positive difference between the level of patient safety knowledge for Pre-Test and Post-Test shows 19 positive data (N), meaning all 19 students experienced an increase in patient safety knowledge from pre to post test with a mean rank or average increase of 10.00 and a sum of positive ranks of 190.00.
c) Ties or the same values for Pre and Post Test in the intervention group amount to 5, indicating that there are 5 students with the same values between pre and post test in the intervention group.
d) Based on the Test Statistics output table above, the Asymp. Sig (2-tailed) value is 0.000, which is less than 0.05, thus it can be concluded that "Ha is accepted." This means there is an increase in patient safety knowledge between Pre and Post Test in the intervention group.

Table 5 Wilcoxon Test Results of Pre-Post Knowledge Level Differences in the Control

Group			
Ranks	**N**	**Mean Rank**	**Sum of Ranks**
Negative Ranks	0	0.00	0.00
Positive Ranks	0	0.00	0.00
Ties	24	—	—
Total	**24**	—	—

Based on the Wilcoxon Rank output table above, it can be interpreted as follows:

a) Negative Ranks or the negative difference between the level of patient safety knowledge for Pre-test and Post-Test is 0, indicating that there are no students who experienced a decrease in scores from Pre to Post Test.
b) Positive Ranks or the positive difference between the level of patient safety knowledge for Pre-Test and Post-Test has 0 positive data (N), meaning there are no students who experienced an increase in patient safety knowledge from pre to post test.
c) Ties or the similarity of Pre and Post Test scores in the control group is 24, indicating that there are 24 students who have the same scores between pre and post test in the control group.
d) Based on the Test Statistics output table above, it is known that Asymp. Sig (2-tailed) is 1.000, which is greater than 0.05, so it can be concluded that "Ha is rejected and Ho is accepted." This means there is no increase in patient safety knowledge between Pre and Post Test in the control group.

Table 6 Mann-Whitney Results of Knowledge Level Differences After Intervention

Test Statistic	Value
Mann-Whitney U	36.000
Z	-5.893
Asymp. Sig. (2-tailed)	0.000

Based on the Mann-Whitney Test Statistics output, it is known that the Asymp. Sig. (2-tailed) value is 0.000, which is <0.05. It can be concluded that "the hypothesis is accepted." Thus, it can be said that there is a significant difference in patient safety knowledge levels between the intervention group and the control group. It can also be concluded that there is an influence of the peer learning method on the level of knowledge of nursing students.

Table 7 Mann Whitney Results of Learning Activity Differences Between Intervention and Control Groups During the Intervention

Test Statistic	Value
Mann-Whitney U	0.000
Z	-6.476
Asymp. Sig. (2-tailed)	0.000

Based on the Test Statistics output, it is known that the Asymp. Sig. (2-tailed) value is 0.000 where <0.05. It can be concluded that "the hypothesis is accepted." Therefore, it can be said that there is a significant difference in the learning activity scores of students in the intervention group and the control group.

DISCUSSION

The findings of this study indicate a significant improvement in patient safety knowledge among students exposed to the peer learning approach. Prior to the intervention, 79.2% of students in the intervention group were classified in the moderate knowledge category. Following the intervention, all students (100%) reached a high level of understanding. In contrast, the control group exhibited no change, with 70.8% of participants remaining in the moderate category both before and after the intervention. This contrast highlights the effectiveness of peer learning in enhancing knowledge acquisition, while also implying that the disparity likely stems from differences in instructional strategies rather than demographic factors, as both groups comprised first-year nursing students who had not yet received formal education in patient safety.

The method used in delivering educational

content played a pivotal role. Students in the intervention group engaged in peer learning activities, while those in the control group followed a conventional lecture format. Previous literature supports the notion that instructional models substantially impact learning outcomes. According to Trianto (2010), the effectiveness of a learning model lies in its ability to guide instructional planning and execution. Pupuh and Sobry S (2010) similarly emphasize that the appropriateness of teaching strategies directly influences the success of educational objectives.

The study also revealed contrasting patterns in student learning activity. Within the intervention group, 79.2% of students demonstrated very high levels of engagement. Conversely, 91.7% of students in the control group exhibited low engagement. This disparity suggests that the peer learning approach fosters greater student involvement. Several contributing factors can explain this difference. Based on Syah (Rusno, 2011), student participation is influenced by internal factors such as health, interest, motivation, and cognitive readiness, as well as external factors like the classroom environment, the instructional style of educators, and institutional resources.

In this study, the traditional lecture approach in the control group was perceived as monotonous and passive, reducing student enthusiasm and engagement. The peer learning strategy, on the other hand, required students to take an active role in their learning process. Wilcoxon test results further support these findings. The intervention group displayed no decline in scores post-intervention and demonstrated improvement across 19 participants. The test yielded a statistically significant result (Asymp. Sig. = 0.000), indicating that the intervention had a measurable effect on student knowledge.

The peer learning model implemented in the intervention group emphasized student collaboration without direct involvement from instructors. Four mentors were selected from outside the respondent pool and trained in patient safety content. These mentors facilitated small group discussions, encouraged knowledge exchange, and oversaw the completion of learning activities over three days. This student-led approach minimized the pressure students might feel when interacting with instructors and promoted a more open learning environment.

Peer learning is designed to promote cooperative learning and skill development by encouraging students of equal standing to assist one another. The strategy is proven to be effective, as supported by studies such as Simorangkir (2015), which identified significant improvements in students' post-intervention scores. Similarly, Elsie S.K. Chan (2014) emphasized that collaborative peer environments foster shared responsibility, deeper understanding, and increased academic competence.

In contrast, the control group followed a traditional lecture format using PowerPoint presentations to deliver content over two days. Although this method is widely used, it did not generate notable improvements in students' knowledge. The Wilcoxon test for the control group showed no positive or negative rank changes, and all 24 students remained at the same knowledge level post-intervention (Asymp. Sig. = 1.000). These outcomes suggest that the lecture-based format may be insufficient for promoting active learning and conceptual understanding in the context of patient safety.

Further analysis attributes this lack of progress to limited student engagement and low interactivity during sessions. Traditional classroom settings, where students act as passive recipients of information, often fail to encourage discussion, curiosity, or critical thinking. Studies by Ardian & Munadi (2016) and Maryatun (2015) reinforce the idea that passive learning environments, particularly those reliant on static visual aids like PowerPoint, can negatively affect motivation and attentiveness.

These patterns were also consistent with observational data during the intervention. In the control group, when instructors attempted

to engage students through questioning, only a few responded. This aligns with Sari (2014), who noted that reluctance to speak may arise from shyness, fear of judgment, or lack of preparation. Some students, though knowledgeable, were hesitant to contribute unless explicitly encouraged by educators. This dynamic limited the sharing of insights and hindered collective learning.

In contrast, the peer learning model encouraged students to assume leadership roles and fostered a supportive environment for dialogue. This collaborative setup allowed learners to feel more comfortable expressing themselves and asking questions, especially within smaller peer groups. As students acted as facilitators and learners simultaneously, communication became more natural, and learning became more effective. The process reduced reliance on traditional authority figures and empowered students to take ownership of their education.

The effectiveness of the peer learning method in promoting knowledge acquisition was further validated by the Mann-Whitney test results. The significant difference in post-test scores (Asymp. Sig. = 0.000) between the two groups confirms that this method outperformed conventional teaching. Moreover, similar findings have been reported in other studies, such as that by Nelwati et al. (2018), which showed a greater improvement in knowledge scores among students engaged in peer learning compared to those who underwent standard lectures.

Student learning activity was also significantly improved through peer learning. The Mann-Whitney test for learning activity scores showed a clear distinction between the two groups, again favoring the intervention group. Students who engaged in peer learning demonstrated greater involvement in discussions, expressed ideas more freely, and showed a willingness to collaborate. This method appeared to enhance students' confidence and competence in navigating academic content.

Peer learning offers a solution to some of the inherent challenges of conventional education. It supports students who may struggle with public speaking or feel anxious about participating in large class settings. By facilitating peer-led groups, students develop communication and leadership skills that are difficult to cultivate in traditional lectures. Rukmini & Turpijn (2017) highlight how student-to-student interaction creates a smoother flow of information, improving understanding and retention.

This research aligns with findings from Rumiyanti & Darmanto (2015), who reported that student engagement and learning outcomes improved significantly across multiple cycles of applying the peer learning model. In their study, activity levels rose from 72.59% to 77.78%, while learning outcomes increased from 78.52% to 83.52%, demonstrating the long-term potential of this approach to enhance educational quality.

In conclusion, the peer learning model proved more effective than conventional lecture-based instruction in improving both knowledge and learning activity related to patient safety among nursing students. The collaborative structure of peer learning encourages active engagement, fosters meaningful dialogue, and enhances knowledge retention. By contrast, conventional methods, though still widely practiced, may not provide the interactive and participatory environment needed to optimize student learning in contemporary nursing education.

CONCLUSIONS

This research has shown that peer learning method has an influence on the level of knowledge and activeness of nursing student. The peer learning learning method can facilitate students to be able to actively ask questions, discuss, respect other people's opinions and express opinions. When students become teachers or mentors for their friends, communication will run more smoothly and knowledge transfer will be easier compared to conventional learning.

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