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Coqnitive and Psychomotor Accomplishments in Endotracheal Tube Installation Practicum Learning

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Abstract

In clinical practice, students need these skills to help maintain a patient's airway, one of which is success in providing endotracheal intubation, to achieve this requires knowledge and experience about the airway and its structure. The aim is to find out the most influential learning method in improving students' skills in laboratory skills, especially in airway management for endotracheal tube installation correctly. Starting from the necessary assessments, preparation of tools to action techniques. This research was conducted on two groups of respondents, the first group was the intervention group where this group was given a video of endotracheal tube installation and the second group was the control group where they were given material in the form of a demonstration from the instructor which then measured the knowledge and skill scores in both groups. The research results showed that there was a significant influence of the learning method on the achievement of students' psychomotor skills in carrying out delegative actions for airway management: endotracheal tube installation on the knowledge score with a p value of 0.007 and the skills score with a p value of 0.002. Where learning methods using live demonstrations are more recommended than methods using learning videos.

Keywords: Endotracheal Tube, Knowledge, Skills

1. INTRODUCTION

What is the purpose of the study? Why are you conducting the study? The main section of an article should begin with an introductory section that provides detailed information about the paper's purpose, motivation, research methods, and findings. The introduction should be written in relatively nontechnical language, yet clear enough for an informed reader to understand the manuscript's contribution.

The aim of this research is to find out the most influential learning method in improving students' skills in laboratory skills, especially in airway management for endotracheal tube installation so that students are able to carry out this action correctly. Starting from the necessary assessments, equipment preparation to action techniques. Airway management is one of the main focuses that anesthesiology nursing students must start. In clinical practice, students need these skills to help maintain a patient's airway, one of which is success in providing endotracheal intubation, to achieve this requires knowledge and experience about the airway and its structure. Lack of clinical maturity can result in student anxiety at the clinical level. The aim of this research is to find out the most influential learning method in improving students' skills in laboratory skills, especially in airway management for endotracheal tube installation so that students are able to carry out this action

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correctly. Starting from the necessary assessments, preparation of tools to action techniques. This research was carried out quantitatively with quasi experiments.

In this research, researchers are interested in seeing the extent of success of students in carrying out endotracheal tube insertion skills, which is one of the main competencies of graduate anesthetists in the anesthesiology nursing study programThis research was conducted on two groups of respondents, the first group was the intervention group where this group was given a video of endotracheal tube installation and the second group was the control group where they were given material in the form of a demonstration from the instructor which then measured the knowledge and skill scores in both groups. The research results showed that there was a significant influence of the learning method on the achievement of students' psychomotor skills in carrying out delegative actions for airway management: endotracheal tube installation on the knowledge and the skills. Where learning methods using live demonstrations are more recommended than methods using learning videos

2. LITERATURE REVIEW

Endotracheal intubation is an important resuscitation procedure in emergencies. Direct and video laryngoscopy are the two most commonly used approaches for endotracheal intubation. Indications for endotracheal intubation include changes in mental status, poor ventilation, and poor oxygenation (Ahmed and Boyer, 2023). Insertion of an endotracheal tube is one way to manage the airway that is needed when the patient is undergoing surgery. Endotracheal tube placement is given to patients under general anesthesia.

Anesthesia services are medical procedures that must be carried out by health workers who have expertise and authority in the field of anesthesia, namely specialist anesthesiology doctors who are then assisted by other health workers, namely anesthesiologists. Anesthesia administrators have the main task of providing anesthesia management care which includes pre-anesthesia, intra-anesthesia and post-anesthesia. In line with the development of knowledge and technology, especially anesthesiology nursing care and demands for quality services, one of the competency standards for anesthetists is the achievement of the core competency of clinical skills of anesthesiology nursing students, namely being able to monitor the patient's airway and carry out anesthesia nursing care based on delegation of authority from the doctor. anesthesiology specialist with airway maintenance.

To achieve this competency, learning material is provided in accordance with the competency to be achieved. Learning will always be synonymous with education which aims

to produce relevant and competent human resources so that learning must be able to prepare the younger generation to play an active role in raising the honor and dignity of the nation. Efforts to improve learning outcomes can be through implementing, improving changes and making updates that influence educational success through implementing learning strategies to improve learning outcomes. There are three main issues in learning, namely input, process and output. In this case, the process is related to the course of the learning process.

To improve the quality of learning, starting with learning planning to support learning in lectures, there are several practicum or laboratory skills courses. Laboratory skills is a special psychomotor skills training activity for students in the laboratory which aims to prepare students to be ready with clinical skills. So far, the learning method by demonstration has been one way of delivering material in laboratory skills. The aim of implementing a learning strategy with demonstration techniques is to help gain practical experience, skills and abilities.

After the Covid-19 pandemic, the learning system has started to get used to the online system. So some practicums are carried out using videos, so that students can know the names, functions of tools and how to use them by watching and observing videos. With videos, students can perform and practice continuously and can be repeated until they understand the video they are studying, students can repeat actions until they are completely skilled (Samiatun, 2013). Transitioning from learning laboratory skills to demonstration methods and watching videos can improve skills in installing IVs and caring for clean wounds in the laboratory (Astuti, 2017). However, to carry out an action or action procedure, individuals use their five senses for inspection, palpation, percussion and auscultation so that they can feel directly how to carry out an action procedure, individuals can see and hold the tool directly, try to use the tool and find a comfortable position when holding the tool and carry out the action using the technique or method taught as well as possible difficulties encountered when carrying out an action which ultimately creates a new way to carry out the action comfortably, and this cannot be felt when students only see it audiovisually.

The implementation of laboratory practicums really depends on the active role of students and lecturers who help the learning process where lecturers train to improve psychomotor intelligence by installing instruments to completion. The process of training these skills is an activity that can be done independently, collaboratively, communicating and honestly (Kustijono and Zuhri, 2018). Apart from being provided with direct demonstrations, laboratory skills can also be provided by watching videos, a learning strategy that develops students' technical skills in using special videos. as effective as when the material is given

directly. The learning media that can be used are very varied, one of which is audio-visual media or what is usually called video media which has a great attraction to the responsiveness of students, because video media has many advantages that can help teachers in explaining or conveying information. from the material taught and makes students easily accept the material taught and can be used as another alternative to replace the methods often used by teachers, namely the lecture and assignment methods (Pebriani, 2017).

Audio visual media is a type of learning media that is packaged in video form which can provide long-term memory to students because video media is presented through animation, images and sound. Video media has the potential to be more popular with students, this is because through video media students can watch and imagine what is presented during the video playback (Nurwinda et al., 2022). Video media is media or tools that present audio and visuals containing learning messages, including concepts, principles, procedures, theory and application of knowledge to help understanding learning material (Syaparuddin and Elihami, 2020).

Learning in the laboratory is something that must be done by anesthesiology nursing students to support their skills when students provide direct anesthesiology nursing care to patients. Currently, the learning process can be carried out anywhere, without limitations in space and time, one of which is achieved by using video media. Successful endotracheal intubation requires knowledge and experience with the airway and its structures. Lack of clinical maturity and patient ignorance of the airway increases student anxiety in the clinical arena (Wands and Minzola, 2015). However, the final result to be achieved from a practicum procedure is that students are able to carry out the action correctly in accordance with standard operational procedures. Competent is the main goal regardless of how the material is delivered. Therefore, in this research, to accommodate learning needs without limits of space and time, a study of a learning method is needed. By comparing the achievement of students' psychomotor skills between using the video learning method and the demonstration method to find out the influence of the learning method on students' achievement of psychomotor skills in carrying out delegative actions for airway management: installation of an endotracheal tube.

3. METHODS

This research is a quasi experimental design where the design is with pre test and post test non equivalent control groups. The two groups received different interventions where the experimental group used videos and the control group used a demonstration learning model

and then given a post test. The population in this study were 58 semester 3 students of the Faculty of Health Sciences, anesthesiology nursing study program, totaling 58 people. The sample used was 40 respondents using a purposive sampling technique, namely by selecting respondents according to the research inclusion and exclusion criteria. The inclusion criteria for respondents were third semester students of the anesthesiology nursing study program, competency scores in the range of 80 – 100 in the previous semester. The research is planned to be conducted from February to October 2024.

The research began by preparing a research instrument in the form of an observation guide in the form of a guide to standard operating procedures used by researchers to directly assess the behavior shown by respondents. Then the researchers created audiovisual media in the form of endotracheal tube installation skills in accordance with standard operational procedures starting from the equipment preparation stage, patient assessment to taking action. The implementation stage starts from the pre-implementation stage where the researcher will select a sample of students with target achievement scores for skills in the previous semester in the range of 80 – 100. The implementation stage is where treatment is given according to the time agreed with the respondent. Learning activities last for 100 minutes from opening to closing. For the intervention group, implementation started with explaining the material, playing a video on skills for inserting an endotraceal tube, then the researcher asked respondents to carry out these skills. In the control group, starting with the researcher delivering the material then demonstrating and asking respondents to repeat the skills given. Then in the final stage the researcher assessed the respondent's psychomotor

The data results will be analyzed using univariate and bivariate. Univariate analysis Univariate analysis is an analysis to describe the characteristics of each research variable. Descriptive analysis is a data processing procedure by describing and summarizing data scientifically in the form of tables or graphs. Univariate analysis was carried out to describe the characteristics of respondents based on gender and knowledge level scores and skills scores.

Bivariate analysis will assess the level of knowledge and skills pre and post intervention in the form of a video of ETT installation skills. The statistical test carried out is a dependent t-test or what is often called a paired t test. This test is used if the two samples being compared have the same subject. In other words, it is called dependent if the respondent is measured/researched twice (pre and post) to test the influence of each independent variable individually on the dependent variable. Then, to test the mean

difference between two groups of independent data on airway installation skills, we will use an independent test.

4. RESULTS

This research was carried out by collecting data directly through observation of the level of knowledge and skills of respondents in carrying out ETT installation in the intervention group and control group. The intervention group was the group that was given ETT installation learning materials using learning videos, while the control group was the group that was given ETT installation learning using the direct demonstration method. A complete description of the results of the research analysis is as follows:

A. Univariate Analysis

The aim of univariate analysis is to explain each of the variables studied, namely the respondent's age, gender, knowledge and skills scores in the intervention group and knowledge and skills scores in the control group.

Table 1. Results of Respondent Analysis Based on Age and Gender of Respondents

	Intervention Group		Control Group	
	Amount	Percentage	Amount	Percentage
Age				
a. 19th	4	26,7	4	26,7
b. 20th	9	60	7	46.7
c. 21th	2	13,3	4	26,7
Gender				
a. Woman	10	66,7	9	60
b. Man	5	33,3	6	40

Based on table 1, it can be explained that each group consists of 15 different respondents. The selection of respondents was carried out using a purposive sampling technique, grouping of respondents was carried out randomly. Characteristics of research respondents based on age can be concluded that all respondents are in the late teenage age category, namely in the 18-21 year range. At both ages, the largest number of respondents in both groups was 20 years old, namely 53.3%. Please note that all respondents are second year students. The gender of the majority of respondents was female, namely 63.3%. This happens because based on the population, there are more female respondents than male respondents.

Table 2. Results of Respondent Analysis Based on Knowledge Level Scores and Skill Level Scores in the Intervention Group

Characteristic	Amount	Percentage	Mean
Koqnitive score			
a. Less (< 75)	4	26.7	80,3
b. Good (75-95)	9	60	
c. Very good (> 95)	2	13,3	
Skill score			
a. Less (< 75)	5	33,3	77,33
b. Good (75-95)	9	60	
c. Very good (> 95)	1	6,7	

Table 2 shows that the assessment of the level of knowledge was carried out using a post test assessment related to ETT installation in patients, while the skills assessment used a checklist sheet from the SOP for ETT installation. The instruments used in both groups were the same. Table 2 shows the results of the analysis of knowledge levels and skill levels in the intervention group. The level of knowledge and skill level of respondents in installing ETT in the intervention group was mostly in the good category, namely 60% with a mean value of knowledge level of 80.3. Meanwhile, the skill level assessment was at a mean of 77.33.

Table 3. Results of Respondent Analysis Based on Knowledge Level Scores and Skill Level Scores in the Control Group

Karakteristik	Jumlah	Persentase	Mean
Koqnitive score			
Less (< 75)	0	0	88,53
Good (75-95)	13	86,7	
Very good (> 95)	2	13,3	
Skill score			
Less (< 75)	0	0	87,67
Good (75-95)	14	93,3	
Very good (> 95)	1	6,7	

Table 3 shows the results of the analysis of knowledge levels and skill levels in the intervention group. The level of knowledge of respondents in installing ETT in the control group was mostly in the good category, namely 86.7% with a mean value of knowledge level of 88.53. Meanwhile, the skill level assessment was also in the good category at 93.3% with a mean value of 87.67. In this group, there was not a single respondent or 0% who fell into the category of lacking in knowledge or skill level.

B. Bivariate Analysis

Bivariate analysis describes whether there is a significant difference in knowledge scores and skills scores in the two groups. The analytical test used is the Independent test.

Table 4. Results of Analysis of Differences in Knowledge Scores in the Intervention Group Compared to the Control Group

Koqnitif score	N	Mean	P value
Intervention Group	15	80,33	0,007
Control Group	15	88,53	

Based on table 4, it shows a comparison of the knowledge scores for the two groups of respondents. The intervention group showed a mean value at the knowledge level of 80.33, while the control group had a mean value of 88.53. The results of both showed that there was a difference of 8.20 points in the two groups, indicating that the level of knowledge of respondents in the control group was higher than in the intervention group in carrying out the ETT installation procedure. The results of the analysis for the two groups show a p value of 0.007, where the p value is smaller than the value of 0.05, so a conclusion can be drawn that there is a significant difference in the level of knowledge between the intervention group, namely respondents who were given learning using video and the control group, namely respondents who were given learning by direct demonstration.

Table 5. Results of Analysis of Differences in Skill Scores in the Intervention Group Compared to the Control Group

Skill score	N	Mean	P value
Intervention Group	15	77,33	0,002
Control Group	15	87,06	

Based on table 5 which shows the comparison of skill scores for the two groups of respondents. The intervention group showed a mean value at the knowledge level of 77.33, while the control group had a mean value of 87.06. The results of both showed that there was a difference of 9.73 points in the two groups, indicating that the skill level of respondents in the control group was higher than in the intervention group in carrying out the ETT installation procedure. The results of the analysis for the two groups show a p value of 0.002, where the p value is smaller than the value of 0.05, so it can be concluded that there is a significant difference in the level of skills between the intervention group, namely respondents who were given learning using video and the control group, namely respondents who were given learning by direct demonstration.

5. DISCUSSION

The practical learning method is a learning method in which learners or students carry out training or practical activities in order to have higher assertiveness or skills than the theory that has been studied. This method is generally implemented in vocational education,

professional education and training (Wiguna, Munawar and Untung, 2016). The practice method is a method of providing educational material using tools or objects, as demonstrated, with the hope that students will learn clearly and easily while being able to practice the material in question and one day in society. This method provides a way for participants to apply, test and adapt theory to actual conditions through practice or work. This is where participants in practice or training will get excellent lessons to develop and perfect the necessary skills.

The practical learning method is carried out by providing education using tools or objects to demonstrate with the hope that students gain a clear understanding of the material. In this research, the act of installing an endotracheal tube (ETT) is one of the competency standards for a prospective anesthetist in category 3, namely being able to understand, explain and carry out under supervision (Ministry of Health of the Republic of Indonesia, 2020). To achieve this, a learning method is needed. so that students can gain understanding and develop and perfect the necessary skills.

The grouping of learning outcomes according to Benjamin S. Bloom's theory is divided into cognitive, affective and psychomotor domains. The cognitive domain includes data on mastery of concepts, factual knowledge related to intellectual skills or level of knowledge. The affective domain is related to attitudes and values, while the psychomotor domain is concerned with skills expressed in completing tasks and the ability to act. Psychomotor is a domain that is closely related to a person's skills and abilities in receiving certain learning experiences. Where psychomotor learning outcomes are a continuation of cognitive and affective learning outcomes.

One of the positive impacts of using learning media is that it can improve the quality of learning if the integrity of words and images as learning media can communicate elements of knowledge in a well-organized, specific and clear way (Nurrita, 2018). Lessons using practical methods will make things clearer and clearer. makes it easier for students to practice the material studied. This method develops the potential for critical thinking abilities and trains intellectual skills in addition to psychomotor skills (Syahrowiyah, 2016)

Based on the research results presented in the table, it can be seen that the average score for the level of knowledge and skills in the group given the practicum video was lower than the group given practice with direct demonstration. Suggests that there are many advantages to using the demonstration method to improve student learning outcomes, including two-way communication (educators and students can directly ask questions and answers), students' attention can be more focused, the student learning process is more

focused on the material being studied as well as experiences and The impression as a result of learning is more inherent in students (Astuti, 2017) states that audiovisual media has several advantages, including being able to attract students' attention, saving time and recordings can be played repeatedly, the loudness and weakness of the sound can be adjusted. and adjusted if comments will be inserted that will be heard and the lecturer/facilitator as the presenter of the material can arrange where to stop the movement of the image, meaning that control is completely in the hands of the lecturer/facilitator as the presenter of the material.

The average knowledge score in the intervention group was 80.33. Where learning through videos presents information, explains processes, is able to explain complex concepts, teaches skills to lengthen or shorten time. Videos which are moving displays accompanied by sound provide their own attraction and present information, explain processes and explain complex concepts, promote skills and knowledge (Handayani, Fiza and Surleni, 2022). Meanwhile, the knowledge score in the control group was 88.33, this This occurs because in practicums which are carried out with direct demonstrations, respondents can see and listen to demonstrations directly by researchers, where demonstrations can provide experience and impressions of learning. The results of the research show that through video media the learning material that will be delivered is able to arouse students' enthusiasm for learning because the material being studied can be easily understood and comprehended by students through the images, sounds and animations presented, so that it can increase learning motivation and student learning outcomes. (Nurwinda et al., 2022)

The results of the independent test variable knowledge score show a p value of 0.007 < 0.05 so it can be concluded that there is a significant difference between the knowledge scores in the intervention group using video media and the control group who carried out live demonstrations, supported by research by Jairus, Naihar and Samuel (2023).)The findings of this study revealed that the average knowledge score was 12.0 in the group using the demonstration and 11.0 in the group using the video, which shows a lower figure compared to the demonstration group and Moneghi, et al (2023) where conducting research on hand washing using video and demonstration methods was used compared to clinical skills learning. The results obtained were that students' scores in the cognitive domain of hand washing with demonstration were higher (16.20 ± 1.5) compared to the method. videos (15.25 ± 1). However, the results of this study contradict the results of research conducted by (Handayani, Fiza and Surleni (2022) which showed p values of 0.229 and 0.539. Based on the research results it can be concluded that the scores were not significantly different between the intervention group and the control group.

Likewise, in the skills scores, which means the psychomotor abilities of students in the intervention group and the control group, there was a significant difference. The average result of psychomotor ability in the intervention group, namely using video learning media, was lower than the control group, namely the group that received practical material by direct demonstration, namely 0.002 < p value. The results of other research conducted where the mean value of learning using demonstrations was greater than the mean video (36.00 > 25.00) so it can be said that demonstrations are more influential than videos in this case, namely conscious motivation (Susilawati, 2019).

The results of this study show that the psychomotor ability of integrating the audiovisual demonstration method into skills is higher than the average results of the psychomotor ability of the demonstration method (Astuti, 2017). Apart from that, looking at the analysis of the results of changes in the difference between post-test and pre-test scores shows that the average skill score in the intervention group is higher compared to the control group.

The practical learning method with videos is indeed more interesting and more timeless where respondents can learn without being limited by space and time. All decisions related to learning are in the respondent's control, including voice settings and focusing attention. In the intervention group, the teaching method will attract more attention, the meaning of the teaching material is clearer so that it can be better understood by students and allows students to master the teaching objectives better, but respondents can learn while doing other things, thereby reducing concentration, managing time according to their wishes and efforts to remember Return the material without looking directly. The weakness of video is that it uses electricity, requires expensive and complex equipment, the audience's attention is difficult to control, participation is rarely noticed (Susilawati, 2019). Less able to display details of the objects presented perfectly. Students prefer teaching with the help of videos, which shows that students who master technology today want a change from traditional teaching to advanced technological teaching methods that can be in line with their good knowledge of technology and the internet (Afif, 2019).

Meanwhile, in the control group, where respondents learned through demonstrations, teachers and students met directly and interacted, respondents saw equipment, supplies and action techniques directly so that in the learning process they used all their five senses to absorb information. What is no less important is the educator's ability to control the class, where respondents will be invited to focus and concentrate before they can try individual

action. Apart from that, students not only listen to the laboratory supervisor's explanation, but also other activities such as observing, performing and demonstrating.

Overall, this intervention group used the video based learning method which is the most significant innovation in updating the way of teaching. This is the most interactive way and does not make things stiff in class so it will make students' mood continue to improve compared to conventional methods such as listening to lectures and also explaining on the blackboard or reading in books. Apart from that, in other research it is said that using videos as an alternative in the learning process can increase good flexibility (Shafa, 2024). In order not to be rigid, the Video Based Learning method can be carried out using a blended method, so that a balance is created between conventional learning methods and Video Based Learning. Of course, the development of video-based learning will always be effective and innovative in supporting learning (Basyaev, Diens and Suwandi, 2021). However, these two methods are equally good to use in conveying material. From the results of data analysis, it shows that both groups scored in the good category, which means that these two methods can be used in providing practical material. However, in practical learning it is still more effective if you use the direct demonstration method for students.

Psychomotor abilities have been widely recognized as abilities that are as important as cognitive and affective abilities, which must be mastered by students. In anesthesiology nursing education where they are in the vocational range, learning in the laboratory is one place where students can learn psychomotor skills. Through learning in the laboratory, students can gain a learning experience that is similar to the learning experience they will experience in the clinic. In this way, students will be better prepared to take part in clinical learning.

6. CONCLUSION

Knowledge scores and skill scores on endotracheal tube installation procedures were higher in the group that was given material using the direct demonstration method compared to the group that was given the video. Researchers recommend learning in the laboratory using direct demonstration techniques.

7. LIMITATION

The limitation of this research is that the assessment is only carried out on skills in the laboratory, it needs to be proven for practical learning directly to patients so that a conclusion

can be drawn as to which learning method is better, using videos or direct demonstrations in front of students.

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