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Evaluating the Effectiveness of the Disaster Preparedness Curriculum on the Intention of Midwifery Alumni to Provide Reproductive Health Services in Crisis Situations: A Planned Behavior Theory Approach

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ABSTRACT

The background: Data from 2024 indicates that disaster victims in South Sulawesi reached 795,930 people. According to Law Number 24 of 2007 concerning Disaster Management, vulnerable groups in disaster occurrences include infants, toddlers, children, pregnant mothers, lactating mothers, people with disabilities, and the elderly. These groups often experience greater impacts due to natural disasters. The purpose of the study was to evaluate the effectiveness of the disaster preparedness curriculum that has been passed by diploma in midwifery alumni of the Pelamonia Institute of Health Sciences with a planned behavior theory approach by assessing the differences between the two groups of midwifery alumni. The research method uses quantitative methods with observational approaches and a comparative design. To compare two groups of midwifery alumni, namely Group A, who received a disaster curriculum during college, and Group B, who did not get a disaster curriculum. Through the theoretical approach of the Theory of Planned Behavior, the differences between the two groups range from knowledge, attitudes, perceptions, subjective norms, and intentions of midwifery alumni in providing services in health crises. The results of the study showed significant differences between the two groups for the knowledge variable, with an average difference value of 5.44 and a value of p= 0.00 < 0.05. The attitude variable of the average difference value was 6.46 with a value of p= 0.00 < 0.05, the perception variable of the average difference value was 4.58 with a value of p= 0.00 < 0.05. The variable of subjective norms of the average difference value was 5.65 with a value of p= 0.00 < 0.05. The variable of intention of the average difference value of 16.03 with a value of p= 0.00 < 0.05. In conclusion, there are significant differences in the variables of knowledge, attitudes, perceptions, subjective norms, and the intention of midwives to provide services in health crises.
Keywords: Disaster Curriculum; Reproductive Health; Intention ; Planned Behavior Theory

INTRODUCTION

In 2023 and 2024, a number of major natural disasters caused huge losses. The Moroccan earthquake (2023) killed nearly 3,000 people [1], while flooding in Libya due to Hurricane Daniel (2023) resulted in 4,333 deaths. [2] Afghan earthquake in Herat province (2023) claimed 1,480 lives.[3] The Brazilian floods (2024) killed 176 people and displaced more than 422,000 [4]. This disaster caused massive damage to life and infrastructure. The Turkish-Syrian earthquake has also worsened the situation of pregnant women, with disrupted access to prenatal care, as well as the threat of complications of childbirth in unhygienic conditions, endangering mothers and babies.[1]

In 2023, the WHO also highlighted that climate change is exacerbating this condition by increasing the risk of premature birth, infections, brain development disorders in children, and other pregnancy complications. Vulnerable groups such as pregnant women, infants, and children face higher health risks due to natural disasters and climate change[5]. In 2023, according to UNFPA, there will be around 26.4 million internal displacements due to natural disasters worldwide, out of a total of 46.9 million internal displacements that year. Of the displacement due to natural disasters, around 49.6% were experienced by women and girls. About 73% of those displacements were caused by floods and storms.[6]

Nationally, the comparison of national disaster victims in 2023 and 2024 shows a contrast between the frequency of events and the severity of the impact. The number of incidents decreased from 5,400 in 2023 to 3,472 in 2024, or a decrease of 35.70 percent. However, the death toll actually soared. The number of deaths and missing persons increased from 308 to 603 people, or an increase of 95.78 percent, while the number of injured almost doubled from 5,795 to 11,531 people. Meanwhile, the number of affected and displaced residents decreased slightly from 8,491,288 to 8,136,271 people, or a decrease of 4.18 percent. House damage increased sharply from 47,214 units to 80,304 units, an increase of 70.09 percent. This pattern indicates that disasters in 2024 are more intense and destructive despite the lower frequency. In South Sulawesi, the impact throughout 2024 is also large. The death toll and number of missing toll was recorded at 59 people, 91 people were injured, and the number of residents who were displaced and affected reached 795,780 people. If combined, the total number of victims reaches 795,930 people. This situation shows the high level of vulnerability at the provincial level and the need to strengthen

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mitigation, early warning, and more adaptive spatial planning. In Makassar City, residents were displaced, and the number of affected reached 65,000 people without casualties, with 16,580 units of houses submerged.

The data confirms that the social and humanitarian burden remains heavy even though it is not always accompanied by fatalities. Although specific data on the number of victims of natural disasters consisting of pregnant women, women, and children is not available in detail in the official report. However, according to Law Number 24 of 2007 concerning Disaster Management, vulnerable groups in disaster occurrence include infants, toddlers, children, pregnant/lactating mothers, people with disabilities, and the elderly. These groups often experience greater impacts from natural disasters.[7]

One of the government's steps to deal with reproductive health in disaster situations is to implement the Ministry of Health's Minimum Initial Service Guidelines. These guidelines confirm that around 4% of the population affected by disasters are pregnant women; Of this group, 15–20% have the potential to experience complications during pregnancy and childbirth. Approximately 75% of the affected population are women, adolescent girls, and children, while 19% of adolescents aged 10–19 are at risk of sexual violence, child marriage, and trafficking. In addition, 27% of women of childbearing age (15–49 years) require reproductive health services along with the need for sanitary pads during menstruation. In terms of age vulnerability, 13% of refugees are under five, and 9.7% are elderly.[8]

Several studies have assessed the impact of disasters on vulnerable groups such as pregnant women, children, and adolescents. Amani (2024) revealed that pregnant women are more susceptible to stress, anxiety, and depression during disasters, which have a long-term impact on both mother and baby. Bolat (2024) added that disasters in certain trimesters can worsen children's cognitive and motor development, so it is important to have psychological support for mothers. [9] Topcu's (2023) research also shows that pregnant women are severely affected by health service disruptions and displacement, emphasizing the need for maternal and child care in emergency response plans.[10] Research by Amy H. Auchincloss et al. (2024) This study found that adolescents exposed to climate disasters have a higher risk of experiencing mental disorders, such as feelings of hopelessness and sleep problems. More intense exposure to climate disasters correlates with increased mental distress in adolescents, especially in less developed areas. This study emphasizes the importance of better mental health support and preparedness for adolescents in the post-climate disaster. Therefore, mental health risks must be integrated into disaster planning.[11]

The impact of disasters also exacerbates existing gender inequality, increasing the risk of violence against women and girls. Gender-sensitive disaster policies are essential for effective disaster management. [12]. In addition, preparedness for sexual violence in disaster situations needs to be incorporated into a more comprehensive disaster management strategy, emphasizing the importance of social support and the provision of services that are responsive to gender needs. A gender-sensitive approach to emergency response management is urgently needed to reduce Gender-Based Violence (GBV) and provide support to affected groups.[13,14]

Reproductive health services are still needed and even increased in health crisis conditions. Low knowledge about minimum initial services in crisis situations is one of the obstacles in providing Minimum Initial Service Package (MISP).[15] The fulfillment of MISP is highly determined by the availability of competent health workers; Training gaps have been proven to reduce the quality of services, so education and capacity building must be placed as priorities in humanitarian responses. Structured training is key to strengthening preparedness and handling of sexual violence and improving the quality of reproductive health services for refugees. Without continuous education and adequate competency improvement, the implementation of MISP will not be optimal, so strengthening education and capacity needs to be made a strategic agenda. So that MISP education and training are currently needed, especially for health workers.[16,17] The provision of health workers who are ready to provide reproductive health services in crises requires the fulfillment of all components of MISP, starting from the prevention and clinical handling of sexual violence, which is a priority due to the high risk of sexual violence in disaster-affected areas, as seen in the Lebanese context.[18] MISP also covers the prevention and management of HIV and STIs through universal prevention standards, condoms, PEP, and syndromic management.[17] In addition, the prevention of maternal-neonatal morbidity and mortality remains crucial due to barriers to access to ANC and high pregnancy complications in refugee populations.[18] Followed by the provision of contraceptive services to prevent unwanted pregnancies according to standards, the success of all these components is highly dependent on competent health workers, because the implementation of MISP is often hampered by a lack of routine training; continuous training is even a requirement for the successful transition of MISP services to comprehensive services for refugees [17]

In addition, increased logistics capacity and coordination between agencies are urgently needed to ensure that the implementation of minimum initial services can be carried out appropriately.[16] The public health approach places great emphasis on community preparedness and resilience, including health workers. The need to approach the problem by preparing human resources who have knowledge and skills in providing reproductive health services, which according to research there is a gap in international guidelines that regulate the role of midwives in crises, especially in the mitigation, preparedness and post-disaster phases, so there is a need for better evidence-based guidelines to optimize the role of midwives in reproductive health throughout the disaster management cycle.[19]

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Health workers play an important role in providing reproductive health care, but are often untrained in disaster contexts, hence the need for specialized training to deal with emergency and disaster situations, as well as to join internationally recognized aid organizations to ensure appropriate support. One of the strategies that can be done is to prepare midwives to become human resources who are ready to provide reproductive health services in crises, by providing reproductive health learning in health crises in the Midwifery program curriculum, so that it will produce graduates who are prepared to provide reproductive health services during health crises due to disasters. [20]

Public Health Sciences focuses on efforts to improve public health through prevention, education, policy, and other intervention approaches. In this context, behavioral theories such as Theory of Planned Behavior (TPB) by Ajzen (1991) is very relevant to understand the factors that affect individual behavior, including in the aspect of health, the important thing in behavior is the existence of intentions where the closest variable to behavior, a person's intention is influenced by knowledge, attitudes, perceptions and subjective norms.[21] Several studies have assessed that Planned Behavior Theory (TPB) has been proven useful in explaining and predicting disaster preparedness behavior in various studies. Research by Ng (2022) used Planned Behavior Theory (TPB) to analyze disaster preparedness for typhoons in Hong Kong. The results of the study show that intention influences preparedness behavior, with subjective norms as the main factor. Although attitudes and behavioral controls have no significant effect, risk perception influences preparedness intentions and behaviors, as well as broadening the TPB to include these factors in disaster management. Wang et al. (2021) extended the TPB by including psychological capital (PsyCap) and found that PsyCap positively influences attitudes, subjective norms, and perceived behavioral controls, which affect emergency preparedness intentions.[22] Meanwhile, Tabatabaei et al. (2025) confirm that behavioral intent is a major predictor of disaster preparedness, with perceived behavioral control and subjective norms playing an important role.[23]. Overall, the TPB provide a useful framework for understanding disaster preparedness and demonstrates the importance of improving attitudes, social influences, and perceptions of control in driving better preparedness behaviors.

If it is related to the theme of this research, it is very important to assess the intention of midwifery alumni to provide services in health crises after getting disaster lessons contained in the midwifery curriculum and this is also a novelty in this study, where the researcher hopes that with planned behavior based on the TPB theory, it will be able to evaluate the effectiveness of the disaster curriculum on the intention of midwifery alumni in providing services in the field Health crisis. The disaster curriculum applied in midwife education aims to prepare health workers, especially midwives, to be able to provide appropriate services in health crises. In a public health approach, the disaster curriculum plays a role in preparing midwives to recognize, respond to, and manage reproductive health risks that may occur during a crisis. This is in accordance with the basic principles of public health, namely prevention, countermeasures, and recovery, so that the formulation of the problem in this study is how effective the disaster curriculum is in achieving the intention of midwives to provide reproductive health services in crises.

MATERIALS AND METHODS

This study uses a quantitative method with an observational approach and a comparative design. This study aims to compare two groups of midwifery alumni, namely Group A, who received a disaster curriculum during college, and Group B, who did not receive a disaster curriculum. Through the Theory of Planned Behavior theoretical approach by measuring the differences between the two groups ranging from knowledge, attitudes, perceptions, subjective norms, and intentions of midwifery alumni in providing services in health crises, in this study, the researcher did not provide any intervention to the two groups, but only observed differences in knowledge, attitudes, perceptions, subjective norms and intentions of midwifery alumni in providing services in health crises based on the experience of midwifery alumni.

The population in this study is midwifery alumni of the 2019 and 2024 batches of the diploma in midwifery study program of the Pelamonia Institute of Health Sciences. Based on calculations using the Lemeshow formula, for the known population, a sample of 84 alumni was obtained for each group. To anticipate drop-outs, the sample size was increased by 19%, 100 alumni per group, with a total sample of 200 diploma in midwifery alumni (100 alumni from each group). The sampling technique used is purposive sampling, where alumni are selected based on certain criteria. Group A consists of midwifery alumni who received a disaster curriculum and have never participated in additional disaster training, while Group B consists of midwifery alumni who did not get a disaster curriculum while in college and have never participated in additional disaster training. Both groups came from alumni of the same study program, namely the diploma in midwifery study program of the Pelamonia Institute of Health Sciences.

The Research Instrument was developed based on knowledge, attitudes, perceptions, subjective norms, and the intentions of obstetrics alumni in providing reproductive health services in health crises which refer to the minimum initial service guidelines (MISP). for the knowledge variable consists of 16 questions with the criteria of True and False for the attitude variable consists of 16 questions, the perception variable consists of 10 questions. for attitude and perception 4 answer criteria namely strongly disagree, disagree, agree, strongly agree. for the subjective norm variable as many as 12 questions with 5 answer criteria, namely strongly disagree, disagree, neutral, agree,

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strongly agree. for the 12-question intention variable with 5 criteria strongly unintended, unintended, doubtful, intended, strongly intended. The questionnaire has been tested for validity and reliability before use, where for the variables of knowledge, attitude, perception, subjective norms, and intentions, the validity test results r calculate > r table and the sig value < 0.05, so all questions are valid. The results of the reliability test for the knowledge variable for the Cronbach's Alpha value (0.942) > 0.60, for the attitude variable of Cronbach's Alpha value (0.937) > 0.60, for the perception variable for the value of Cronbach's Alpha (0.829) > 0.60, for the Subjective Norm variable for the value of Cronbach's Alpha (0.909) > 0.60. For the intent variable, Cronbach's Alpha value (0.889) > 0.60, which means that all of these instruments are reliable and worth using.

Univariate analysis, to describe the characteristics of each variable studied using frequency distribution, is presented in the form of a table, including an overview of the respondent characteristics. Furthermore, Bivariate Analysis was carried out to assess differences in knowledge, attitudes, perceptions, subjective norms, and intentions of obstetrics alumni in providing reproductive health services in health crises. Before the statistical test was carried out, the data was first tested for normality using the Kolmogorov-Smirnov test obtained for the variables of knowledge of group A (p= 0.00 < 0.05), knowledge of group B (p=0.03 < 0.05), attitude of group A (p=0.00<0.05), attitude of group B (p=0.00 < 0.05), perception of group A (p= 0.00 < 0.05), perception of group B (p=0.00 < 0.05), Subjective norms of group A (p=0.01< 0.05), subjective norms of group B (p=0.01< 0.05), intention of group A (p = 0.00 < 0.05), Intention of group A (p = 0.00 < 0.05) based on these results it can be concluded that all variables are abnormally distributed, then the test used is the Man Whitney U test, to compare two groups that are not normally distributed. Before conducting research, this research proposal had also received permission from the Ethics Commission of Pelamonia Institute of Health Sciences with the ethics number Rek/007/KEPK-IIKP/X/2024.

RESULT

Table 1. Respondent Characteristics

Characteristics	Group A		Group B	
	n	%	N	%
Age				
23 years old	93	93.0	-	-
24 years old	7	7.0	-	-
26 years old	-	-	88	88.0
27 years old	-	-	12	12.0
Total	100	100	100	100
Education				
Diploma of midwifery	100	100	100	100
Total	100	100	100	100
Employment Status				
Work	100	100	100	100
Total	100	100	100	100

Source: Primary Data

Based on Table 1 for group A, the highest age is 23 years, which is 93 (93.0 %), for group B, the age of 26 years is 88 (88.0 %). For education in groups A and B, Diploma in Midwifery education is 100 (100%). For Employment status in groups A and B, 100 (100%) have worked.

Table 2. Differences in Research Variable Values in Groups A and B

Variabel		n	Mean ± SD	Δ (Mean ± SD)	P
Knowledge	Group A	100	30.20 ± 1.101	15 ± 5.44	0.00
	Group B	100	24.76 ± 2.731		
Attitude	Group A	100	61.54 ± 1.141	13 ± 6.46	0.00
	Group B	100	55.08 ± 3.659		
Perception	Group A	100	36.10 ± 1.784	10 ± 4.58	0.00
	Group B	100	31.52 ± 1.987		
Subjective Norms	Group A	100	49.34 ± 2.275	13 ± 5.65	0.00
	Group B	100	43.69 ± 2.312		
Intention	Group A	100	56.14 ± 1.792	24 ± 16.03	0.00
	Group B	100	40.11± 2.265		

Source: Primary Data

Based on Table 2 of 200 respondents, consisting of 100 in group A who received the disaster curriculum during college and group B who did not get the disaster curriculum during college, the results showed that there

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was a significant difference between the variables of knowledge, attitudes, perceptions, subjective norms, and intentions of midwifery alumni in providing reproductive health services.

DISCUSSION

The disaster curriculum in the midwifery study program is a series of materials and courses designed to prepare diploma in midwifery students to face and provide health services in disaster situations. The curriculum covers a wide range of topics, such as health crisis management, disaster victim management, first aid, and obstetric care in emergencies. The goal is to equip students with the knowledge, skills, and attitudes needed to respond to health needs in disaster situations, as well as ensure they are ready to provide effective, safe, and timely services in a challenging environment. In the disaster curriculum of the midwifery study program, there are at least 3 courses that are differentiators from the previous curriculum, which are the characteristic courses, namely the Disaster Management, Disaster Emergency Response I, and Disaster Emergency Response II courses. And this curriculum is obtained by midwifery alumni in group A, while group B is midwifery alumni who do not get a disaster curriculum.

The selection of the Theory of Planned Behavior (TPB) in assessing the success of the disaster curriculum in the diploma in midwifery study program is based on its ability to identify and analyze factors that affect the intentions and behaviors of individuals in providing reproductive health services in health crises. TPB helps explain how diploma in midwifery alumni's attitudes toward midwifery services in health crises, subjective norms related to their perceptions of social expectations, and perceived control of behaviors (such as confidence and ability to act in crisis) can be influenced by the disaster curriculum taught. Using TPB, the research can measure the extent to which the disaster curriculum has succeeded in changing the attitudes, perceptions, and intentions of diploma in midwifery alumni to provide effective and responsive midwifery services in disaster situations, thus providing a clear picture of the success of the curriculum in preparing alumni to face disaster challenges.

In the context of providing services in a reproductive health crises, it refers to services that are tailored to health emergency conditions, aiming to provide fast, precise, and effective interventions to protect individuals, especially women and children. In crises, reproductive health services include aspects such as MISP coordination and prevention of sexual violence,[24] HIV/STI treatment, maternal and neonatal mortality prevention, and reproductive health service planning integrated with basic health services.[8]

Barriers to reproductive health services in crises repeat the same pattern: providers' knowledge of MISP is low, supply chains are often stalled, funding is limited, and health workers are lacking, all of which have undermined the effectiveness and sustainability of services since the early phases of emergency response. It was also found that inter-institutional coordination was weak across state contexts, with the influence of cultural factors and inadequate information. Therefore, the response needs to be strengthened through clear coordination, structured training, and adequate resource allocation; Accompanied by strengthening systems (planning, data-monitoring, logistics) and local capacity for the prevention/handling of gender-based violence. At the community level, community-based approaches and reproductive health education, especially for adolescents, mothers/fathers, and couples, are prioritized so that correct information is conveyed and access to services is increased.

The public health approach emphasizes community preparedness and resilience, including health workers. This study examines how the disaster curriculum that has been applied to midwife alumni at the Pelamonia Institute of Health Sciences of Makassar City is able to increase their readiness in providing reproductive health services. Midwife preparedness is very important in crises, where health services must be tailored to the urgent needs of people affected by disasters or health crises. With a public health approach, the success of a disaster curriculum can be measured by how effectively midwives provide services that can prevent reproductive health risks, such as complications of pregnancy, childbirth, or miscarriage that can increase during the crisis.

The knowledge of midwives in providing reproductive health services in disaster situations is the understanding of midwives in providing health services that include reproductive aspects, including in times of emergency or disaster. Disaster situations often present additional challenges, such as limited health facilities, a lack of medicines, and disrupted access to basic health services. This knowledge includes the ability to handle a wide range of reproductive health issues, such as childbirth complications, sexual violence, family planning services, and the treatment and prevention of sexually transmitted infections, in challenging and resource-limited conditions.[25]

Based on the results of the study involving 200 respondents, the average knowledge score of Group A (30.20 ± 1.10; n=100) was significantly higher than that of Group B (24.76 ± 2.73; n=100). The mean difference = 5.44 points with $t \approx 18.5$ and $p < 0.001$, showing a very statistically significant difference. These findings support that the disaster curriculum is effective in increasing the knowledge of midwifery alumni. Within the framework of the Theory of Planned Behavior (TPB), increased knowledge has the potential to strengthen perceived behavioral control and attitudes towards midwifery services in disaster situations, thereby encouraging the intention to be involved in health crisis services. These results are in line with research by Al-Qbelat et al. (2024) in the Zalaan Journal, which reported a significant improvement in the knowledge, skills, and preparedness of health workers after disaster training. The study confirms that structured disaster education is able to strengthen professional capacity in dealing with emergencies, both at the individual and institutional levels. Thus, the effectiveness of the

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disaster curriculum in this study is consistent with the literature that emphasizes the importance of integrating disaster preparedness materials in the curriculum of health workers as a strategy to increase the competence and resilience of the health system.

Increasing the knowledge of midwives in health crisis services includes several aspects, such as handling victims of sexual violence, childbirth, neonatal and maternal emergencies, and STI prevention and treatment. Midwives need to understand the medical and psychosocial aspects to provide appropriate care, including injury examinations, pregnancy detection, STIs, as well as the provision of emergency contraception and trauma counseling. In addition, knowledge of referral protocols and the location of referral facilities is also important to ensure fast and effective service. Birth control services should also remain available in disaster situations to prevent unwanted pregnancies and reduce the risk of unsafe abortions. Adolescent reproductive health counseling is also important to meet physical, mental, and social needs during a crisis, as well as prevent unwanted pregnancies, STIs, sexual violence, and early marriage.[2,7,8] The knowledge gained through the disaster curriculum supports midwives in providing services in disaster situations, so it is important to include the disaster curriculum to increase students' knowledge about disasters.[27]

Focusing on the domain of knowledge, the results of this study are consistent with the findings of Mohamed, Abdel-Aziz, & Elsehrawy (2023) on nursing students in Al-Kharj, which showed that the majority of respondents were categorized as "adequate" disaster preparedness knowledge and that there was a positive—albeit weak—correlation between knowledge and attitudes; At the same time, it highlights gaps in practices that are still inadequate so that it demands the strengthening of structured and continuous learning so that the knowledge gained through courses related to risk and disaster management is truly converted into operational preparedness. The findings corroborate the direction of the effect in this study: exposure to disaster curriculum is associated with increased disaster literacy, while continuity of training is needed to close the gap between declarative knowledge and procedural competence in the field.[28]

In accordance with the principle of Minimum Initial Service (MISP), the attitude of midwives includes commitment and readiness to provide quality reproductive health services, even in emergencies. In this study, attitude is interpreted as a tendency to assess and be ready to act in disaster preparedness—including cognitive aspects (knowledge/belief), affective (concern/empathy), and behavior (readiness to act). Within the framework of the Theory of Planned Behavior (TPB), attitudes, along with subjective norms and perceived behavioral controls, form the intention to act. Midwifery alumni who have followed the disaster curriculum are expected to show a more resilient, empathetic, and professional attitude, believe in the priority of essential services (safe childbirth, obstetric emergency management, post-disaster family planning, prevention of gender-based violence), maintain the dignity and privacy of mothers and babies, and be ready to carry out protocols (mother-baby triage, rapid referrals, cross-professional work, adaptation to limited resources). The disaster curriculum strengthens these three components of attitudes to encourage consistent intentions and practices as seen from involvement in routine simulations, the use of mother-infant checklists, the implementation of infection prevention, complication monitoring, emotional support for survivors, and culturally sensitive risk communication to ensure that services remain effective and sensitive in crisis conditions.

Based on the results of the study, which showed a significant difference in attitude aspects between group A (61.54 ± 1,141) and group B (55.08 ± 3,659) with $p < 0.05$, it can be concluded that the implementation of the disaster curriculum has a significant positive influence on the formation of a positive attitude towards disaster preparedness. These results are in line with the research of Mohamed, Abdel-Aziz, & Elsehrawy (2023) which found that more than half of nursing students have a positive attitude towards disaster preparedness and showed a positive correlation between knowledge and attitudes, indicating that improved conceptual understanding also shapes mental preparedness and attitude response to disasters These findings reinforce the argument that systematic disaster education not only improves cognitive knowledge, but also foster a professional attitude that is more prepared, empathetic, and responsive in dealing with emergencies.[28]

In this study, perception is how respondents interpret information and experiences related to disaster preparedness and reproductive health services, which inform their assessment of risks, benefits, barriers, and self-ability to act; includes risk perception (threat level and response urgency), benefit/obstacle perception (SOP usability, logistics, referral flows, field constraints), and perception of self-ability and support. Within the framework of the Theory of Planned Behavior (TPB), perceptions, especially self-efficacy and support, work together with subjective attitudes and norms to encourage intentions and ultimately effective preparedness practices.

Based on the results of the study that showed a significant difference in the perception aspect between group A (36.10 ± 1,784) and group B (31.52 ± 1,987) with $a\ p < 0.05$, it can be concluded that the implementation of the disaster curriculum has a significantly enhances on increasing the perception of disaster preparedness. These results are in line with Ng Sai's (2022) research which shows that risk perception has a direct and indirect relationship with disaster preparedness intentions and behaviors within the framework of the Theory of Planned Behavior (TPB). A high perception of disaster risk has been shown to increase awareness, form supportive subjective norms, and strengthen perceived behavioral control so that individuals are better prepared to act in real action in the face of disasters. These findings indicate that an effective disaster curriculum not only improves knowledge and attitudes

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but also forms realistic perceptions of threats and self-capabilities, which ultimately strengthen the readiness of midwifery alumni to provide safe reproductive health services and disaster response.

These findings are in line with research by Fowler, Goldsberry, and Aultman (2022) involving final year nursing students in the United States. The study showed that after attending formal disaster training in the Federal Emergency Management Agency (FEMA) Center for Domestic Preparedness, there has been a significant increase in students' perception of disaster management preparedness and competence, including the dimensions of knowledge, skills, and the ability to evaluate post-disaster response. The research confirms that structured disaster training can expand the perception of roles and increase students' self-confidence in dealing with emergencies.[29] This shows that the disaster curriculum in midwifery education can function similarly to foster positive perceptions, sense of ability, and readiness of alumni in providing reproductive health services in crises, thereby strengthening disaster response capacity at the primary service level.

Based on the results of the study that showed a significant difference in the aspect of subjective norms between Group A (49.34 ± 2,275) and Group B (43.69 ± 2,312), with $a\ p < 0.05$. This showed that the disaster curriculum had a strong effect on increasing subjective norms or social encouragement to behave and act in disaster preparedness. The subjective norms in this study showed that group A had a stronger view of social expectations in reproductive health services than group B, who had lower subjective norms. This illustrates the importance of social influence in shaping individual behavior. In disaster situations, midwives or health workers tend to act in accordance with expectations or pressures from their communities.

A disaster curriculum that integrates an understanding of social norms can reinforce positive subjective norms in group A, potentially improving the quality and effectiveness of reproductive health services in crises. In accordance with the theory of planned behavior, strong subjective norms can influence the actions of health workers in providing services, so that training that strengthens these norms can improve their commitment and understanding in disaster situations. The concept of subjective norms in planned behavior theory (TPB), which involves social pressures such as family, colleagues, and health institution support, plays a major role in motivating individuals to engage in behaviors that support disaster preparedness, with factors such as intentions, disaster experiences, and subjective norms contributing to improving disaster preparedness; therefore, TPB-based interventions, such as systematic disaster training that involves social norms, can have a positive impact in improving disaster preparedness among health workers, especially midwives, who have an important role in health services in disaster-prone areas, so that policies and training programs should emphasize strengthening social norms to support preventive and preparedness actions.[30]

These results are in line with the research of Ridzuan et al. (2024) with the findings of a study based on *social norms theory* on flood preparedness that shows subjective norms are positively associated with preparedness intentions, and intentions encourage real behaviors; In fact, the effect of norms can change depending on the context of trust in public protection (moderation of trust). This means that when the environment (lecturers, prescribers, colleagues, institutions) gives clear expectations and support for the role of midwifery in disaster response, motivation to comply with SOPs, practice drills, and engage in SRH services in crisis increases, in line with the results of this study.[31]

Based on the results of the study, which showed a significant difference in the aspect of intention between Group A (56.14 ± 1,792) and Group B (40.11 ± 2,265) with $p < 0.05$, it can be concluded that the implementation of the disaster curriculum has a statistically significant impact on increasing disaster preparedness intentions. Within the framework of the Theory of Planned Behavior (TPB), intention is the main predictor of actual behavior; the stronger a person's intentions, the more likely he or she is to take real action in a catastrophic situation. Within the framework of theTPB, intention is the closest step to real behavior. The findings of Tabatabaei et al. (2025) support this: intentions are positively correlated with preparedness behavior, and are influenced by two key things: the sense of being able to control actions (perceived behavioral control) and social/professional support (subjective norms). This means that for midwifery alumni, a curriculum that increases confidence, fosters support from peers/superiors, and provides structured experiences (simulation and *drill*) will raise morale, then encourage real action in reproductive health services in times of crisis.[23] Research by Ng Sai (2022) also confirms that risk perceptions and supportive social norms reinforce individuals' intentions to participate in disaster preparedness. Thus, the increase in intention of midwifery alumni who follow the disaster curriculum reflects the success of learning in fostering awareness, self-confidence, and professional commitment to provide responsive and sustainable reproductive health services in emergencies.[32]

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the study, 5 conclusions were obtained: (1). There was a significant difference in knowledge between group A of midwifery alumni who received the disaster curriculum and group B of midwifery alumni who did not receive the disaster curriculum, with a value of $p = 0.00 < 0.05$. (2) There is a significant difference in attitude between group A of midwifery alumni who receive a disaster curriculum and group B of midwifery alumni who do not receive a disaster curriculum, with a value of $p = 0.00 < 0.05$ (3). There was a significant difference in perception between group A of midwifery alumni who received the disaster curriculum and group B of midwifery

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alumni who did not receive a disaster curriculum, with a value of p = 0.00 < 0.05. (4). There is a significant difference in Subjective Norms between group A midwifery alumni who receive a disaster curriculum and group B midwifery alumni who do not receive a disaster curriculum, with a value of p = 0.00 < 0.05. (5) There was a significant difference in intention between group A of midwifery alumni who received the disaster curriculum and group B of midwifery alumni who did not receive the disaster curriculum, with a value of p = 0.00 < 0.05. Suggestions Based on these findings, institutional advocacy is needed to incorporate a mandatory and structured disaster curriculum into midwifery education, including MISP materials, cross-professional simulations, and ready-to-use SOPs so that knowledge, attitudes, perceptions, subjective norms, and intentions of graduates lead to real practice. Going forward, follow-up research needs to assess the clinical skills and operational preparedness of alumni during a health crisis or disaster (e.g., through scenario-based OSCE, *field drills*, SOP compliance audits, and post-placement performance tracking) to ensure real-world competency testing.

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