

Available online on 15.02.2022 at <http://jddtonline.info>

Journal of Drug Delivery and Therapeutics

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Research Paper

The Use of Incision Wound Model to Improve the Clinical Skills of Nursing Students

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Article Info:



Article History:

Received 26 Dec 2021
Reviewed 03 Feb 2022
Accepted 11 Feb 2022
Available online 15 Feb 2022

Cite this article as:

Iriana P. The use of incision wound model to improve the clinical skills of nursing students; 12(1-S):97-99

DOI: <http://dx.doi.org/10.22270/jddt.v12i1-s.5355>

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Abstract

Nursing education curriculum plays a significant role in preparing nursing graduates to begin clinical practice in the field. It is important to develop several learning methods, like skill-lab practice media, in order to enable students to practice more often before engaging in actual clinical practice and obtain a simulated picture that is close to reality. The objective of this research is to determine the effectiveness of a portable postoperative incision wound model on the clinical skills of nursing students. The quasi-experimental research method used pre and posttest evaluation in control and intervention groups. The intervention group used a portable incision wound care model during practice. Stratified random sampling was performed as a sampling method with 45 students in each group. The data were analyzed using dependent and independent t-tests, with a significance value of 0.05. All students scored above the passing grade limit (2.76). The mean difference among students using the portable wound care model increased by 0.31 and was higher than that in the control group, with an increase in the difference value by 0.26. The p value in both groups is 0.001

Keywords: Clinical skills, Portable wound model, Clinical skill-lab, Instructional media

INTRODUCTION

Newly qualified nurses experience a change in their roles to become real nurses and are required to provide professional nursing care. Several studies state that this role transition becomes a big challenge for nursing students and triggers stressors.^{1,2} The significance of an educational curriculum that includes clinical practice appears to be important. For example, the experience gained during education does not represent the actual situation in the work field and there is, thus, a gap between theory and practice Duchscer.³ Therefore, new nursing graduates feel unprepared to work in actual clinical settings and provide good quality of nursing care. According to Jarvien "readiness" can be defined as feeling fully ready to take an action.²

This challenge indicates the importance of developing learning methods in the nursing education curriculum that are able to simulate the actual situation in clinical practice. The methods that are often used in nursing education are demonstration and role play and they are combined with learning media, such as aids or models, for several nursing interventions. The limited number of teaching aids often triggers anxiety among nursing students in skill-lab exams.⁴

One of the competencies that must be achieved by nursing students is wound care, including postoperative incision wound care. Nurses have a responsibility to ensure that the wound care of patients is safe and in accordance with operational standards.⁵ The 2020 Indonesian nurse competency standards state that in the Environmental Category and Security and Protection Subcategory, nurses

must have the competence to carry out wound care and postoperative care. Clinical skills in performing incision suture wound care can be learned by nursing students through skill-lab using props. The limited number of teaching aids, like probandus, used in education can be caused by the high price of such aids, thereby causing the ratio of the availability of teaching aids to the number of students to become unequal. For example, the wound model mannequin in the Ministry of Health's Poltekkes Jakarta laboratory in 2013 was available only for 1 of 90 students. Based on the above problems, we aim to conduct a qualitative study to determine the development and effectiveness of using a portable incision wound model for nursing students.

MATERIALS AND METHODS

A quasi-experimental research method is used by dividing the participants into intervention and control groups. Both pre- and post-test evaluation is used in both groups. The students in the control group performed a wound care practice using a non-portable wound model, while the intervention group used a portable incisional wound model made of leather synthetic materials with a beige color similar to skin. The portable model can be attached to the probandus/person who acts as a patient so that the students can perform incisional wound care practice on the wound model that is attached to the body part of the probandus.

The research respondents in this study were 90 medical surgical nursing students in the year 2013–2014 in their third and fifth semesters of study. By using the stratified random sampling

method, all respondents were divided into two groups: intervention and control. A total of 77 students had a GPA of above 2.75 according to the cutoff point and 13 students had a GPA of below 2.75, and this number was divided equally between the intervention and control groups.

Both groups were administered a pre and posttest after performing a wound care practice. The instruments in the pre and posttests contain knowledge of incision wound care and aspects of psychomotor clinical ability in wound care in accordance with standard operating procedures. The validity and reliability of the instrument was tested in terms of wound care knowledge, with the results indicating a Cronbach's alpha of 0.831. This score is greater than the alpha score of 0.632. This shows that the instrument has high validity. Similarly, the psychomotor instrument for wound care, which resulted in a Cronbach's alpha score of 0.909. Pre and posttest instruments pertaining to psychomotor incision wound care were implemented by the same officer and using the same sheet. One point was given for steps that were carried out but were incorrect, a score of 2 was given for steps that were correct, and 0 points were given for steps that were not performed at all. The maximum score limit for the clinical skill of wound care based on the provisions of the institution is 69% or 2.76. In addition, statistical data analysis of the dependent t-test was carried out to ascertain the difference in the mean values of the two control and intervention groups. If the test results revealed a significance value of less than 0.05, then the two variables were said to have a significant difference or the intervention carried out can be said to have a significant effect.

The two groups performed a wound care skill-lab practice after filling out the pretest instrument. The time allotted to practice was four hours for both groups. In the intervention group, each respondent took turns doing wound care exercises using the portable incision wound model. Immediately after the exercise time was over, the two groups undertook a posttest in different locations.

RESULT

The results of the analysis of the dependent t-test revealed that there was a significant difference in the clinical ability of students in terms of performing incision wound care before and after the intervention. In both groups, there was an increase in the scores after the intervention. The mean result of the pretest in the control group was 3.31 and that in the posttest was 3.57, while the mean result of the pretest in the intervention group was 3.27 and that in the posttest was 3.58.

Table 1. Differences in the mean pretest and posttest of incision wound care practice

Group	Mean	SD	T	p-value
Control				
Pre-test	32.11	2.891	-1.103	0.001
Post-test	32.06			
Intervention				
Pre-test	35.17	2.721	-5.750	0.001
Post-test	37.51			

Table 1 shows that there are differences in the improvement in the clinical skill of incision wound care practices before and after the intervention (wound care training) in both the control and intervention groups with a p-value <0.05. These results indicate that both teaching models are proven to be able to improve students' clinical psychomotor skills. In addition, both groups indicated an increase in the average passing grade (passing grade value: 2.76) with the control

group having a mean difference of 0.26 and an intervention of 0.31.

Table 2. Comparison of clinical skill of incision wound care in the intervention and control groups

Group	Mean±SD	95%CI	F	p-value
Control	-1.104±2.891	-1.201	4.455	0.001
Intervention	-2.333±2.721	-3.554		

Table 2 presents the findings regarding the differences in the effectiveness of using a portable wound care model on students' clinical knowledge and skills. Laboratory training (skill-lab) was provided for wound care in the control group using non-portable aids and the intervention group using portable incision wound care props. The test was performed using an independent t-test.

DISCUSSION

A study conducted by Bannaasan indicated that the average score of wound care skills using a latex wound model in the intervention group was higher than that in the control group. This study is relevant to the results obtained in the study of a portable incision wound care model that imitated the patient's clinical status. Both models were designed with materials that were similar to the patient's skin and were portable. Several factors conveyed by students who used the wound model when practicing wound care skills were considered meaningful, more realistic, and similar to the actual condition.^{6,7}

Students in the intervention group were given the opportunity to independently use a portable teaching model by practicing according to the module containing the stages of wound care according to the standard operating procedure. The simulation learning method effectively measures ability and communication as well as improves learning in order to support safe nursing care.⁸ The portable wound model was designed by the team with the aim of obtaining a simple wound model that resembles a real wound on the patient and can be attached to the proband so that the wound care practice situation can be more active. This is in accordance with the study on developing a wound model by Kasatpibal et al. which found that the wound model assessed by students was easy to use and could be available with limited resources, thereby improving self-learning in wound care.⁹

In this study, the use of an incision portable wound model was analyzed. Students performed wound care practice with their peers and independently, but were also able to obtain guidance from lectures during practice. These enabled students to understand the steps they needed to perform in accordance with SOPs with more practice time. Practice time is stated as one of the factors that increases students' skills and knowledge in performing wound care and maintaining the integrity of the patient's skin.¹⁰ This is relevant to the research by Shin et al. which deduces that the simulation method in nursing education can produce a significant improvement in psychomotor skills among those in the intervention group compared to those in the control group. Overall, this study revealed the improvement in nursing students' psychomotor skills through the use of a portable incision wound model.¹¹

CONCLUSION

The use of an incision wound care teaching model can enable students to improve their knowledge and psychomotor skills in wound care practice. The portable wound care teaching model is considered more effective than the use of other traditional teaching aids. By using the portable teaching model, students

gain access to a practical environment that is similar to the situation in reality, as the teaching model can be attached to the probandus. In addition, the number of teaching aid models are equivalent to the number of students, thereby giving students the opportunity to practice independently more frequently, with or without assistance from the lecture. With the development of a portable model, students can practice not only in the skill-lab but can also be used at home or when providing counseling about wound care in the community. The limitations of this study is the wound model developed for student to practice only has one insisional post operative wound. So that for further research, models with other wounds can be added in the same model. For example are stoma wounds, post operative appendectomy wounds, post herniotomy or Sectio caesarea surgical wound

ACKNOWLEDGEMENTS

The authors thank to all participants and research assistants.

CONFLICT OF INTEREST

The authors declare that they have no conflict interests.

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