

THE EFFECT OF SIMULATION-BASED EDUCATION ON THE ABILITY OF HOUSEWIVES TO PERFORM THE HEIMLICH MANEUVER IN KARANGANYAR VILLAGE, JEMBER

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ABSTRACT

The aim of this study was to determine the effect of simulation-based education on housewives' ability to perform the Heimlich Maneuver in RT 05 RW 019, Karanganyar Village, Ambulu District, Jember Regency. To achieve this objective, a quantitative pre-experimental study using a one-group pretest-posttest design was conducted. The participants consisted of 34 housewives selected using a total sampling technique. Data were collected using an observation checklist based on the Standard Operating Procedure (SOP) of the Heimlich Maneuver and were analyzed using the Wilcoxon Signed Rank Test. The findings showed that before the intervention, all respondents (100%) were unable to perform the Heimlich Maneuver correctly. After receiving simulation-based education, 15 respondents (44.1%) were categorized as capable, while 19 respondents (55.9%) remained incapable. The Wilcoxon Signed Rank Test revealed a statistically significant difference between pretest and posttest scores ($p = 0.000$; $p < 0.05$). It can be concluded that simulation-based education significantly improves housewives' ability to perform the Heimlich Maneuver. Therefore, simulation-based education is recommended as an effective community health education strategy to enhance first-aid skills for choking emergencies.

Keywords: *Education, Simulation-Based Education, Heimlich Maneuver, Housewives' Ability*

INTRODUCTION

Choking is an emergency condition caused by airway obstruction due to a foreign body, resulting in partial or complete blockage of the airway. Complete airway obstruction requires immediate first aid, such as the Heimlich Maneuver, which increases intrathoracic pressure through abdominal thrusts to expel the obstructing object (Rahmawati et al., 2025). Prompt and appropriate intervention is essential to prevent severe complications, including hypoxia and death. Choking frequently occurs during eating and remains a common emergency in both children and adults (Yanuar et al., 2024).

According to the World Health Organization (WHO), choking is one of the leading causes of unintentional injury-related morbidity and mortality, particularly among children and other vulnerable groups (WHO, 2020). In Indonesia, choking incidents are still common, but many cases remain unreported, resulting in limited national data (Afzal et al., 2023). This condition highlights the importance of improving community preparedness through first aid education.

Previous studies have shown that community knowledge and skills in managing choking remain inadequate. Suparmanto et al. (2023) reported that many housewives lacked knowledge of choking first aid, including the Heimlich Maneuver. Furthermore, simulation-based education has been proven to be more effective than conventional teaching methods in improving both knowledge and practical skills related to emergency management (Science & Article, 2024; Hanifah, 2025). However, studies evaluating the effectiveness of simulation

in improving the practical ability of housewives, particularly in rural communities, are still limited.

This study aimed to determine the effect of simulation-based education on the ability of housewives to perform the Heimlich Maneuver in Karanganyar Village, Jember. Specifically, the study examined whether simulation-based education could improve participants' practical ability to provide first aid in choking emergencies.

This study provides evidence regarding the effectiveness of simulation-based education in improving housewives' ability to perform the Heimlich Maneuver. The findings are expected to support the development of community-based emergency preparedness programs and strengthen the role of housewives as first responders in choking emergencies before professional medical assistance is available.

METHOD

This study employs a quantitative pre-experimental design using a one-group pretest-posttest approach, aiming to determine the effect of simulation-based education on the ability of housewives to perform the Heimlich maneuver in RT 05 RW 019, Karanganyar Village, Ambulu District, Jember. The study population and sample consist of housewives residing in RT 05 RW 019, Karanganyar Village, Ambulu District, Jember, selected using a total sampling technique.

Data collection was conducted in June 2026. An observation sheet based on the Standard Operating Procedure (SOP) for the Heimlich maneuver served as the measurement tool. All respondents received an explanation of the study's objectives and signed an informed consent form prior to measurement; additionally, a pre-test assessment was conducted before the educational intervention. The collected data underwent editing, coding, scoring, and tabulation before being analyzed using SPSS software; specifically, the Wilcoxon Signed-Rank Test was used to determine the effect of the simulation-based education on the housewives' ability to perform the Heimlich maneuver.

FINDING AND DISCUSSION

RESEARCH RESULT

GENERAL DATA

Tabel 1: Frequency Distribution Of Respondent Characteristics Based On Age, Highest Level Of Education, Source Of Information, And Experience.

No	Frequency Distribution of Respondent	F	%
1	Age		
	25-40 Years	13	38,2
	41-55 Years	14	41,2
	56-70 Years	7	20,6
2	Highest level of education		
	Elementary School	16	47,1
	Junior High School	11	32,4
	Senior High School	7	20,6
	Higher Education	0	0

3	Source of Information		
	Have Never Received Information	34	100
	Healthcare Worker/Nurse	0	0
	Social Media/Internet	0	0
	Family/Friends/Neighbors	0	0
	Health Educator/Trainer	0	0
4	Experience		
	Never	30	88,1
	Ever	4	11,8
	Total	34	100

Source: Primary Data 2026

Table 1 shows that among the 34 respondents, 14 (41.2%) were aged 41–55 years, 16 (47.1%) had an elementary school education, all 34 (100%) had never received prior information, and 30 (88.2%) had no prior experience with the Heimlich maneuver.

SPESIFIC DATA

1. Respondents' Proficiency Prior To Receiving Education Via The Simulation Method (Pre-Test)

Tabel 2 : Frequency Distribution Of Respondents' Capabilities Prior To Receiving Education Via The Simulation Method (Pre-Test)

Ability	F	%
Capable $\geq 75\%$	0	0
Unable $< 75\%$	34	100
Total	34	100 %

Source: Primary Data 2026

Table 2 shows that the study conducted on 34 housewives in Karanganyar Village, Jember, revealed that all respondents—totaling 34 (100%)—fell into the unable category.

2. Respondents' Proficiency After Receiving Education Via The Simulation Method (Post-Test)

Tabel 3 : Frequency Distribution Of Respondents' Abilities After Receiving Education Via The Simulation Method (Post-Test)

Ability	F	%
Capable $\geq 75\%$	15	44,1
Unable $< 75\%$	19	55,9
Total	34	100 %

Table 2 shows that the post-test results indicate that 19 respondents (55.9%) fell into the category of being unable to perform the Heimlich maneuver; however, there was still an improvement compared to the pre-education stage.

3. The Effect Of Education Using The Simulation Method On The Ability To Perform The Heimlich Maneuver

Tabel 4 : The Effect Of Education Using The Simulation Method On The Ability To Perform The Heimlich Maneuver.

Homemaker Skills	Pre-test	(%)	Post-test	(%)	P value
Capable $\geq 75\%$	0	0 %	15	44,1 %	0,000
Unable $< 75\%$	34	100 %	19	55,9 %	
Total	34	100	34	100	

Table 4 shows that, prior to receiving education via the simulation method, all 34 respondents (100%) fell into the "incapable" category regarding their ability to perform the Heimlich Maneuver. Following the education, the majority of respondents (19 individuals or 55.9%) remained in the "incapable" category; however, an improvement in ability was observed in a subset of respondents, specifically 15 individuals (44.1%). The obtained significance value was 0.000 (less than $\alpha = 0.05$), indicating a significant difference in the housewives' ability to perform the Heimlich Maneuver before and after the simulation-based education; the Z-value was -3.873b, with an Asymp. Sig. (2-tailed) value of 0.000 ($p < 0.05$). This significance value indicates that the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted; thus, it can be concluded that education using the simulation method has a significant impact on the housewives' ability to perform the Heimlich Maneuver.

The Wilcoxon signed-rank test revealed that no respondents experienced a decline in ability following the educational intervention, as indicated by a negative rank count of 0 (0%). Conversely, all 34 respondents (100%) demonstrated an improvement in ability, evidenced by positive ranks with a mean rank of 8.00 and a sum of ranks of 120.00. Furthermore, no respondents showed unchanged ability levels between the pre- and post-intervention stages (ties = 19).

DISCUSSION

1. Respondents' Proficiency Prior To Receiving Education Via The Heimlich Maneuver Simulation Method (Pre-Test)

Before receiving simulation-based education, all respondents (100%) were categorized as unable to perform the Heimlich Maneuver. These findings indicate that the participants had very limited practical skills in managing choking emergencies. The low baseline ability may be associated with respondents' characteristics, including the predominance of middle-aged adults, elementary school educational backgrounds, lack of prior information regarding the Heimlich Maneuver, and limited experience in providing first aid. Previous studies have demonstrated that educational level, access to health information, and previous emergency training are important determinants of first-aid competence among laypersons. Individuals with limited educational backgrounds generally have fewer opportunities to obtain accurate health information and practical emergency skills, resulting in lower confidence and poorer performance when responding to life-threatening situations. Therefore, without structured educational interventions, community members are likely to experience difficulty in recognizing choking emergencies and performing the correct first-aid procedures.

The present findings are consistent with Suparmanto et al. (2023), who reported that most respondents had inadequate knowledge regarding the Heimlich Maneuver before receiving health education. Similarly, Affrita et al. (2024) found that community-based choking education significantly improved participants' knowledge, practical skills, and confidence after structured training. A recent survey also reported that although most community members had heard about the Heimlich Maneuver, only a minority were able to perform it correctly because few had participated in hands-on training. Practical education through community simulation was therefore recommended to improve emergency preparedness and increase the likelihood of appropriate bystander intervention during choking events. This study has several limitations. First, it involved a relatively small number of respondents from a single village, limiting the generalizability of the findings. Second, participants had no previous exposure to Heimlich Maneuver training, which may have contributed to the uniformly low baseline ability. Finally, the study evaluated participants immediately after the educational intervention; therefore, long-term retention of practical skills was not assessed.

The findings emphasize the importance of implementing simulation-based education to improve community preparedness in managing choking emergencies. Practical training should be integrated into community health promotion programs, particularly for housewives who are often the first responders in household emergencies. Collaboration between community health centers, nursing institutions, and local governments could facilitate regular first-aid simulation programs to improve public emergency preparedness. Future studies are recommended to include larger and more diverse populations, assess long-term skill retention, compare simulation with other educational methods such as video-assisted learning or blended learning, and examine the influence of health literacy, self-efficacy, and previous caregiving experience on the acquisition of first-aid skills. Such investigations will provide stronger evidence regarding the most effective educational strategies for improving community competence in managing choking emergencies.

2. Respondents' Proficiency After Receiving Education Via The Heimlich Maneuver Simulation Method (Post-Test)

After receiving simulation-based Heimlich Maneuver education, 15 of the 34 respondents (44.1%) were categorized as capable of performing the procedure, while 19 respondents (55.9%) remained in the incapable category. These findings indicate that simulation-based education improved participants' practical ability, although not all respondents achieved competency after a single educational session. The improvement suggests that direct practice and demonstration play an important role in developing first-aid skills for choking emergencies. Simulation-based learning enables participants to repeatedly observe, imitate, and perform emergency procedures in a safe environment, allowing them to develop psychomotor skills while receiving immediate feedback from instructors. According to the Healthcare Simulation Standards of Best Practice developed by the International Nursing Association for Clinical Simulation and Learning (INACSL), simulation facilitates experiential learning by integrating cognitive, psychomotor, and affective domains, thereby improving learners' competence and

confidence in performing clinical procedures (INACSL Standards Committee, 2021; Watts et al., 2021).

The findings are consistent with Fitriana et al. (2024), who reported that simulation-based Heimlich Maneuver education significantly improved participants' knowledge and practical skills in managing choking emergencies. Similar findings were reported by Avau et al. (2022), who demonstrated that simulation-based first-aid education significantly enhances practical performance, self-efficacy, and knowledge retention compared with conventional educational approaches. Through simulation, participants actively engage in performing each procedural step rather than merely observing demonstrations, enabling them to integrate theoretical knowledge with practical application. Immediate feedback provided during simulation also helps participants identify procedural errors, refine their techniques, and strengthen motor memory, thereby improving the likelihood of performing appropriate first aid during real choking emergencies. These findings support the growing evidence that active learning strategies are more effective than passive educational methods for developing emergency response competencies.

Although respondents' abilities improved after the intervention, more than half remained unable to perform the Heimlich Maneuver correctly. This may be related to differences in educational background, learning pace, previous experience, and the limited duration of the simulation. Individuals with lower educational attainment or no previous exposure to first-aid training generally require repeated practice to achieve competency in psychomotor skills. Furthermore, one educational session may be insufficient for participants to master every step of the Heimlich Maneuver, particularly when the skill involves coordinated hand placement, body positioning, and compression techniques. Recent studies have suggested that repeated simulation sessions, refresher training, and continuous practice substantially improve skill retention and long-term competency in emergency procedures (Sihvo et al., 2022; Ko et al., 2023). In addition, this study evaluated participants immediately after the intervention; therefore, long-term retention of competency could not be determined. Future studies should assess participants several weeks or months after simulation-based education to determine whether repeated training produces sustained improvements in practical skills.

3. The Effect Of Education Using The Simulation Method On The Ability To Perform The Heimlich Maneuver.

The study results indicate that prior to receiving education via the simulation method, 100% of the respondents were unable to perform the Heimlich maneuver. Following the intervention, an improvement in capability was observed, with 15 respondents (44.1%) becoming able to perform the maneuver. This study supports research by Hanifah (2025), which demonstrated that teaching mothers how to perform the Heimlich maneuver significantly enhances their knowledge and skills. The findings lead to the conclusion that education combined with practical application is an effective method for improving the community's ability to perform the Heimlich maneuver.

According to Edgar Dale's "Cone of Experience" theory, simulation is a learning method involving direct experience ("learning by doing"); this allows learners to understand, retain, and master skills more effectively than through verbal explanations

alone. The researchers believe that the improvement in respondents' abilities occurred because the simulation method provided an opportunity to directly execute each stage of the Heimlich maneuver. Through this practice, respondents not only grasped the theoretical concepts but also gained real-world experience in administering first aid. Education combined with Heimlich maneuver simulation has proven effective in enhancing first-aid knowledge and skills for choking incidents. Through simulation techniques, participants move beyond theoretical material to witness the procedure in action and gain the opportunity to physically perform each step using training aids. Consequently, simulation-based Heimlich maneuver education serves as an effective alternative for reducing the prevalence of the inability to manage choking emergencies.

The study results demonstrate that simulation-based education effectively improves the ability of housewives to perform the Heimlich maneuver; however, 19 respondents (55.9%) remained unable to perform the procedure correctly. Table 4.1 shows that the majority of respondents (16 or 47.1%) had an elementary school education level; notably, one respondent was 67 years old, and 100% of the housewives in Karanganyar Village had never previously received information regarding the management of digestive disorders. This is further evidenced by a lack of prior experience with first aid for choking. Although the researcher provided explanatory material, demonstrated each procedural step, supervised the practice sessions, and gave all respondents the opportunity to practice according to the Standard Operating Procedure (SOP), it is suspected that these factors contributed to the fact that the improvement in skills among some respondents did not reach optimal levels.

CONCLUSION

Based on the research findings regarding the impact of education using the simulation method on the ability of housewives in Karanganyar Village, Ambulu District, Jember Regency, to perform the Heimlich maneuver, it can be concluded that:

1. Prior to receiving education via the simulation method (pre-test), all respondents (34 respondents or 100%) fell into the category of being unable to perform the Heimlich maneuver according to Standard Operating Procedures (SOP); no respondents fell into the category of being able to perform it.
2. Following the education provided via the simulation method (post-test), the housewives' abilities improved: 15 respondents (44.1%) were in the category of being able to perform the maneuver, while 19 respondents (55.9%) remained in the category of being unable to perform the Heimlich maneuver according to SOP.
3. There is a significant influence of education using the simulation method on the ability of housewives in Karanganyar Village, Ambulu District, Jember Regency, to perform the Heimlich maneuver. Through the simulation method, participants not only received theoretical information but also observed the practical application and had the opportunity to demonstrate each step of the procedure firsthand using training aids. Therefore, education on the Heimlich maneuver using the simulation method can serve as an effective alternative for reducing the rate of inability to handle choking incidents.

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