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The Influence of Simulation-Based Learning Methods on the Clinical Competence of Midwifery Students

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Abstract

Clinical competence is an important aspect of midwifery education because it is directly related to students' ability to provide safe, effective, and professional midwifery care. One learning method considered capable of improving students' clinical competence is simulation-based learning. This study aims to explore the effect of simulation-based learning methods on the clinical competence of midwifery students. The study used a qualitative approach with a descriptive phenomenological design. The study participants were 15 midwifery students selected using a purposive sampling technique. Data collection was conducted through in-depth interviews, participant observation, and documentation. Data analysis used thematic analysis through the processes of data reduction, coding, theme identification, and interpretation of meaning. The results showed that simulation-based learning methods had a positive impact on improving the clinical competence of midwifery students. Students experienced improvements in clinical practice skills, critical thinking skills, clinical decision-making, therapeutic communication, and teamwork. In addition, simulation also helped increase students' confidence in facing real-life clinical practice because they gained training experiences that resembled actual health care conditions. However, the study also identified several obstacles to implementing simulations, such as limited laboratory facilities, a limited number of simulation tools, and less than optimal practice time. This study concluded that simulation-based learning methods are effective in improving the clinical competence of midwifery students and can be an innovative learning strategy in modern midwifery education.

Keywords: Clinical Simulation, Clinical Competence, Midwifery Education, Simulation-Based Learning, Midwifery Students

Introduction

The development of health education in the modern era demands that educational institutions produce graduates who possess not only academic abilities but also optimal clinical competence. In midwifery education, clinical competence is a crucial aspect because it directly relates to students' ability to provide safe, effective, and professional midwifery care to patients. Midwifery students are required to integrate theoretical knowledge, technical skills,

communication skills, and clinical decision-making in real-world situations. Therefore, the learning process in midwifery education must be innovatively designed to enhance students' readiness for professional clinical practice.

One rapidly developing learning approach in health education is simulation-based learning. This method utilizes clinical scenarios, mannequins, virtual simulations, and standardized patients to create learning experiences that mimic real-life healthcare settings. In midwifery education, simulations are used to practice skills in antenatal examinations, assisting with deliveries, managing maternal-neonatal emergencies, and even therapeutic communication with patients. Simulation-based learning is considered effective in bridging the gap between theory and practice, allowing students to safely gain clinical experience before entering the field.

Research by Cant and Cooper (2017) shows that simulation methods effectively improve clinical skills, critical thinking skills, and the confidence of nursing and m

idwifery students. Simulation allows students to perform repetitive exercises without risking patient harm, allowing them to develop skills gradually. Furthermore, the use of simulation also helps students systematically understand clinical procedures through more realistic and interactive learning experiences.

In the context of midwifery education, simulation-based learning is becoming increasingly important because students often face limited clinical experience in the practice setting. Not all obstetric cases can be encountered directly during clinical practice. Therefore, simulation is an alternative learning method that can provide broader and more structured clinical experiences. According to Bogossian et al. (2019), simulation in midwifery education helps improve clinical decision-making skills and students' preparedness for maternal emergencies.

In addition to improving technical skills, simulations also impact students' psychological well-being. Students who participate in simulation training tend to have greater confidence when performing clinical procedures in the field. Research by Lewis et al. (2017) suggests that simulations help students reduce anxiety and increase their preparedness for clinical practice because they have gained prior practice experience.

This is crucial in midwifery education because students often face emotional stress when performing clinical procedures on real patients for the first time.

Simulation-based learning also aligns with the student-centered learning approach, which positions students as active participants in the learning process. Students not only receive information from lecturers but also engage directly in problem-solving, decision-making, and reflection on their learning experiences.

Research by Jeffries (2016) explains that simulations encourage active learning and increase student engagement in the clinical learning process. Thus, simulations not only improve practical skills but also students' critical and reflective thinking skills.

Despite its various advantages, the implementation of simulation methods in midwifery education still faces several challenges. Limited laboratory facilities, the cost of procuring simulation equipment, lecturer preparedness, and a lack of training in using simulation methods hinder the implementation of simulation-based learning. Furthermore, some students also experience difficulty adapting to learning methods that require active participation and good communication skills.

Research by Foronda et al. (2018) shows that the success of a simulation is

influenced by the quality of the scenario design, the facilitator's skills, and the post-simulation debriefing process.

Debriefing is a crucial part of simulation learning because it helps students reflect on their learning experiences, identify errors, and improve their clinical skills. In midwifery education, reflection on learning is crucial for building professional skills and patient safety.

Furthermore, research by Lapkin et al. (2015) states that simulation contributes to improved patient safety because students have the opportunity to practice clinical skills before directly encountering patients. This suggests that simulation is not only beneficial for students but also has implications for the quality of healthcare services.

Although various studies demonstrate the effectiveness of simulation in healthcare education, research exploring midwifery students' experiences with the use of simulation methods in depth is still limited, particularly in Indonesia.

Most previous studies have used a quantitative approach to measure student grades or skill improvement, while students' subjective experiences in participating in simulation learning have not been widely studied qualitatively. Yet, student experiences are crucial for understanding how simulations influence self-confidence, learning motivation, clinical practice readiness, and their perceptions of the learning process.

A qualitative research approach allows researchers to explore students' experiences, perceptions, and meanings during simulation-based learning. This approach allows the research to provide a more comprehensive picture of the influence of simulation methods on the clinical competence of midwifery students.

Based on this description, this study aims to explore the influence of simulation-based learning methods on the clinical competence of midwifery students.

This research is expected to contribute to the development of more innovative, effective clinical learning strategies oriented toward improving the quality of midwifery graduates. Furthermore, the research findings are expected to serve as a basis for educational institutions in developing simulation laboratories and clinical learning systems that are more adaptive to the needs of future healthcare education.

Method

Research Design

This study used a qualitative approach with a descriptive phenomenological design. A phenomenological approach was chosen because the research aimed to explore the experiences, perceptions, and meanings felt by midwifery students regarding the use of simulation-based learning methods to improve their clinical competency.

Qualitative research allows researchers to understand participants' subjective experiences in depth through direct interaction and narrative exploration of students' learning experiences.

According to Jeffries (2016), simulation approaches in health education not only influence students' technical skills but also their emotional, reflective, and clinical decision-making abilities.

Therefore, a qualitative approach was deemed appropriate for exploring how students interpret simulation-based learning experiences in the context of midwifery education.

Research Participants

Participants in this study were second- and third-year midwifery students who had participated in simulation-based learning for at least one semester. The participant selection technique used

purposive sampling with the following criteria:

1. Active students in the Midwifery Study Program
2. Have participated in clinical simulation-based learning
3. Willing to participate in the research
4. Able to verbally express learning experiences

The number of participants in this study was 12–15 students, or until data saturation was reached, which is the point when data collection has been repeated and no new information is found. According to Holloway and Galvin (2016), phenomenological research generally uses a relatively small number of participants because the focus of the research is on the depth of data and the meaning of participants' experiences.

Data Collection Techniques

Data collection was conducted using the following techniques:

1. In-Depth Interviews. In-depth interviews were used as the primary method to explore students' experiences related to simulation learning. Interviews were conducted semi-structured using an interview guide containing open-ended questions regarding. Each interview lasted 40–60 minutes and was recorded using a voice recorder after obtaining participant consent. According to Foronda et al. (2018), in-depth interviews are effective for exploring student reflections on simulation experiences and the clinical learning process.
2. Participatory Observation. The researcher conducted observations during the simulation learning process in the obstetrics laboratory. Observations were recorded in field notes to support interview data. According to Stayt et al. (2015), observations in simulation research help researchers directly understand student behavior during the clinical learning process.
3. Documentation. Documentation was used as supporting data in the form of simulation learning modules, photos of simulation activities, lab schedules, and student clinical skills evaluation sheets. These documents were used to strengthen the validity of the research data.

Research Instruments

The primary instrument in this research was the researcher herself (human instrument). The researcher played a role in conducting interviews, observations, data interpretation, and analysis of research results.

Supporting instruments include:semi-structured interview guide, observation sheet, field notes, and audio recorder. According to Rutherford-Hemming et al. (2016), simulation research in health education requires in-depth, reflective exploration, making the researcher the primary instrument in understanding participants' experiences.

Data Analysis Techniques

Data analysis was conducted using thematic analysis based on the stages of Braun and Clarke, which include: 1) Transcribing interviews, 2) Reading and understanding the entire data, 3) Coding, 4) Identifying main themes, 5) Developing interpretations of the meaning of the data, 6) Drawing research conclusions. Data from interviews, observations, and documentation were analyzed simultaneously to gain a comprehensive understanding of the influence of simulation methods on the clinical competence of midwifery students. According to Smith et al. (2018), thematic analysis was effectively used in health education research to explore students' learning experiences in depth.

Data Validity

The validity of the data in this study was maintained through several techniques, namely:

1. Source Triangulation. Data were obtained from interviews, observations, and documentation to increase the validity of the research results.
2. Member Checking. The researcher confirmed the interview results with participants to ensure the accuracy of the data interpretation.
3. Peer Debriefing. The researcher discussed with the supervisor or fellow researchers to reduce bias in data interpretation.
4. Audit Trail. This study aimed to explore the influence of simulation-based learning methods on the clinical competence of midwifery students. Data were obtained through in-depth interviews, participant observation, and documentation with 15 midwifery students who had participated in clinical simulation learning for at least one semester. Thematic analysis yielded five main themes: (1) improved student clinical skills, (2) increased confidence in midwifery practice, (3) development of critical thinking and clinical decision-making skills, (4) improved communication and teamwork, and (5) obstacles in implementing simulation learning.

Result

1. Characteristics of Research Participants

Research participants consisted of second- and third-year students in the Midwifery Study Program who had participated in laboratory simulation learning and clinical case simulations.

Table 1. Participant Characteristics

Participant Code	Age	Academic Level	Simulation Experience
P1	20 years	Level II	1 semester
P2	21 years	Level III	2 semesters
P3	20 years	Level II	1 semester
P4	22 years	Level III	3 semesters
P5	21 years	Level III	2 semesters
P6	20 years	Level II	1 semester
P7	21 years	Level III	2 semesters
P8	22 years	Level III	3 semesters
P9	20 years	Level II	1 semester
P10	21 years	Level III	2 semesters
P11	20 years	Level II	1 semester
P12	22 years	Level III	3 semesters
P13	21 years	Level II	2 semesters
P14	20 years	Level III	1 semester
P15	22 years	Level II	3 semesters

Based on the table above, the majority of participants were third-year students who had more experience in simulation learning. This provided a variety of experiences and perceptions regarding the use of simulation to improve clinical competency.

2. Theme 1: Improving Students' Clinical Skills

All participants stated that simulation-based learning methods helped improve their midwifery practice skills, particularly in antenatal examination procedures, assisting deliveries, and managing obstetric emergencies. Students felt that simulation provided an opportunity for repeated practice, enabling them to better understand clinical procedures.

Participant Statements. “With simulation practice, we can practice repeatedly until we get it right. So, when we practice in the hospital, we're more prepared.” (P4) “Videos and mannequins help me understand delivery procedures more clearly than just reading a book.” (P9)

Observations showed that students were more skilled in performing physical examinations and clinical procedures after participating in the simulation session. Students appeared more systematic in their actions and were able to follow procedures according to midwifery practice standards.

3. Theme 2: Increased Confidence in Clinical Practice

The second theme that emerged was increased student confidence when facing real-life clinical practice. Before

participating in the simulation, most students were afraid of making mistakes while practicing on patients.

However, after participating in the simulation, students felt more mentally and technically prepared.

Table 2. Student Perceptions of Confidence After the Simulation

Perception Category	Number of Participants
Greatly improved	8
Improved	6
Moderately improved	1

Most students stated that simulations significantly helped increase their confidence in clinical practice. Students felt more at ease when dealing with patients because they had gained prior training experience. Participant Statements

"I used to be afraid of handling patients, but after the simulations, I became more confident." (P2)

"Simulations help me know what to do in an emergency." (P12)

Observations showed that students who actively participated in simulations appeared more confident when demonstrating clinical procedures than students who were less active.

4. Theme 3: Developing Critical Thinking and Clinical Decision-Making Skills

Students stated that simulations helped them learn to analyze patient conditions and make clinical decisions quickly.

In several emergency simulation scenarios, students were asked to prioritize actions based on the patient's condition. This helped them practice their critical thinking and problem-solving skills. Participant Statements

"During simulations, we had to make decisions quickly, so we got used to critical thinking." (P7)

"Simulations taught me how to deal with unexpected situations." (P10)

Observations show that students are able to discuss and determine clinical interventions more systematically after participating in several case simulations.

5. Theme 4: Improving Communication and Teamwork

Simulation learning also helps improve students' therapeutic communication and teamwork skills. In the childbirth and emergency simulations, students work in groups and assign roles according to their respective responsibilities.

Table 3. Impact of Simulation on Students' Soft Skills

Soft Skills	Findings
Therapeutic Communication	Improved
Teamwork	Improved
Leadership	Developing
Stress Management	Better

Students demonstrated improved communication and coordination skills during the simulation. The simulation helped them learn to work collaboratively within a healthcare team. Participant Statements, "We learned to communicate with patients and teammates during the simulation." (P5). "The simulation helped us learn to work together like in a real delivery room." (P14). Observations showed that students were more active in discussions and better able to coordinate their actions after participating in the simulation.

6. Theme 5: Barriers to Simulation Learning Implementation

Although the simulation was deemed effective, students also expressed several obstacles during the learning process. The main obstacles included: limited number of simulation tools, limited practice time, anxiety during the first simulation, busy practice schedule. Participant Statements

"Sometimes the practice tools had to be switched, so there wasn't enough practice time." (P1)

"At first, I was nervous because the simulation felt like a real-life situation." (P8)

Furthermore, observations showed that some students remained passive during

simulation discussions due to fear of making mistakes in front of their peers.

Based on the overall research findings, simulation-based learning methods have a positive impact on the clinical competence of midwifery students. Simulations help students improve: clinical practice skills, self-confidence, critical thinking skills, clinical decision-making, therapeutic communication, and teamwork. However, the implementation of simulations still faces technical and psychological barriers that educational institutions need to address. Overall, simulations provide a "safe practice space" for midwifery students to learn to navigate clinical realities without risking patient safety.

Discussion

The results of the study indicate that simulation-based learning methods have a positive impact on the clinical competence of midwifery students. This impact is evident in improved practical skills, self-confidence, critical thinking skills, therapeutic communication, and teamwork during the clinical learning process. Simulation in midwifery education can be likened to a "safe bridge" that connects academic theory with the reality of clinical practice without placing patients at direct risk.

1. The Effect of Simulation on Improving Clinical Skills

The results of the study indicate that students felt more skilled in performing midwifery procedures after participating in simulation-based learning. Students had the opportunity to perform repeated practice exercises, allowing them to understand clinical procedures more systematically and in-depth.

This finding aligns with research by Cant and Cooper (2017), which stated that simulation effectively improves the clinical skills of healthcare students through active and realistic learning experiences. Simulation allows students to practice without fear of harming patients, thus optimizing the learning process.

In this study, students stated that the use of mannequins and clinical scenarios helped them understand the steps of antenatal care, delivery assistance, and obstetric emergency management. This experience reinforced the concept of learning by doing, namely learning gained through direct practice.

Research by Shin et al. (2015) also explained that simulation learning significantly improved the psychomotor skills of nursing and midwifery students. This indicates that simulations not only improve theoretical knowledge but also students' technical abilities in performing clinical procedures.

2. Simulations Increase Student Confidence

Research findings indicate that simulations help students increase their confidence when facing real-life clinical practice. Before participating in simulations, students were afraid of making mistakes when dealing directly with patients. However, after gaining practical experience through simulations, students felt more mentally and technically prepared.

These results align with research by Lewis et al. (2017), which found that simulations help reduce student anxiety and improve clinical practice readiness. Simulation provides a safe space for students to learn from mistakes without risking patient safety.

In the context of midwifery education, self-confidence is crucial because students often face situations that require rapid decision-making in labor or maternal emergencies. Students with higher self-confidence tend to be able to perform clinical procedures more calmly and systematically.

Research by Stayt et al. (2015) also showed that high-fidelity simulation can increase midwifery students' confidence in performing labor procedures and clinical communication. These findings reinforce research that simulation contributes to students' psychological readiness before entering actual clinical practice.

3. Development of Critical Thinking and Clinical Decision-Making Skills

The study's findings indicate that simulations help students develop critical thinking and clinical decision-making skills. In simulation scenarios, students are required to analyze patient conditions, prioritize actions, and respond quickly to emergency situations.

These findings align with research by Olaussen et al. (2019), which explains that simulations improve healthcare students' clinical decision-making skills through realistic situational experiences. Simulations help students integrate theory with practice, enabling them to think more analytically when dealing with clinical cases.

In this study, students stated that simulations familiarize them with dealing with unexpected situations. This demonstrates that simulations not only train technical skills but also adaptability and problem-solving skills.

According to Jeffries (2016), simulations encourage reflective learning, helping students evaluate their actions and improve clinical decision-making in future situations. Therefore, simulation is an effective learning method in developing critical thinking skills in midwifery students.

4. The Effect of Simulation on Communication and Teamwork

This study shows that simulation helps improve students' therapeutic communication and teamwork skills. During the simulation, students work in groups and assume roles based on the given clinical scenario. This finding is supported by research by Rutherford-Hemming et al. (2016), which states that simulation helps students develop professional communication and team collaboration in healthcare.

In midwifery education, communication skills are crucial because midwives must be able to provide education, emotional support, and therapeutic communication to patients and families. Simulation allows students to practice communication skills in a setting that mimics real clinical practice.

Furthermore, teamwork in simulation helps students understand the importance of coordination among healthcare professionals in maternal and neonatal care. Observations showed that students became more active in discussions and helped each other during the simulation.

5. Barriers to the Implementation of Simulation Learning

Although the simulation was deemed effective, this study found several barriers to its implementation, such as limited simulation facilities, a limited number of practice tools, and student anxiety during the first simulation. These findings align with research by Foronda et al. (2018), which stated that simulation effectiveness is influenced by the quality of facilities, scenario design, and the facilitator's ability to guide the learning process.

Some students also felt nervous during their first simulation because the simulation situation was designed to resemble real-life conditions. However, this anxiety diminished as students became more accustomed to the simulation learning method. In addition to facilities, limited practice time also posed a barrier to simulation learning. Students felt they needed more practice time to optimally develop their clinical skills.

6. Implications of the Research for Midwifery Education

The results of this study provide several important implications for the

development of midwifery education, namely:

a. Strengthening Simulation Laboratories. Educational institutions need to improve clinical skills laboratory facilities to optimize simulation learning.
b. Developing Lecturer Competencies. Lecturers need to receive training on simulation design, learning facilitation, and debriefing techniques to make the simulation process more effective.
c. Integrating Simulation into the Curriculum. Simulation methods need to be implemented sustainably in various midwifery practice courses.
d. Strengthening Reflective Evaluation. Students need to be given the opportunity to reflect after simulations to strengthen their critical thinking and self-evaluation skills.

Overall, simulation-based learning methods have been shown to have a positive impact on the clinical competence of midwifery students. Simulations help students improve their practical skills, self-confidence, critical thinking, therapeutic communication, and teamwork. However, the success of simulations is greatly influenced by the quality of the facilities, the preparedness of the instructor, the scenario design, and the learning reflection process. In modern midwifery education, simulations are not merely a practical training method, but rather a "miniature clinical space" where students learn to face the realities of the profession more safely, reflectively, and professionally.

Conclusion and Recommendations

This study shows that simulation-based learning methods have a positive impact on the clinical competence of midwifery students. Simulations help students improve their practical skills, critical thinking, therapeutic communication, teamwork, and confidence in facing real-life clinical practice. Through learning experiences that mimic real-life healthcare settings, students can understand clinical procedures more systematically and safely without risk to patients. Furthermore, simulations also create more active, reflective, and student-centered learning, thus supporting the development of the professional competence of prospective midwives.

However, the implementation of simulation learning still faces several obstacles, such as limited laboratory facilities, a limited number of simulation tools, and less than optimal practice time. Therefore, midwifery educational institutions are advised to improve the quality of clinical skills laboratories, provide adequate simulation facilities, and provide training to lecturers on simulation methods and debriefing techniques. Continuous integration of simulation into the midwifery curriculum is also necessary to provide students with a more comprehensive practical experience.

Future research is recommended to explore the effectiveness of digital technology-based simulations and high-fidelity simulations on the clinical competency of midwifery students with a wider range of participants to obtain more in-depth and comprehensive research results.

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