

The Effectiveness of Low Cost Hybrid Simulator Teaching Aids in Achieving Clinical Skills for 3rd Trimester Pregnancy Examination in Midwifery Students

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Abstract

The use of hybrid simulators in the clinical learning of antenatal care is necessary to improve student skills. However, the lack of availability and function limitations in determining the height of the fundus uteri (TFU) by palpating the abdomen of pregnant women in an old-fashioned hybrid simulator hampered the process of clinical learning. The purpose of this research is to develop the hybrid simulator low cost in achieving clinical skills in pregnancy examination. This research is an R&D research with ADDIE development model. The test subject is the second grade of midwife students in Health Polytechnic Ministry of Health Riau and Laksamana Midwifery Academy, and midwifery/CI in four maternity homes in Pekanbaru. The assessment data consists of quantitative data and qualitative data. Quantitative data is obtained the result of Focus Group Discussion (FGD). The results of data showed the value of $\alpha < 0.05$ means there is a significant difference between the assessment of the old phantom and the assessment of the new phantom using a hybrid low cost simulator. Old phantom assessment results averaged 68.27 while new phantom assessment results averaged 84.94. Low cost hybrid simulators can be used as a learning medium to improve clinical skills in antenatal care especially in determining the height of the fundus uteri (TFU) in pregnant women. The qualitative results of this research can be categorized as low cost, realistic, durable, and safe. It is expected that lecturers or instructors in the field of midwifery will be creative in creating or developing a teaching tool for low-cost but high-quality clinical skills that can be used in learning.

Keywords

hybrid simulator, low cost, clinical skills

INTRODUCTION

Clinical education in midwifery education aims to integrate theoretical knowledge from books into clinical skills in real-life situations and to help students develop skills in clinical practice for their problem solving. Due to patient safety and ethical concerns, students' direct experience with patient care and opportunities to handle problem-based clinical situations has been reduced. Simulation-based clinical education is a useful pedagogical approach that provides midwifery students the opportunity to practice their clinical and decision-making skills through a variety of experiences in real-life situations, without compromising patient well-being. Simulation according to the Big Indonesian Dictionary, 2016 (KBBI) is a training method that displays something in an artificial form that is similar to the real situation.

Simulation-based clinical education in midwifery education refers to a variety of activities that use a patient simulator, including devices, trained people, living virtual environments, role playing, and use of mannequins. With realistic clinical scenarios, simulation-based educational interventions in Midwifery Education can train aspiring midwives to be experienced, helping them develop effective non-technical skills. The advantages of simulation-based educational interventions include the ability to provide direct feedback, repetitive practical learning, integration of simulations into the curriculum, the ability to adjust difficulty levels, opportunities for individuals to improve learning, and adaptability to different types of learning strategies (Issenberg SB, et al., 2005; 27: 10–28).

Simulation can be described as a series of activities ranging from low fidelity simulations to high fidelity simulations. Munshi, F., et al., (2015) Various simulation methods can be adjusted according to specific learning outcomes and education levels. The required learning outcomes must regulate the choice of the simulation method. Toserud R, et al., (2013; 13: 262–70) A number of research studies in Midwifery have evaluated the effectiveness of simulation-based educational interventions. However, the reported effectiveness varies according to the level of simulator fidelity and the outcome variables. High-fidelity simulators are declared effective for learning in health sciences, such as midwifery.

Simulation training is currently considered one of the most common and important educational methodologies. Rutherford-Hemming, T., et al., (2012) As an innovative approach, simulation training has become very popular in midwifery education because simulation training matches the demands of future midwives through complementary traits (Cooper, S. , et al., 2012).

Practicing skills using a variety of models has been a part of midwifery education for many years and is an increasingly important tool for primary education and the continuing health profession. Simulations also provide opportunities for lecturers to teach and evaluate student performance in realistic situations. Pregnancy simulator is an anatomical model designed for the teaching skills needed to help a woman who is having her pregnancy checkup. This pregnancy check-up simulator provides students with realistic opportunities to practice hand maneuvers to check for normal or complicated pregnancies. Simulations with the midwife team in antenatal care will reduce midwife errors, increase knowledge, improve communication and teamwork skills, and improve antenatal care skills.

The use of a hybrid simulator (hybrid simulator), which is a combination of a standard patient and simulator, allows learners to practice and demonstrate affective skills and procedural skills in the context of the same simulated patient care. Herajy, M., et al., (2017) Hybrid simulations are particularly effective for teaching and assessment in scenarios that require high levels of procedural accuracy and emotional sensitivity. Kneebone R, et al., (2002; 36 (7): 628-634) Given the complexities of pregnancy, hybrid simulation offers the ideal modality for constructing simulation scenarios.

This research will focus on making a hybrid pregnancy examination simulator with materials that are very easy to obtain, namely in the form of sewn fabrics. The resulting product will prioritize the aspects of appropriate technology, namely technology designed in a particular society so that it can be adapted to the environmental, ethical, cultural, social and economic aspects of the community concerned. The community referred to in this study are midwifery students who desperately need simulators or teaching aids for pregnancy examination clinical skills. The economic aspect that is the target in the manufacture of this product is the low-cost concept so that the resulting simulator can be provided by midwifery

institutions in sufficient numbers to be a teaching aid in learning clinical skills for pregnancy examinations.

Based on a preliminary study, the researcher with 15 students of D III Midwifery Study Program at STIKES Payung Negeri Pekanbaru said that the props available for pregnancy examinations available in the old panthom laboratory were rather stiff and could not determine the part of the fetus, nor could they determine the part of the fetus. uterine fundal height, and when the pregnant panthom is opened, then you know the position of the fetus in the panthom, so that when practicing in the laboratory, you do not immediately know what is in the panthom.

Intellectual Property Rights (IPR) is the final product of this research with a finished product in the form of a pregnancy examination simulator. The low-cost motto is a priority which is the superior product produced in this study when teaching aids sold in the market are expensive and, for this reason, students become afraid when using them so that the repetition of clinical skills procedures that should be done by students as many times as possible cannot be executed properly. For this reason, this research is expected to be one of the leading works that will make an example of the creativity of midwifery lecturers with the title "The effectiveness of Hybrid Simulator Low cost teaching aids in achieving clinical skills in 3rd Trimester Pregnancy Examination in Midwifery Students Poltekkes Riau Ministry of Health in 2019".

METHODE

Qualitative research design with a phenomenological approach.

The research design or product manufacturing procedure is based on the following steps:

- a. Initial (first) stage product manufacturing
- b. First-time expert validation
- c. Product revision (product creation stage two)
- d. Second time expert validation
- e. Product revision (product creation stage three)
- f. Third time expert validation (final)

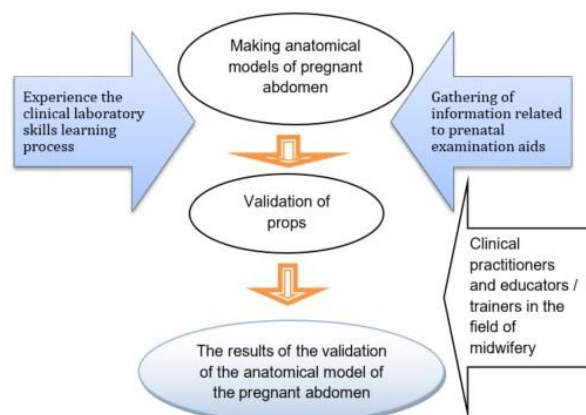


Figure 1. Research Concept Framework

The location of research and development was carried out at the Integrated Laboratory of the Riau Health Ministry's Health and Technology Polytechnic, Afiyah Pratama Clinic, Hasanah Pratama Clinic and BPM Zurahmi Pekanbaru. The time of research is April - August 2019.

The population in this study were all subjects who were involved in the development of hybrid simulator Learning Media in Pregnancy Examinations for Midwifery Students at the Health Polytechnic Laboratory of the Ministry of Health Riau. The method of selecting samples / informants in this study was carried out purposively, directed based on suitability to the research topic and adequacy (the number of informants was considered sufficient if the data obtained had described all phenomena related to the research topic). This is done so that the informant can really represent the phenomenon being studied. Informants who are the source of data in the study are: Practitioners and clinical advisors within the scope of pregnancy care who have had at least 5 years of practical experience, the number of informants who will be researched is 14 people.

In-depth interviews are a dialogue conducted by interviewers to obtain information from informants about the phenomenon being studied in detail using semi-structured guidelines (Bachtiar, 2000). In-depth interviews were conducted with all informants of this study using an open ended interview strategy so that participants had the opportunity to give answers in their own words and were more complex than just Yes or No answers (Saryono, 2013). The observation is systematic observation by seeing the informant perform pregnancy examinations using a hybrid simulator media in pregnancy examinations.

The technique of collecting data was by means of Focus Group Discussion (FGD) using in-depth interview questionnaire guides about the similarities in the physical form of pregnant women in the third trimester; what about the criteria for the model whether it includes the criteria for teaching materials from materials that are cheap, easy to obtain, easy to make, easy to store, and do not require special care; the model can be used by simulated patients, it is possible that this model can be used repeatedly; safety in the use of models for simulated patients and examiners.

Data processing and analysis techniques are carried out as follows (Sugiono, 2012):

- a. All data collected from the interview results were collected in the form of an interview transcript,
- b. The data or information collected is displayed in a narrative or category form. Every information written is given a data source code so that it can be traced if the information obtained is deemed incomplete.

Research has been carried out in compliance with the principles of ethical clearance through the licensing process to the government and related institutions, respect for persons, informed consent, maintaining privacy, confidentiality, purpose, use and benefit in accordance with the research proposal.

RESULT AND DISCUSSION

Table 1. Stages of Making and Developing Tools

<p>DEVELOPMENT STAGES WITH EXPERT VALIDATION AND REVISION Making stage 1: VALIDATION</p>	<p>FGD results in a model study for examining pregnant women at PMB 'Siti Julaeha' Pekanbaru</p>
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Expert: it's hard to pair it. If it is installed, it looks like a pregnant woman, the inside uterus is suitable for the size of the uterus of the pregnant woman per semester. Suggestions for improvement:

- on the back of the model so that it can be made like a rope to make it easier to put on and open

This t-shirt material makes the model more elastic and press. If possible made with ordinary materials in order to reduce costs because this t-shirt material is not available for sale in Pekanbaru



Can the model attached to the simulated patient give the impression of a pregnant woman?



Suitable..., if the size is better, there is an S-M-L size. If this is used by him (while pointing at a student who practices) it is just right, but if used with him ... it is too big). that's pretty good looking like pregnant women, especially those who are big pregnant). If the little pregnant is not visible yet. We think it's only natural, when pregnant women are young they haven't seen a lumpy stomach.

The results of the FGD in the research model for the examination of pregnant women at the Clinic 'Afiyah' Pekanbaru Can the material and structure of the model injure the simulated patient when used?



It's impossible for the one to hurt, from the cloth... the same as the material we wear everyday (while holding the material)... using foam again so it's definitely safe. This is very similar to ordinary clothes... you can wash it, ma'am (while asking). It's good, ma'am, can be washed, folded, don't bother storing it '

Results of FGD in a model study for examining pregnant women in PMB 'Hj. Dince Safrina' Pekanbaru Can the model attached to the simulated patient give the impression of a pregnant woman?



"It looks like a pregnant woman, especially after wearing a negligee ... the more it looks like". But ... if the uterus is small it is less visible.

The significant value of p value <0.05 (95% significant level) means that there is a significant difference or influence between the pre-test and post-test using the low cost hybrid simulator. post-test) using a low cost hybrid simulator used paired sample t-test. However, because the pre-test and post-test data obtained were not normal due to outliers, and data transformation was carried out to overcome the outliers, the results obtained still showed that the data were not normally distributed. Based on this, researchers used the Wilcoxon test to see the effect of before (pre-test) and after (post-test) the use of low cost hybrid simulators on data that were not normally distributed.

Based on the results in class, all student scores on the posttest seemed to have improved with an emphasis on one component of the assessment, namely the mention of the uterine fundal height of pregnancy. This is evidence that the results of the study in the form of teaching models for pregnancy examination from two models (old and new) provide significant differences in results. Based on random interviews with previous students, the difference in the ability to mention the height of the uterine fundus is based on the fact that the old model cannot be used to assess the height of the uterine fundus, while the touch in the new model gives a clear impression that there is a felt fundal height.

The second difference that results in differences in student scores is the communication that can be made between midwives (students) and patients (simulated patients who are grafted with the new simulator). Students feel the real clinical situation obtained in posttest involving simulated patients.

The determination of the uterine fundal height is very important in antenatal care because, from a palpable fundal height, an estimate of the fetal weight (TBJ) will be carried out. Therefore, clinical learning model of pregnancy examination in trimesters 1, 2, and 3 must be made as precise as possible so that learning outcomes can be achieved as well as possible. This is in accordance with the objectives of the instructional design model (ADDIE), (Cheung, L., et al., 2016) which is to help educators ensure that they teach the right material optimally, or to provide the right purpose, and the right path. to bring the direction of learning achievement. Here, the tasks that have to be performed by learners, as well as the knowledge, skills and attitudes they need, are defined and broken down into components. This, in turn, will inform the learning objectives.

However, in accordance with the principles of appropriate technology, learning aids should also cover at least the following four categories: cheap, realistic, durable, and safe. Realistic and highly durable but cheap and safe tools are absolutely necessary in clinical learning students, especially midwifery students who are the focus of our research.

Qualitative

1. Cheap

Teaching aids that are inexpensive but have good quality are needed in the world of teaching and training in certain health skills, such as pregnancy examinations in the 1st, 2nd and 3rd trimesters with special specifications on the touch of the fundus area to determine the TFU (height of the uterine fundus) which is used. the basis of obstetrics in determining estimated fetal weight (TBJ). While the tools required for simulating health scenarios (with simulated patients) are inexpensive, procuring these tools will be less difficult for certain institutions. Therefore, by being said to be cheap, the model in this study can be categorized as “low-cost” because the only materials used are cotton, dacron, and foam which are relatively easy to find.

2. Realistic

From the students' opinions carried out at the quantitative and qualitative research stages after students were given exams with a pretest and posttest using two different tools (pretest with old tools and posttest with new tools), this pregnancy examination clinical learning teaching product can be categorized as realistic as a tool. teaching or training aids. Realistic impression is very important to be highlighted in making products as teaching aids because trainees or students can imagine real situations or anatomy from humans. In the world of health education, simulations offer good coverage for the training of interdisciplinary medical teams. Realistic scenarios and equipment make it possible to retrain and practice

until one can master a procedure or skill. More and more health institutions are now turning to simulation-based learning.

3. Durable

Both students and practicing midwives stated that they were not afraid of breaking the device because the models made were made of durable cloth. A durable tool or simulator is needed by students or trainees so that they can practice repeatedly until they are truly proficient with the skills they are learning. Medical teaching aids or training simulators must be flexible and durable. Repetition or repetition is a very important part in learning a skill, without the exception of determining the height of the uterine fundus in pregnancy examinations for the 1st, 2nd, and 3rd trimesters. wear is not easily damaged.

4. Safe

When the products used for teaching aids are considered safe, midwifery students as the focus of this research who will later use the teaching aids developed in this study can comfortably use the model to master the skills being taught. Product safety includes in terms of materials used, sharpness of tools, which may occur. This product does not contain any dangerous ingredients, does not have a sharp surface or edge, and is easy to carry because it is a fabric (light).

With the opinions of students and midwives practitioners, this product can be categorized as an appropriate technology product. The R&D (research and development) research carried out using the ADDIE instructional method is expected to encourage other researchers in making teaching materials or clinical teaching aids in order to advance midwifery education, in particular, and other health education, so that more graduates are produced. competent because they can practice clinical skills with high repeatedly.

CONCLUSION AND RECOMENDATION

The development of learning media in the form of a low cost hybrid simulator with appropriate technology can help improve the clinical skills of antenatal care, especially for determining the height of the uterine fundus in pregnant women. With the development of a low cost hybrid simulator that is durable, realistic, safe, has similarities with the real patient so that it is effectively used to assist in the smooth running of student practicum activities, as well as to provide convenience in providing pregnancy examination tools.

The results of the low cost hybrid simulator product implementation trial showed that there was a significant change in the increase in the average pre-test result from 74.78 to 84.94 in the post-test result. This shows an increase in clinical skills of students, especially in determining the height of the uterine fundus in the third trimester of pregnancy examinations using a low cost hybrid simulator.

With the creation of a tool with the principles of appropriate technology, suggestions that can be conveyed to readers, especially midwifery and other health lecturers, are:

1. Lecturers or clinical instructors in the field of midwifery and other health should be more creative in creating or developing a low-cost but high-quality clinical skills teaching aid.
2. Lecturers or clinical instructors in the field of midwifery and other health must be able to show creativity, not only always in creating or developing teaching aids for clinical skills, but also in other matters such as educational curriculum innovation, development of learning methods, development of book materials. teach that is easy to understand, etc.

3. The government continues to support the creativity of lecturers when the lecturer is able to create or develop a teaching aid for clinical skills by facilitating these creativities because one's creativity can be more expensive and more difficult to find than the material.

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