

**Journal Educational of Nursing (JEN)**

Vol. 8 No. 1 – January – June 2025; page 94-99

p-ISSN :2655-2418;e-ISSN:2655-7630

journal homepage: <https://ejournal.akperrspadjakarta.ac.id>

DOI: <https://doi.org/10.37430/jen.v8i1.397>

Article history:

Received: May 16<sup>th</sup>, 2025

Revised: June 20<sup>th</sup>, 2025

Accepted: June 27<sup>th</sup>, 2025

## **The Effectiveness of the Service Learning Method on Pre-Disaster Preparedness in Undergraduate Midwifery Students at STIKES RSPAD Gatot Soebroto**

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### **Abstract**

**Background:** Indonesia is a country with a high level of disaster risk so that disaster preparedness is an important competency for health workers, including midwifery students as prospective midwives. One of the learning methods that can be used to improve pre-disaster preparedness is Service Learning. **Objective:** This study aims to analyze the effectiveness of the Service Learning learning method on the knowledge and attitudes of pre-disaster preparedness in the Undergraduate Midwifery Study Program students of STIKES RSPAD Gatot Soebroto. **Method:** This study used a quasi-experimental design with a pretest-posttest control group design approach. The research sample was 60 using a total sampling technique. **Results:** The average student knowledge score increased from  $78.33 \pm 16.681$  before the intervention to  $99.42 \pm 2.015$  after being given the Service Learning learning method. The average attitude score increased from  $72.45 \pm 14.168$  to  $86.37 \pm 1.650$ . The Wilcoxon test results showed a significant difference in knowledge ( $p = 0.000$ ) and attitude ( $p = 0.001$ ) before and after the intervention. **Conclusion:** The Service Learning method is effective in improving the knowledge and attitude of pre-disaster preparedness of students in the Undergraduate Midwifery Study Program.

**Keywords:** Service Learning, pre-disaster preparedness, disaster education.

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### **INTRODUCTION**

Indonesia is a country with a high level of disaster risk because it is located at the confluence of three active tectonic plates in the world, has many active volcanoes, extensive coastal areas, and is vulnerable to various hydrometeorological disasters such as floods, landslides, extreme weather, drought, and forest and land fires. Disaster risk remains a major challenge in national development because almost all regions of Indonesia have varying levels of disaster threat. National Disaster Management Agency (BNPB) data shows that during 2024

there were 3,472 disasters in Indonesia with significant impacts on communities and infrastructure. Most of these disasters were dominated by hydrometeorological disasters such as floods, extreme weather, and landslides that occurred due to the influence of climate change and environmental vulnerability. Disaster events in 2024 resulted in 540 people died, 63 people went missing, 11,531 people were injured, and 8,136,271 people were affected and displaced. In addition, the disaster also caused damage to 80,304 housing units, 612

educational facilities, 415 places of worship, 82 health facilities, 89 offices, and 445 bridges. This condition shows that efforts to reduce disaster risks and increase community preparedness, including among students as prospective health workers, are very important to support the nation's resilience in facing disasters (2).

This condition indicates a high level of vulnerability to flood disasters, so efforts are needed to reduce the risks and impacts they cause to the community. One effort to reduce risks and impacts is through preparedness. The main goal of preparedness is to minimize the impact of disasters through effective, efficient, and timely planning, training, and preventive actions. The main parameters in measuring community preparedness are knowledge and attitudes (4). Increased community preparedness can be achieved if they have adequate knowledge and understanding regarding the threat of flooding in their area. Knowledge about disaster preparedness needs to be possessed by the community, even those who are not affected by floods (5). Community attitudes towards flood disasters greatly determine the effectiveness of mitigation actions taken. Attitudes are not only influenced by experience, but also knowledge. Preparedness attitudes are actions taken to reduce disaster risks that include understanding, response, and proactive actions of individuals or groups in facing potential disasters. With good knowledge and attitudes about preparedness, the community will be better prepared to reduce the impacts caused by flood disasters (11).

In the context of health, disasters can disrupt basic health services, including maternal and child health services. Pregnant women, women in labor, postpartum mothers, infants, toddlers, the elderly, and people with disabilities are vulnerable groups who require special attention in the pre-disaster, emergency response, and post-disaster

phases because they have higher health risks than other groups (8)(10). Midwifery students as prospective midwives need to have good preparedness, not only in terms of knowledge, but also attitudes, risk communication skills, community education, evacuation planning, and understanding of reproductive health needs in disaster situations (3). Pre-disaster preparedness

Midwifery students need to be developed through applicable learning methods. One relevant method is service learning, a learning approach that integrates academic objectives with community service and reflection on learning experiences (7). Through service learning, students not only receive material in class but also directly engage in problem identification, education, simulations, and reflection with the community. This method has been proven to improve practical skills, social responsibility, communication skills, and student readiness in dealing with public health problems and disasters (1).

In midwifery education, service learning can be implemented through pre-disaster preparedness education activities for the community, the development of educational media, the identification of vulnerable groups, preparedness simulations, and counseling on the special needs of pregnant women and babies during disasters. These activities provide students with direct learning experiences while increasing the community's capacity to face disaster risks (7). Therefore, research on the effectiveness of the service learning method on pre-disaster preparedness for students in the Undergraduate Midwifery Study Program at STIKES RSPAD Gatot Soebroto is important to determine whether the method is able to significantly improve students' knowledge and attitudes about preparedness.

## RESEARCH METHODOLOGY

This type of research is quantitative with a quasi-experimental method, using a Pretest-Posttest Control Group Design. The study population was all students of the Undergraduate Midwifery Study Program at STIKes RSPAD Gatot Soebroto who met the research criteria. The sampling technique used total sampling, resulting in 60 respondents divided into an intervention group (n=30) and a control group (n=30). The research instruments were a knowledge questionnaire and a pre-disaster preparedness attitude questionnaire that had been tested for validity and reliability. The collected data were analyzed univariately to describe the characteristics of respondents and the distribution of research variables. Data were analyzed using parametric or nonparametric tests according to the results of the normality test, with a significance level of  $\alpha = 0.05$ .

## RESULTS

**Table 1. Average knowledge before and after being given the service learning method.**

| Knowledge | N  | Mean  | Elementary School | Min-Max |
|-----------|----|-------|-------------------|---------|
| Before    | 60 | 78.33 | 16,681            | 33-94   |
| After     | 60 | 99.42 | 2,015             | 94-100  |

Based on Table 1, it is known that the average knowledge score of students before being given the Service Learning method was 78.33 with a standard deviation of 16.681. The lowest knowledge score was 33 and the highest score was 94. After being given the Service Learning method, the average knowledge score increased to 99.42 with a standard deviation of 2.015. The lowest knowledge score after the intervention was 94 and the highest score was 100.

**Table 2. Average Attitudes before and after being given the Service Learning Method**

| Attitude | N  | Mean  | Elementary School | Min-Max |
|----------|----|-------|-------------------|---------|
| Before   | 60 | 72.45 | 14,168            | 55-88   |
| After    | 60 | 86.37 | 1,650             | 70-98   |

Based on Table 2, it is known that the average attitude score of students before being given the Service Learning method was 72.45 with a standard deviation of 14.168. The lowest attitude score was 55 and the highest score was 88. After being given the Service Learning method, the average attitude score increased to 86.37 with a standard deviation of 1.650. The lowest attitude score after the intervention was 70 and the highest score was 98.

**Table 3. The Influence of the Service Learning Method on Student Knowledge and Attitudes.**

| Variables | Mean Rank Pre-test | Mean Rank Post-test | p-value |
|-----------|--------------------|---------------------|---------|
| Knowledge | 8.50               | 13.00               | 0,000   |
| Attitude  | 10.88              | 17.78               | 0.001   |

Based on the results of the normality test, the knowledge and attitude data were not normally distributed ( $p < 0.05$ ), so the analysis was continued using the Wilcoxon Signed Rank Test. The results of the Wilcoxon test on the knowledge variable showed a mean pre-test rank of 8.50 and a mean post-test rank of 13.00 with a p-value of 0.000 ( $p < 0.05$ ). These results indicate that there is a significant difference between the level of student knowledge before and after being given the Service learning method.

*Learning.* In the attitude variable, the mean pre-test rank was 10.88 and the mean post-test rank was 17.78 with a p-value of 0.001 ( $p < 0.05$ ). These results indicate a

significant difference between student attitudes before and after being given the Service Learning method.

## **DISCUSSION**

### **1. The Influence of Service Learning Method on Student Knowledge**

The results of the study indicate that the Service Learning method significantly increased students' knowledge of pre-disaster preparedness. The average knowledge score increased from 78.33 before the intervention to 99.42 after the intervention. The Wilcoxon test results also showed a p-value of 0.000 ( $p < 0.05$ ), indicating a significant difference between the level of knowledge before and after the Service Learning method was administered. This increase in knowledge occurred because Service Learning integrates academic learning with direct experience in the community. Through active involvement in community service activities related to disaster preparedness, students have the opportunity to connect the theories learned in class with real-world situations. This contextual and experiential learning process allows students to understand the concept of pre-disaster preparedness more deeply than conventional learning. The results of this study are in line with the Experiential Learning theory proposed by (Wijnen-Meijer et al., 2022) which states that learning gained through direct experience can improve students' understanding, critical thinking skills, and knowledge retention. Furthermore, service learning also encourages students to reflect on their experiences, making the learning process more meaningful.

### **2. The Influence of Service Learning Method on Student Attitudes**

The results of the study showed that the Service Learning method also had a significant effect on improving students' attitudes regarding pre-disaster preparedness. The average attitude score increased from 72.45 before the intervention to 86.37 after the intervention. The Wilcoxon test results showed a p-value of 0.001 ( $p < 0.05$ ), which means there was a significant difference between students' attitudes before and after being given the Service Learning method. The improvement in students' attitudes can occur because Service Learning not only focuses on cognitive aspects, but also on developing affective and social aspects. Student involvement in community service activities provides real-life experience regarding the importance of disaster preparedness, thereby fostering a sense of responsibility, concern, and awareness to play an active role in disaster mitigation efforts. The experience of interacting directly with the community allows students to understand the impacts that can be caused by disasters and the importance of individual and community preparedness in facing emergency situations. This condition contributes to the formation of a more positive attitude towards pre-disaster preparedness. Therefore, Service Learning can be an effective learning strategy to shape the character and professional attitudes of midwifery students (9).

### **3. Implications of Service Learning Methods in Midwifery Education**

Pre-disaster preparedness is an important competency for health workers, including midwives. In disaster situations, midwives play a strategic role in providing maternal

and child health services, health education, and psychosocial support to affected communities. Therefore, strengthening students' knowledge and attitudes regarding disaster preparedness needs to be done from the start of their education. The results of this study indicate that the Service Learning method can be an effective alternative learning model for improving students' competency in the field of disaster preparedness (11). Through an approach that integrates theory and field practice, students not only gain knowledge but also develop professional attitudes, communication skills, teamwork, and social awareness necessary for midwifery practice (7).

## CONCLUSIONS

Service learning can be used as an effective, innovative learning strategy to improve pre-disaster preparedness among midwifery students through the integration of academic learning, field experience, and critical reflection. The application of this method is expected to support the development of student competencies as prospective healthcare workers ready to play a role in disaster mitigation and response efforts in the community.

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## **ACKNOWLEDGEMENT**

Acknowledgments are given to funders, parties who provide data and parties related to the article.