

The effect of delivery technique videos on midwifery master's students' skills in assisting births during disasters

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Abstract. Midwives' preparedness in disaster situations is crucial, as women and children are vulnerable groups requiring childbirth assistance. This study examined the effect of video-based media on improving the skills of Master of Midwifery students in providing childbirth assistance during disaster emergencies. A one-group pretest–posttest design was used, involving 34 respondents selected from 73 students at Universitas 'Aisyiyah Yogyakarta. Data were collected through an online questionnaire administered via Google Forms. The procedure consisted of a pretest, followed by an instructional video on childbirth techniques in disaster situations that participants could view repeatedly for two days, and concluded with a posttest. Data analysis employed McNemar's test. Results showed that before the intervention, 85.3% of respondents were categorized as not competent, while afterward, 79.4% were considered competent. McNemar's test yielded a p-value of 0.000, confirming the significant effect of video-based media in enhancing childbirth assistance skills during disasters. These findings highlight that additional competencies beyond routine practice can be effectively acquired through technology-based media. Educational videos offer an efficient and flexible learning strategy suited to midwives' professional needs in resource-limited settings. Integrating video-based training into curricula and continuing education programs is recommended to strengthen midwives' capacity in crisis management.

1 Introduction

Disaster preparedness and mitigation need to be understood and internalized by everyone, particularly healthcare workers. In disaster or crisis situations, healthcare providers require not only knowledge but also the skills to appropriately, accurately, and effectively manage patients, thereby minimizing adverse outcomes caused by improper interventions. Midwives, as key healthcare providers, play an essential role in such crises, especially considering that

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women and children are often among the most vulnerable groups affected by disasters. Therefore, adequate preparation is crucial for midwives when facing emergencies, particularly in providing childbirth assistance, which requires specific skills.

During disaster-related health crises, healthcare facilities and infrastructure are often severely disrupted. Consequently, healthcare workers are frequently unable to rely on existing resources to perform their duties effectively. Thus, midwives must be equipped with both the knowledge and the skills necessary to deliver optimal maternity care under emergency conditions, even with very limited resources.

This study aims to develop a childbirth assistance model suitable for disaster or crisis emergencies. The findings are expected to inform training programs for both midwifery students and practicing midwives, enabling them to provide childbirth assistance under constrained circumstances effectively, promptly, and accurately.

Indonesia is among the regions highly prone to disasters. There are three main types of disasters that Indonesia may face: natural disasters, non-natural disasters, and social disasters [1]. In recent decades, both the frequency and severity of disasters—whether natural or human-induced—have increased significantly [2]. Accordingly, preparedness in disaster prevention, response, and recovery is essential to mitigate their impacts. The role of healthcare workers, especially during disaster response and recovery, is indispensable.

However, in reality, most healthcare workers, particularly nurses, remain inadequately prepared to face disasters, indicating a generally low level of disaster preparedness [3–4]. Beyond this lack of preparedness, disaster-affected areas are often marked by limited healthcare facilities and infrastructure for patient care [5]. Thus, comprehensive knowledge, practical skills, and high levels of creativity are required from healthcare workers to carry out safe, effective, and accurate interventions using available resources, while adhering to essential principles of care.

A primary principle in such interventions is infection prevention. Compliance with universal precautions in infection prevention is critical to improving service quality [6]. Yet, evidence suggests that healthcare workers' understanding of universal infection prevention remains insufficient [6–8]. In addition to infection control, technical skills in carrying out interventions are equally vital, particularly during disasters.

To date, specialized instructional videos on labor assistance primarily showcase delivery techniques under ideal, non-disaster conditions. This current research, however, presents a video demonstrating delivery techniques adapted for crisis/disaster scenarios where comprehensive and ideal equipment is unavailable. Given that literature reviews have not yet identified prior research on labor assistance techniques in crisis/disaster settings, this study is deemed necessary to provide midwives with the essential knowledge required for critical situations. **Research objective is** to assess the preparedness of midwifery students in providing childbirth assistance during disaster emergency situations.

2 Methods

This study employed a one-group pretest–posttest design. This design was selected to examine the skills of midwives in providing childbirth assistance during disaster emergency situations. The study population consisted of students from the Master of Midwifery Program at Universitas 'Aisyiyah Yogyakarta, comprising 42 students from the 11th cohort and 31 students from the 12th cohort, with a total of 73 students. A total population sampling technique was applied. Out of 73 students, 47 completed the pretest, and 34 completed both the pretest and posttest. Consequently, 9 respondents were excluded, resulting in a final sample of 34 students.

The research was conducted online. The initial stage involved administering the pretest. Prior to the pretest, respondents were provided with an explanation of the study and its

objectives. Students who agreed to participate were then invited to complete the pretest questionnaire via Google Form. Afterward, respondents were given access to a video demonstrating childbirth assistance techniques in disaster emergency situations, which they could view repeatedly over a two-day period. After two days, the video link was locked to prevent further access. On the following day, respondents were asked to complete the posttest via Google Form.

Skill data were obtained via pre- and post-tests, which consisted of open-ended questions instructing respondents to detail labor assistance steps performed without medical tools, utilizing only household items. The documented steps were assessed to determine the respondents' ability to leverage the available rudimentary household equipment through specific techniques, or their inability to use the items effectively for safe delivery. Data were analyzed using McNemar's test.

3 Results and discussion

3.1 Results

A total of 34 respondents in this study were midwives who continued their education in the Master of Midwifery program. In terms of age, all respondents were within the productive age group.

Table 1. Characteristics of Respondents, n = 34

Characteristics	Frequency	Percentage (%)
Years of experience as a midwife:		
< 3 years	12	35.3
4-5 years	7	20.6
6-10 years	7	20.6
> 10 years	8	23.5
Place of work:		
Health service facilities	16	47.1
Health service facilities & educational institutions	3	8.8
Educational institutions	2	5.9
Unemployed	12	35.3
Pretest:		
Not competent	29	85.3
Competent	5	14.7
Posttest:		
Not competent	7	20.6
Competent	27	79.4

From Table 1, it can be observed that the majority of respondents had been practicing as midwives for less than three years. Meanwhile, those with more than three years of experience were relatively evenly distributed across different lengths of service. The largest proportion of respondents were midwives working in health service facilities (47.1%), followed by those who were unemployed (35.3%). This indicates that the distribution between employed and unemployed respondents was nearly balanced, with only four more respondents working than not working.

The pretest results revealed that almost all respondents (85.3%) could not yet be considered competent in providing childbirth assistance during crisis situations, particularly in disaster areas. After receiving education through a video on childbirth assistance techniques in disaster emergencies, 79.4% of respondents answered the posttest correctly,

indicating an improvement in their competence in providing childbirth assistance in emergency disaster situations.

Table 2. Analysis of midwives’ skills in childbirth assistance during crisis situations before and after intervention

	Posttest		p
	Not Competent	Competent	
Pretest	Not Competent	7	0,000
	Competent	0	

Table 2 shows the results of the McNemar test, which yielded a p-value of 0.000. This indicates that the intervention provided through an educational video on childbirth assistance techniques in crisis or disaster emergency situations had a statistically significant effect in improving respondents’ competence.

3.2 Discussion

This study showed that the majority of respondents were midwives with less than three years of professional experience, most of whom worked in healthcare facilities. This condition reflects that most respondents were still in the early phase of their professional careers, and thus their clinical experience had not been fully optimized to handle specific situations such as childbirth in crisis or disaster conditions. Disaster preparedness is crucial for everyone, especially healthcare workers, including midwives. In disaster situations, unpredictable events may occur; therefore, adequate preparation is essential to reduce the impact and risks. Disaster education programs need to be provided for healthcare workers so they are equipped to deliver prompt and appropriate services to disaster victims [9]. Previous findings revealed that healthcare workers’ preparedness in facing disasters was generally at a near-ready category [10].

The preparedness of midwives in disaster situations is still relatively low. The dominant factor contributing to this lack of readiness is the limited training related to emergency and disaster management [11].

In this study, the pretest results indicated that most respondents were categorized as not competent in childbirth assistance skills during disaster emergencies. This highlights a gap between the required skills and the level of education and experience possessed. Such a lack of competence may directly affect the safety of mothers and infants in emergencies. During disasters, access to healthcare facilities is often restricted, leaving the nearest available healthcare providers—midwives in the field—as the primary responders. After the intervention through an educational video on childbirth assistance techniques in disaster emergencies, a significant improvement in respondents’ skills was observed. Previous research reported similar findings: before the intervention, respondents in both the control and intervention groups demonstrated similar skill levels in reproductive health during disaster situations. However, after the intervention with a reproductive health disaster preparedness module, the intervention group showed a significant improvement compared to the control group [12]. Likewise, virtual teaching and learning have proven to be a feasible and efficient method for training healthcare providers [13].

The effectiveness of video media in improving midwives’ competencies can be explained through the principles of andragogy, which emphasize that adult learning is more effective when grounded in real-life experiences and relevant to professional contexts. Midwives can acquire valuable experience not only through direct practice but also by observing real events, even if only through video. Learners using video as an instructional medium have demonstrated significant improvements in language skills compared to those who did not

[14]. Similarly, health education delivered through videos and flashcards has been shown to enhance pregnant women's knowledge and skills in fetal stimulation [15].

Practically, the findings of this study have important implications, suggesting that video-based education may serve as an effective strategy to strengthen midwives' capacity in disaster situations. Considering that Indonesia is highly disaster-prone, competency development for midwives should not only focus on routine clinical skills but also on emergency response skills in disaster contexts. Therefore, the integration of video-based training into midwifery education curricula and continuing professional development programs represents a strategic step.

By enhancing midwives' competencies through such interventions, the quality of maternal healthcare in crisis situations can be better ensured, ultimately contributing to efforts to reduce maternal and neonatal mortality rates in Indonesia. Thus, this study underscores the importance of innovation in midwifery education methods, particularly through the utilization of video media as an effective, efficient, and easily implementable educational tool.

Research Limitations

Data collection for this study was conducted online, requiring respondents to complete a Google Form outlining the steps for labor assistance both before and after the intervention. Ideally, the respondents' skill data should be gathered by asking them to perform a hands-on demonstration in a skills laboratory; however, this approach has not yet been implemented.

4 Conclusion

Length of work experience does not necessarily guarantee proficiency in skills outside of one's routine practice. Similarly, the workplace does not automatically ensure mastery in all aspects of practice. The provision of additional skills, particularly those different from routine competencies, is crucial during disaster crises. Given the limitations of time, human resources, and other factors, educational videos play an important role in enhancing one's skills. This study demonstrates that the use of video media is effective in improving midwives' competencies in providing childbirth assistance under disaster emergency conditions. These findings strengthen the evidence that technology-based educational media, particularly video, can serve as an effective, efficient, and flexible alternative for capacity development in midwifery practice.

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