THE EFFECTIVENESS OF USING THE INDEX CARD MATCH METHOD TO INCREASING THE ABILITY OF RECOGNITION OF PRACTICUM TOOLS INTHE MIDWIFE LABORATORY IN LEVEL I MIDWIFE STUDENTS

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ABSTRACT

The process of a midwife to become a competent person begins with taking midwifery education at a midwife education institution. Preliminary study obtained data that students could not name the laboratory equipment and its functions correctly. The results of interviews with students obtained data so far in learning the introduction of laboratory practicum tools using the lecture method. The research was carried out in May-August 2021 and is a quasi-experimental research with a non-equivalent control group design. The research sample was taken using accidental sampling technique totaling 32 respondents who were divided into the intervention group and the control group. The intervention group was given the Index Card Match method and the control group was given the lecture method. Comparison of the effectiveness of the two methods was tested by independent t-test on thevalue of N-Gain. The result of the research is that there is a difference between Index card match and lecture in improving the ability to recognize laboratory equipment. Based on the N-Gain analysis, the results of the lecture method are less effective and the Index Card Match method is quite effective in increasing the ability to recognize laboratory equipment in students. Index card match is more effective in improving the ability to recognize laboratory equipment compared to the lecture method.

Keywords: *Index Card Match, Laboratory, Midwife*

Introduction

Long-term direction of Indonesia's 2005-2025 development is to improve the quality ofhuman resources, because basically the key to successful development will be determined by the quality of human resources (Bappenas, 2005). Efforts to improve the quality of human resources can be done through education. Education is able to make human resources of high quality. Health services are very dependent on health workers. Health workers are alsoclosely related to the health education they receive.

One of the health problems in Indonesia is the Maternal Mortality Rate (MMR) and the Infant Mortality Rate (IMR), which are still quite high. Based on the Inter-Census Population Survey (SUPAS), the Maternal Mortality Rate (MMR) is around 305 per 1000 live births. Health workers, especially midwives, play an important role in reducing the MMR and IMR rates. Midwives are the spearhead of service providers to the community, so in their services they are required to provide fast, precise, excellent, quality and standardized services so that improving the quality of midwives is absolutely necessary.

The quality of midwifery services is influenced by the competencies possessed by midwives. The process of a midwife to become a competent person begins with taking midwifery education at a midwife education institution. Midwife education institutions needto develop an effective and efficient learning strategy to improve the competence of their graduates. (Kodiyah et al., 2017). The structure of the midwifery education program in

vocational education contains 40% theory and 60% practice. Practical learning aims to give students a learning experience in terms of applying theory as training material and preparation for the application of clinical practice, bringing students to the formation of attitudes, skills, ability to work together, and creativity in receiving knowledge. (Kodiyah etal., 2017)

Practical activities in midwifery education are carried out in the laboratory. Before carrying out practical activities in accordance with the demands of skills that must be met, midwifery students are first equipped with training activities for the introduction of laboratory equipment. The introduction of laboratory equipment aims to provide knowledge to students about the names and functions of tools and how to use the tools properly and correctly so as to minimize procedures for using tools and equipment damage due to improper use. The introduction of laboratory equipment is needed to support work safety in the practicum process. The use of laboratory equipment that is not in accordance with procedures has the potential to cause harm and damage.

The Manokwari D-III Midwifery Study Program Laboratory during 2019 recorded a total of 40 practicum visits. A total of 12 practicums were carried out by level I students. The introduction of the names of tools, functions and workings of practicum equipment at the Manokwari D-III Midwifery Study Program used conventional methods (lectures accompanied by explanations). The weakness of the lecture method is that it is boring and students tend to be passive. A preliminary study that was conducted on 12 level I students of the Manokwari D-III Midwifery Study Program, it was found that 7 students could not correctly name the tools and their functions. The results of interviews with students obtained data so far in learning the introduction of laboratory practicum tools using the lecture method. The available practicum tools have not met the student ratio if there is a simulation practicum that directly involves many students and often students are considered to understand and understand the material presented.

The solution to this problem is to provide material for introducing practical tools in the laboratory using the method *Index Card Match*. *Index Card Match* is a type of active learning that is done by looking for pairs of answer cards or questions while learning abouta concept or topic in a pleasant atmosphere (Silberman, 2006). There is an element of play in this method so as to minimize student boredom and create a pleasant learning climate. The purpose of this study is to evaluate the effectiveness of *Index Card Match* as a learning method in introducing practical tools in the midwifery laboratory.The method *Index Card Match* uses index cards (*Index Cards*) as the delivery medium. According to Astuti (2019), the advantage of themethod is *Index Card Match* that it increases students' understanding of the material being taught. Making index card media does not take long and the costs incurred are more efficient so that researchers are interested in using this method as a way to improve the ability to recognize laboratory equipment for level I students.

Methods

The study was conducted in May-August 2021 in the Laboratory of Midwifery Study Program D-III Manokwari Poltekkes Ministry of Health Sorong and was a quasi-experimental study with a non-equivalent control group design. The research sample was taken using accidental sampling technique totaling 32 respondents who were divided into the intervention group and the control group. The intervention group was given treatment with the introduction of laboratory equipment using themethod, *Index Card Match* while the control group was given treatment using the lecture method and an explanation of the introduction of laboratory equipment using the help of power point (PPT). The research instrument used a questionnaire to measure student's ability to identify laboratory equipment, a questionnaire on learning motivation and learning achievement. The analysis used is bivariate analysis using *paired sample t-test* and *independent t-test*.

Result and DiscussionResult

Distribution of Respondents Frequency based on Learning Achievement and Learning Motivation in the Intervention Group and Control Group

Table 1.1 Distribution of Respondents Frequency based on LearningAchievement and Learning Motivation

Charateristics of Variable		Intervention Group		Control Group	
		Frequency	%	Frequency	%
Learning Achievment					
	Very good	2	13	5	31
Good		9	56	7	44
Less		1	6	4	25
	Very poor	4	25	0	0
Learning motivation		N	%	n	%
	Very good	0	0	2	13
Good		8	50	10	63
	Fairly Good	6	38	3	19

Primary Data Source, 2021

Based on table 1.1, it can be shown that respondents in the intervention group based on learning achievement the most, namely good learning achievement as many as 9 respondents (56%), and in the control group learning achievement the most, namely good learning achievement as many as 7 respondents (44%). Respondents in the intervention group basedon motivation to learn the most, namely those who have good learning motivation as manyas 8 respondents (50%), and in the control group the level of motivation to learn the most, namely good learning motivation as many as 10 respondents (63%).

Normality Test Results Variable Capability Introduction Laboratory Equipment in intervention group and control group

Table 1.2 Normality Test Results Variable

Variable/Group	**n**	**Treatment**	***P value***
Intervention	16	Before Treatment	0,58
		After Treatment	0,60
Control	16	Before Treatment	0,59
		After Treatment	0,83

The results of the Shapiro-Wilk normality test, significant>0.05

Table 1.2 shows that the significant value of normality of data before and after treatmentin the intervention group and control group is > 0.05 which means that the variance of dataon the ability to recognize laboratory equipment before treatment in the intervention group and control group both before and after being given treatment is normally distributed so thatthe bivariate analysis using parametric *paired sample t test* and *independent t test.*

Differences in Recognition Ability of Laboratory Equipment Before and After Treatment in the Intervention Group and the Control Group

Tabel 1.3 Differences in Recognition Ability of Laboratory Equipment Beforeand After Treatment in the Intervention Group and the Control Group

Recognition Ability of Laboratory Instruments					
Variable/Group	n	Mean	SD	Selisih rerata	*p- value*
Intervention Group					
Before Intervention	16	37,5	6,3	37,5	0,000
After Intervention		75,0	8,6		
Control Group					
Before Intervention	16	37,2	8,4	25,6	0,000
After Intervention		62,8	9,8		

Significant P value <0.05 Paired T- test

Table 1.3 shows the results that in the intervention group the average ability to recognize laboratory equipment before being given an intervention was 37.5 and after being given an intervention it increased to 75.0 while in the control group the ability to recognize laboratory equipment before being given an intervention was 37.2 and after being given an interventionthere was an increase to 62.8 with the same p-value, 0.00 <0.05, which means that there aredifferences in the ability to recognize laboratory equipment before and after both the intervention group and the control group.

Differences in Recognition of Laboratory Equipment After Treatment in the Intervention Group and Control Group

Table 1.4 Differences in Recognition of Laboratory Equipment AfterTreatment in the Intervention Group and Control Group

Recognition Ability of Laboratory Instruments				
Variable	**Mean**	**SD**	**Mean Difference**	***p-value***
Intervention Group	75,0	8,6	12,2	0,01
Control Group	62,8	9,8		

Significant P value ≤ 0.05 Independent Test

Table 1.4 shows the results that the average ability to recognize laboratory equipment after being given treatment in the intervention group is 75, 0 while in the control group the average was 62.8 with a mean difference of 12.2 and *p-value* = 0.01, which means that thereis a significant difference in the ability to recognize laboratory equipment between the intervention and control groups.

Table 1.5 Results of Calculation of *N-Gain Score*

No	Intervention Group *N-Gain Score* (%)	No	Control Group *N-Gain Score* (%)
Average	60,6	Average	41,1
Minimum	38	Minimum	27
Maximum	80	Maximum	64

Primary Data Sources, 2021

Table 1.5 shows that the average *N-Gain score* for the intervention group (Method *Index Card Match*) is 60.6% and is included in the quite effective category with an *N-Gain scoreof* at least 38% and a maximum of 80%. Meanwhile, the mean *N-Gain score* for the control group (conventional method with lectures and PPT slides) is 41.1% and is included in the less effective category with an *N-Gain score of* at least 27% and a maximum of 64%.

Table 1.6 Differences in N-Gain Score in the Intervention Group and theControl Group

Recognition Ability of Laboratory Instruments

Variable	**Mean**	**SD**	**Mean Difference**	***p-value***
Intervention Group	60,6	11,5	19,5	0,00
Control Group	41,1	11,7		

Significant P value ≤ 0.05 NGain Independent Test

Table 1.6 shows that the mean *N-Gain score* for the intervention group (Index Card Match Method) is 60.6%. Based on the category table for the interpretation of the effectiveness of the *N-Gain value* (%) according to Hake (1999), it can be concluded that the use of the *index card match* method is quite effective as a method of introducing laboratory equipment. Meanwhile, the mean *N-Gain score* for the control group (conventional method with lectures and PPT slides) is 41.1%. Based on the category table for the interpretation of the effectiveness of the *N-Gain value* (%) according to Hake (1999),it can be concluded that the use of conventional methods is less effective as a method of introducing laboratory equipment.

Based on table 1.5, it is known that the *p-value is* 0.00 < 0.05. Thus, it can be concluded that there is a significant difference in effectiveness between the use of the *Index Card Match* method and the conventional method to improve the ability to recognize laboratory equipment in first-level students in the D-III Study Program. Manokwari Midwifery Poltekkes Ministry of Health Sorong.

Discussions

This research was conducted on 32 level I students of the Manokwari D-III Midwifery Study Program which were divided into an intervention group and control group with 16 students in each group. The intervention group was given the introduction of laboratory equipment using the an *index card match* method, while the control group was given the introduction of laboratory equipment using the lecture method. The control and intervention groups were given treatment once per week for 4 weeks with a duration of 60 minutes. Pre-test was given before the treatment started and post-test was given at the end of the study.

The ability to recognize laboratory equipment in students before being given treatment in both the intervention group and the control group can be seen through the average *pre- test value* in table 1.3 which shows the ability to recognize laboratory equipment in the twogroups is relatively the same. Meanwhile, the scores *post-test* showed that the average ability to recognize laboratory equipment in the intervention group was higher than the control group. Submission of information becomes more effective when assisted with the use of appropriate learning media (Sunaengsih, 2016).

The results showed that in the intervention group the average ability to recognize laboratory equipment before being given the intervention was 37.5 and after being given the intervention there was an increase to 75.0 while in the control group the ability to recognize laboratory equipment before being given the intervention was 37.2 and after being given the intervention there was an increase to 62 ,8 with the *p-value*, 0.00 <0.05, which means that there are differences in the ability to recognize laboratory equipment before and after

treatment, both in the intervention group and in the control group.

In the control group, the results of statistical tests showed that there was an effect of the lecture method in increasing the ability to recognize laboratory equipment. Lectures are one way to convey information. This intervention will change the balance of the attitude component so that a new balance is formed (Ngestiningrum et al., 2017). The lecture methodis often used in the learning process, especially for the large number of students or masses. The learning process in the form of lectures and counseling can increase knowledge, attitudes and make it possible to change behavior. The results of this study are in line with research (Ngestiningrum et al., 2017) which suggests that the lecture method is effective in increasing knowledge, attitudes andbehavior *personal hygiene* during menstruation in adolescents.

Analysis of the effect of *Index Card Match method* in increasing the recognition ability of laboratory equipment shows a significant effect. This is in line with research (Ngestiningrum et al., 2017) where *index card match* method is effective in increasing knowledge, attitudes andbehavior *personal hygiene* during menstruation in adolescents. Likewise with research (Susanti & Kartiyani, 2016), where themethod *index card match* is also effective in increasing the knowledge of cadres about early detection of danger signs in pregnancy. In this study, the results of statistical tests showed that there was an effect of *index card match* method in improving adolescent attitudes about personal hygiene during menstruation (sig value 0.00).

The mean *N-Gain score* for the control group (conventional method with lectures) was 41.1%. Based on the category table for the interpretation of the effectiveness of the *N-Gain value* (%) according to Hake (1999), it can be concluded that the use of conventional methods is less effective as a method of introducing laboratory equipment. Meanwhile, the mean *N-Gain score* for the intervention group (Index Card Match Method) was 60.6% so that the use of the *index card match* method was quite effective as a method of introducing laboratory equipment compared to using the lecture method. *Index card match* method is one of the cooperative learning processes. In this study, students in the intervention group played an active role in learning the introduction of laboratory equipment so as to create a fun learning process and the material was easier to accept and implement. According to the theory, assistive devices function to assist the learning process which is based on human knowledge and then received through the five senses so that the more senses are used to receive messages, the more knowledge is obtained(Zolekhah et al., 2020).

The *Independent t test* of the mean *N-Gain value* in the control group and the intervention group obtained a *p-value* of 0.00 < 0.05. Thus, it can be concluded that there isa significant difference in effectiveness between the use of the *Index Card Match* method and conventional methods to improve the ability to recognize laboratory equipment in students.
The difference in effectiveness in the method of introducing laboratory equipment using the index card match method and the lecture method is influenced by the differences in the methods of the two methods. In the lecture method, students only listen to explanations so that the knowledge gained is less and is quickly forgotten when compared to hearing, seeing, discussing and doing it simultaneously. This is increasingly less effective if students do not concentrate in receiving the material. In contrast to the Index Card Match method, which is more fun, interesting and able to keep participants' attention focused on the learning processso that learning outcomes can be maximized (Susanti & Kartiyani, 2016).

Index card match method is proven to be able to increase the ability to recognize laboratory equipment in students, as well as to maximize student activities to obtain information. The information obtained will then be conveyed to other students so that all know the information obtained from each pair. In addition, by using themethod, *index card match* it can be seen the level of student mastery of the material being studied so that it is quite effectively used in the learning process of introducing laboratory equipment.

Conclusion and Suggestion

There are differences in the ability to recognize laboratory equipment before and after treatment, both in the intervention group and in the control group. The index card match method is quite effective in being used as a method to improve the ability to introduce laboratory equipment to students. The *index card match* method is more effective than the lecture method in increasing students' ability to introduce laboratory equipment.

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