

Improving IV-Cath Insertion Knowledge Using Comics for Nursing Students at the Health Polytechnic of Palembang in Baturaja

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Abstract

Introduction: One of the most critical aspects that determine the growth of education is learning, which is a process of obtaining a lot of development, both in terms of knowledge, attitudes, and skills. One thing that needs to be improved is the knowledge and skills of IV-Cath insertion as a basis for nursing practice. One of the educational media to attract students' attention is comics. The advantage of the comic is that it is easy to understand with simple pictures plus words in daily language so that comics can be read easily. **Objective:** The study aimed to test the effect of the IV-Cath Comic on knowledge of IV-Cath Insertion in nursing students *Baturaja*, South Sumatra, Indonesia. **Method:** This research was a quantitative study with a quasi-experimental approach using pre and post-tests with a total sample of 78 nursing students from the Health Polytechnic of Palembang in *Baturaja*. Data analysis used the Wilcoxon test because the data was not normally distributed. **Result:** The results of the Wilcoxon analysis test obtained the value of Sig. (2-tailed) of $0.000 < 0.05$, an average difference exists between the pre-and post-test scores. **Conclusion:** In conclusion, there is an increase in knowledge of IV-Cath insertion after using comic media. **Recommendation:** This IV-Cath comic can be used as a practical learning media to increase students' knowledge about IV-Cath insertion. For further research, we suggest examining student motivation and enthusiasm for learning.

Keywords: Comics, IV-Cath, Knowledge, Nurse Student.



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INTRODUCTION

One of the most critical aspects that determine educational growth is learning, which is a process of obtaining a lot of development in terms of knowledge, attitudes, and skills (1). The goal is to master, acquire, and change behavior through knowledge from various aspects of human life (2).

Improving student knowledge needs to be applied in learning nursing practice, one of which is skills in IV-Cath insertion as the basis of nursing practice. In January 2017, the average number of IV-Cath insertions by the nurse was 2,661 per day at Graha Husada Hospital, Bandar Lampung (3). IV-Cath insertion skills need to be mastered to avoid unwanted things through the correct nursing standard operational Procedure (SOP) (4).

The application of SOP in every nurse intervention is an effort to maintain patient safety (5). In principle, applying SOPs is part of individual performance and behavior in working according to their duties in the organization, usually related to compliance (6).

Nursing care is a series of activities performed on patients biologically, psychosocially, and spiritually. However, each student has a different understanding of each set of nursing care (7). Most students stated they needed help applying the theoretical knowledge gained in class in practical areas. Students only use part of their conceptual knowledge to be realized when they practice at the hospital (8).

Educators should use different teaching methods to develop critical thinking when teaching the nursing care process (7). So we need a suitable learning media to increase student knowledge.

The use of media in learning is to help accelerate students in an effort to understand the material presented (5). One of the educational media to attract students' attention is comics (9). The advantage of this comic media is that it is easy to understand with simple pictures plus words in daily language, so everyone can read comics. Edgar Dale's theory, known as the Cone of Experience, states that 75% of a person's learning experience is obtained through the sense of sight (eyes), 13% through the sense of hearing (ears), and the rest through other senses. Learning by using comic media composed of pictures and writing can

activate the senses of sight so that students' understanding of the material presented will be more accessible and more attractive.

Previous research stated that there was an effect of providing *KOPI BETA* (Smart Comic Learning Blood Transfusion) media as a medium that presented the SOP form of giving blood transfusions in comic form on the knowledge of giving blood transfusions to nursing students in the Nursing Study Program, Faculty of Medicine, Udayana University. In addition, the study respondents' interest in learning was included in the high category after being given *KOPI BETA* media (10).

The results of a preliminary study conducted by researchers on 78 nursing students of the Diploma Nursing Study Program in Baturaja, as many as 82% of students stated that they were not interested in reading the existing SOPs because they were only in written form. Students also said they wanted a more attractive laboratory practice SOP material display. As for the results of a survey of researchers in laboratories in educational institutions, it was found that the practicum SOP guidebook still needed to be updated or re-evaluated. The practicum guide was last updated in 2014 and still needs to be completed SOPs.

Meanwhile, from the results of the practicum examination, especially IV-Cath insertion, it was found that of 79 students who took the exam, 60% of the examinees were incompetent in carrying out this action. The reason is not reading and studying the SOP for IV-Cath insertion, so there are errors in the stages of IV-Cath insertion, angle of needle insertion, forgetting to prepare plaster, and so on. Even though IV-Cath insertion is a fundamental science in nursing

Based on the results of discussions with students and lecturers, the researchers were interested in making IV-Cath insertion comics containing pictures and short writing. Previous research studies have found many results in increasing student knowledge of practical skills (2,9).

One of the things that makes it difficult for nursing students to insert an IV-Cath is their need for knowledge concerning IV therapy and IV-Cath insertion (11). So, increasing students'

knowledge about IV therapy and IV cath installation is necessary. Inserting an IV is one of the skills that must be mastered adequately by a nurse to prevent incidents that make the patient unhelpful or solely uncomfortable, such as failure in fluid therapy and phlebitis (12,13).

This research is essential because the preliminary study results show that 60% of nursing students of the Health Polytechnic of Palembang in Baturaja still need to pass the exam. So, it is necessary to modify learning techniques using additional teaching materials such as a comic or visual.

The novelty in this study is the use of a comic which is modified into a story when students learn IV-Cath insertion, which contains information about an IV-Cath insertion, from the size of the needle, needle insertion technique, and side effects if an error happens during the procedure.

OBJECTIVE

The study aimed to test the effect of the IV-Cath Comic on knowledge of IV-Cath Insertion in nursing students of Health Polytechnic of Palembang in Baturaja, South Sumatra, Indonesia.

METHODS

Design

This research is quantitative. This type of research is quasi-experimental with a one-group pre-post test of 78 students of the Diploma Nursing Study Health Polytechnic of Palembang Batch 2021.

Sample

The sampling technique uses total sampling. Respondents' inclusion criteria are students with active status who have passed the theoretical material in the class, such as medical surgical nursing, basic science of nursing, and basic nursing, have received material for IV-Cath insertion using manual SOPs, and sign informed consent. The respondent's exclusion criteria were inactive students who had never received IV-Cath insertion skill laboratory and did not get permission to participate in laboratory skills due to indiscipline punishment.

Data Collecting

The research began by preliminary studying students in the Diploma Nursing Program. Then, the researchers developed an IV-Cath insertion comic with an image that was visualized using a design application to produce a comic. Researchers used standardized SOP references for IV-Cath insertion from the Health Education Center of Health Human Resources in Indonesia's Ministry of Health. The researcher prepared the instrument as a pre-post data collection material and passed the research ethics test.

Before giving the IV-Cath comic, the researcher first conducted a pre-test on the respondents. Data was collected using the Knowledge of Infusion Questionnaire, which had been tested for validity and reliability. Then, the researcher gave an intervention by providing an IV-Cath comic to study for two weeks to increase knowledge. The researcher evaluated the results of the intervention by collecting post-test questionnaire sheet data that had been distributed previously.

Intervention

The research began by conducting a pre-test using a previously created questionnaire. The results of this questionnaire are initial data. Then, the researcher prepared comics that had been previously designed to be distributed to participants as teaching materials.

Following the pre-test, on the same day as the intervention, research participants received a comic book about an IV-Cath insertion, which they read aloud to one another in turns before discussing it. Within a two-week period, the procedure was performed three times. The duration of each intervention is approximately 20 minutes. A post-test was conducted after the third intervention to gather the second data as the research participants' concluding data.

Data Analysis

Data analysis uses the Wilcoxon test because the data is not a normal distribution. The characteristics of respondents can be seen in Table 1. The achievement indicator in this study was the value of students' knowledge in IV-Cath insertion using comics as media.

Ethical Consideration

This study was conducted according to the guidelines of the Declaration of Helsinki.

The Palembang Health Polytechnic Ethics Committee number 0248/KEPK/Adm2/III/2023 issued the ethical approval. All participants were asked to fill out and sign a consent form after receiving information about the research, and they had the right to participate or not in this study. The researcher assures that the confidentiality of the information will be guaranteed.

RESULTS

The following are the results of research on the characteristics of the respondents.

Table 1. Respondents Characteristics

Respondents Characteristics	Respondents Data	f	%
Gender	Men	12	15.4%
	Women	66	84.6%
Basic High School (HS)	Science HS	48	61.5%
	Social HS	22	28.2%
	Language HS	1	1.3%
	Health HS	7	9%
Age	20 years old	62	79.5%
	21 years old	16	20.5%
Reason to study nurse	Own desire	60	77%
	Parental wishes	18	23%

The table above shows that the majority of respondents in this study were female, more than male respondents. The female respondents were 66 people (84.6%), while the male respondents only amounted to 12 people (15.4%). Before entering the Diploma Nursing Program in Baturaja, the respondents' primary school was that most came from 48 science high schools (61.5%), while the least came from 1 language high school (1.3%). Based on the data in Table 1, it was also found that 77% of students studied at the Baturaja nursing study program of their desire.

Table 2. Wilcoxon Test

Post Test - Pre-test	N	%	Mean Rank	Sum of Ranks	Z	p-value
Negative Ranks	0	-	.00	.00		
Positive Ranks	48	61.5	24.5	1176		
Ties	30	38.5			-6.140	.000
Total	78	100				

Based on Table 2, the results of the Wilcoxon test showed that 48 (61.5%) of the research subjects received positive results with an average increase of 24.50 while the sum of rank was 1176.00. 30 (38.5%) subjects got the same results pre and post-test.

Based on the table 2, the value of Sig. (2-tailed) of 0.000 < 0.05, so it can be concluded that there is an average difference between the pre-test and post-test scores

DISCUSSION

Based on Table 1, it was found that the sex of the respondents in this study was dominated mainly by women. The phenomenon in education illustrates that women have more knowledge than men. Things that affect their learning achievement are that men tend to be more mischievous, challenging to manage, and see, from a neuroscientific perspective, the differences in the brains of men and women (14).

This statement is supported by previous research with the title Analysis of the relationship between gender and the level of adolescent knowledge about HIV/AIDS. It was found that nine male adolescents had good knowledge of HIV/AIDS (23.7%), while 27 girls (46.6%) had good knowledge. The results of the analysis obtained a p-value = 0.010, so it can be concluded that there is a significant relationship between gender and the level of knowledge of adolescents at SMAN 3 Atambua (15). According to Fatimah (2017), women have maturity in critical thinking, and biologically, women are more accessible to process, respond to, or store information for a long time (16). Based on this, the researchers concluded that female students' knowledge level tended to be higher because most women, after returning home from college, re-read the material presented during lectures while male nursing students studied at home just as exam day was approaching.

Respondents in this study were students who had previously studied at SMA/SMK (High/Vocational High School). Most respondents came from SMA IPA, namely 48 people (61.5%). Research conducted by Nurazizah et al. (2017) found that 62% of high school students had a good profile of cognitive abilities (17). In addition, supported by research conducted by Afridah and Fajariani (2017),

information was obtained that high school students had a moderate to good level of knowledge about sexual reproduction after receiving sexual education (18). From the results of these two studies, the education level of the respondents has fulfilled the 12-year compulsory education and entered college so that they have a good level of knowledge and cognitive abilities.

It can be seen from Table 2 that the results of the study above show that there is no decrease in students' pre-test scores to post-test scores after being given comic media. Forty-eight students experienced increased learning outcomes using comic media from the pre-test to the post-test, and 30 students showed identical scores between the pre-test and post-test. Based on the results of this study, it was found that there was an increase in knowledge of infusion in students after being given comic media.

Knowledge combines various related experiences, information, and values (19). Knowledge is also interpreted as one's theoretical and practical understanding (know-how) that someone owns. This knowledge is essential in the life and development of a person, society, and organization (20). Several things can increase one's knowledge: education, learning media, social culture, and the environment (10).

In addition, from the results of research by Djoni et al. (2021), the characteristics of the respondents came from high school majoring in science and health. Primary material in the nursing department is obtained in the science and health departments so that respondents with a high school background in science and health majors are better prepared to face lectures as nursing students (10).

In addition to the level of education, cognitive development is also influenced by learning media. The use of learning media in the form of comics can increase the knowledge of the respondents studied. The results of a study conducted by Rahajeng and Muslimah (2020) stated that comics were more effective in improving nurses' understanding of safe blood transfusions than SOP media (21). Research conducted by Djoni et al. (2021) also concluded that one of the factors that influenced a significant difference between pre-test and

post-test scores was the KOPI BETA comic learning media (10).

Judging from other external factors, when someone is exposed to something or gets a stimulus from outside, such as the mass media and the socio-cultural environment, what happens after that is the stimulus process. In the stimulus process, there is such a thing as a closed reaction, where a fast response will shape one's level of knowledge (22). The research of Djoni et al. (2021) also supports this statement, where socio-cultural and environmental factors can affect a person's level of knowledge (10). Based on this, these external factors can affect the level of understanding of giving infusion comic media to research respondents.

In this study, looking at the results, 48 (61.5%) of the respondents had a positive score, which means there was an increase in the value of knowledge in IV-Cath insertion, indicating that using comics as additional teaching material has good implications. According to previous studies, using comics as a teaching tool can increase student motivation and enhance learning outcomes (23,24).

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