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Effectiveness Of Obstetric Neonatal Emergency Preparedness Training (PPGD-ON) On Midwives' Skills At Community Health Centers

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Abstract

Background : Obstetric and neonatal emergencies require rapid , accurate , and standardized management to prevent maternal and neonatal morbidity and mortality . Midwives , as frontline healthcare providers in primary care settings , play an important role in recognizing emergency signs , providing initial management , stabilizing patients , and facilitating timely referral . Obstetrics and Neonatal Emergency Management Training (PPGD-ON) is an important strategy to improve midwives ' competencies and practical skills in managing emergency situations. Objective : To analyze the effectiveness of PPGD-ON training on the skills of midwives at a Primary Health Center. Methods : This study employed a quasi-experimental one-group pretest – posttest design . The sample consisted of 30 midwives selected using total sampling. Midwives ' skills were assessed before and after the training using an observational checklist for obstetric and neonatal emergency management . The two-day training consisted of theoretical sessions , discussions , demonstrations , and practical simulations . Data were analyzed using the paired t- test with a significance level of 0.05. Results : The mean skills score increased from 61.87 ± 8.24 before the training to 82.63 ± 6.71 after the training . The paired t- test demonstrated statistically significant difference between pre-training and post-training skills scores ($p < 0.001$). Conclusion : PPGD-ON training was effective in improving midwives ' skills in managing obstetric and neonatal emergencies . Regular competency-based training is recommended to maintain and improve midwives ' emergency management skills in primary healthcare settings

Keywords : PPGD-ON, Midwives' Skills, Community Health Centers

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1. Introduction

Emergencies are a critical issue in maternal and child health care. Emergencies can occur suddenly during pregnancy, childbirth, the postpartum period, and the neonatal period. Delays in recognizing emergencies and providing appropriate treatment can increase the risk of serious complications and even death for both mother and baby. Therefore, the ability of health workers to provide early detection, initial care, stabilization, and referral is a crucial component in improving the quality of maternal and neonatal health services.

Midwives are healthcare professionals who play a strategic role in maternal and child health services, particularly at the primary care level. Midwives are often the first healthcare professionals to encounter pregnant women, women in labor, postpartum mothers, and newborns experiencing complications. In these situations, midwives are required to possess adequate skills to conduct initial assessments, recognize danger signs, provide care according to authority and service standards, and make timely referrals.

Skills in emergency management are not solely determined by theoretical knowledge. The ability to systematically perform actions requires repeated practice and practical experience. Midwives who possess knowledge but lack the opportunity to practice through simulations may struggle when faced with emergency situations requiring rapid decision-making.

Obstetric and Neonatal Emergency Management Training (PPGD-ON) is a form of competency development for healthcare workers aimed at improving their ability to respond to maternal and neonatal emergencies. Training materials can include introduction to emergencies, patient assessment, first aid, management of bleeding, hypertension in pregnancy, labor emergencies, neonatal resuscitation, patient stabilization, team communication, and referral systems.

This training method, which combines theoretical learning with demonstrations and simulations, allows participants not only to understand concepts but also to practice skills directly. Simulations provide participants with the opportunity to perform actions in situations that mimic real-life situations, thereby improving preparedness, confidence, coordination, and accuracy in carrying out emergency procedures.

Improving midwives' competency in handling obstetric and neonatal emergencies is increasingly important because primary health care is the first step in the maternal and neonatal health care system. The ability of primary care workers to provide initial care and make rapid referrals can contribute to the safety of mothers and babies.





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emergency training has been widely conducted, evaluating its effectiveness in improving the practical skills of healthcare workers remains necessary. Measuring skills before and after training can provide insight into changes in participants' abilities following the training intervention.

Based on this description, this study aims to determine the effectiveness of PPGD-ON training on the skills of midwives at Community Health Centers. The results are expected to provide input for maternal and child health program managers in designing sustainable, competency-based training to improve midwives' preparedness in dealing with obstetric and neonatal emergencies.

2. Research Methods

This study employed a quantitative research approach using a quasi-experimental design with a one-group pretest–posttest approach to determine the effectiveness of Obstetric and Neonatal Emergency Management (PPGD-ON) training in improving midwives' skills. Skills were assessed twice, before the training (pretest) and after the training (posttest), with all respondents receiving the PPGD-ON training intervention. The research design was represented as $O_1 \rightarrow X \rightarrow O_2$, where O_1 represented the measurement of skills before training, X represented the PPGD-ON training intervention, and O_2 represented the measurement of skills after training.

The research was conducted at a Community Health Center (Puskesmas), which was selected because it is a first-level healthcare facility providing maternal and neonatal health services and requiring healthcare workers to be prepared to manage emergency situations. The research was conducted from January to March 2026, including the preparation stage, pretest, training implementation, posttest, data processing, and analysis of the research findings.

The population consisted of all midwives working at Community Health Center X who were involved in maternal and child health services, totaling 30 midwives. Because the population was relatively small, the entire population was included as the research sample using a total sampling technique, resulting in 30 respondents. The inclusion criteria were midwives working at the Community Health Center, being involved in maternal and neonatal health services, being willing to participate in the entire research process, completing the PPGD-ON training, and providing informed consent.

The exclusion criteria included midwives who were on leave during the research period, unable to attend the training in full, did not complete either the pretest or posttest assessment, or withdrew from the study. The independent variable was PPGD-ON training,





while the dependent variable was midwives' skills in managing obstetric and neonatal emergencies. PPGD-ON training was defined as structured training providing theoretical knowledge and practical skills related to obstetric and neonatal emergency management through modules, presentations, demonstrations, and simulation tools, while midwives' skills were defined as their ability to perform emergency obstetric and neonatal care according to established procedures. Skills were assessed using an observation sheet or skills checklist and converted into scores ranging from 0 to 100, with scores of 76–100 categorized as good, 56–75 as moderate, and ≤ 55 as poor.

The research instruments consisted of a respondent characteristics form and a skills observation sheet. The respondent characteristics form collected information regarding age, educational background, years of service, employment status, and previous experience in emergency training. The skills observation sheet assessed participants' ability to perform procedures in several obstetric and neonatal emergency scenarios, including initial assessment and identification of emergency signs, communication and activation of assistance, maternal assessment, initial management of obstetric emergencies, prevention and management of bleeding according to professional authority, initial management of hypertension in pregnancy according to established procedures, newborn assessment, standard initial neonatal resuscitation, patient stabilization before referral, and communication and documentation of the referral process. Each action was scored according to the accuracy of implementation, and the final score was converted to a scale of 0–100.

The PPGD-ON training was conducted over two days with approximately 12 hours of total learning time using interactive lectures, discussions, demonstrations, case simulations, practical skills sessions, and skills evaluations. The training materials included an introduction to obstetric and neonatal emergencies, initial patient assessment, management of maternal emergencies, patient stabilization, neonatal emergencies, neonatal resuscitation, team communication, and referral systems. Practical sessions were conducted using simulation equipment to allow participants to perform procedures directly in scenarios resembling actual healthcare service conditions. The research procedures consisted of a preparation stage, pretest stage, intervention stage, posttest stage, and data processing and analysis stage.

During the preparation stage, the researchers conducted a preliminary study, developed research instruments, prepared training materials, determined respondents, and obtained the necessary research permits. Before the training, each respondent underwent a skills assessment using a predetermined emergency scenario, and the resulting score was





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recorded as the pretest score. Respondents then participated in the two-day PPGD-ON training, which included theoretical materials, demonstrations, discussions, and simulation practices. After completion of the training, the respondents' skills were reassessed using the observation sheet with an equivalent emergency scenario, and the resulting score was recorded as the posttest score. Primary data were obtained directly from respondents through skills assessments conducted before and after the training, while secondary data were obtained from Community Health Center documentation concerning the number of midwives, characteristics of health workers, and maternal and neonatal health services. Before use, the skills observation sheet underwent content validity assessment by experts with competence in obstetric and neonatal emergency management, while reliability testing was conducted to ensure consistency of assessment.

The instrument was considered suitable for measuring midwives' skills after meeting the established reliability criteria. Data analysis included univariate and bivariate analyses. Univariate analysis was used to describe respondent characteristics and the distribution of skill scores before and after training using frequency, percentage, mean, standard deviation, minimum, and maximum values. Normality was assessed using the Shapiro–Wilk test because the number of respondents was less than 50. Data were considered normally distributed when the p-value was greater than 0.05. Bivariate analysis was performed to compare midwives' skill scores before and after training. When the data were normally distributed, a paired t-test was used, whereas the Wilcoxon Signed Rank Test was applied when the data were not normally distributed. Statistical significance was determined at $\alpha = 0.05$, with $p < 0.05$ indicating a statistically significant difference and $p \geq 0.05$ indicating no statistically significant difference.

The research was conducted in accordance with health research ethics principles. Before participation, respondents received an explanation regarding the purpose, benefits, procedures, and their right to refuse or withdraw from the study at any time. Respondents who agreed to participate provided informed consent. Confidentiality was maintained by assigning research codes and excluding respondents' names from the research report. The study also applied the principles of respect for persons by respecting respondents' rights and autonomy, beneficence by providing potential benefits through improved emergency management skills, non-maleficence by minimizing risks during the training process, and justice by ensuring fair treatment for all respondents.





3. Research Results And Discussion

1. Research result

a. Respondent Characteristics

This study involved 30 midwives working at Community Health Centers (Puskesmas). Respondent characteristics included age, education, length of service, and previous experience with emergency training.

Table 1. Respondent Characteristics (n = 30)

Characteristics	n	%
Age		
20–29 years	7	23.3
30–39 years	14	46.7
40–49 years	7	23.3
≥50 years	2	6.7
Education		
Diploma III in Midwifery	18	60.0
Diploma IV/Bachelor of Midwifery	8	26.7
Midwife Profession	4	13.3
Years of service		
<5 years	6	20.0
5–10 years	13	43.3
>10 years	11	36.7
Have attended emergency training		
Yes	11	36.7
No	19	63.3

Based on Table 1, the majority of respondents were aged 30–39 years (14 people) (46.7%). Based on education, the majority of respondents had a Diploma III in Midwifery (18 people) (60.0%). Based on length of service, the majority had worked for 5–10 years (13 people) (43.3%). A total of 19 respondents (63.3%) had never attended emergency training before.

b. Distribution of Midwives' Skills Before Training

Table 2. Midwives' Skill Level Before PPGD-ON Training

Skill Level	n	%
Good	5	16.7
Enough	15	50.0
Not enough	10	33.3
Total	30	100





Before receiving PPGD-ON training, most midwives (15) had adequate skills, with 10 (33.3%) having poor skills, and only 5 (16.7%) having good skills.

This condition shows that there are still midwives who need to improve their skills in handling obstetric and neonatal emergencies .

c. Distribution of Midwives' Skills After Training

Table 3. Skill Level of Midwives After PPGD-ON Training

Skill Level	n	%
Good	25	83.3
Enough	5	16.7
Not enough	0	0
Total	30	100

After receiving PPGD-ON training, midwives' skills improved. Twenty-five (83.3%) had good skills, while five (16.7%) had adequate skills. There were no further respondents with poor skills.

These results show positive changes in midwives' skills after receiving training.

d. Comparison of Skill Scores Before and After Training

Table 4. Average Midwife Skill Score Before and After Training

Measurement	Mean	Elementary School	Minimum	Maximum
Pretest	61.87	8.24	45	75
Posttest	82.63	6.71	68	95
Improvement	20.76			

The average skill score increased from 61.87 before training to 82.63 after training, a 20.76-point increase in the average score .

e. Normality Test

Table 5. Normality Test Results Shapiro – Wilk

Variables	Statistics	p- value
Pretest score	0.958	0.271
Posttest score	0.967	0.455

The Shapiro – Wilk test results showed a p-value of 0.271 for the pretest and 0.455 for the posttest . Both values are greater than 0.05, indicating a normal distribution of the data .





Based on these results, analysis of differences in skill scores before and after training was carried out using a paired t- test .

f. Analysis of the Effect of PPGD-ON Training on Midwives' Skills
Paired t- test results

Measurement	Mean $\pm$ SD	Mean Difference	t	p- value
Pretest	61.87 $\pm$ 8.24			
Posttest	82.63 $\pm$ 6.71	20.76	14.32	<0.001

The results of the paired t- test showed a p-value <0.001 , so there was a significant difference between the skills of midwives before and after receiving PPGD-ON training.

PPGD-ON training effectively improves midwives' skills in handling obstetric and neonatal emergencies .

2. Discussion

a. Midwife Skills Before PPGD-ON Training

The results showed that before training, most midwives had sufficient skills, and one-third of respondents had insufficient skills. The average skill score before the intervention was 61.87.

This situation demonstrates that experience working as a midwife does not necessarily guarantee optimal emergency skills . Certain skills require specific and repeated training because emergency management requires speed, accuracy, coordination, and the ability to make decisions quickly.

Most respondents in this study had never received emergency training before. This could be a contributing factor to their low skill levels before the intervention. Skills that are rarely used or not updated through training are more likely to deteriorate.

neonatal emergencies do not always occur with the same frequency in every healthcare facility. Therefore, healthcare workers require regular training and simulations to maintain readiness for these rare but high-risk situations.



**b. Midwife Skills After PPGD-ON Training**

After receiving PPGD-ON training, there was a significant improvement in skills. The average score increased from 61.87 to 82.63. The number of midwives with good skills increased from 5 to 25.

There were no longer any respondents in the low-skills category after the training. These findings indicate that the combination of theoretical materials, demonstrations, discussions, and simulations provided midwives with the opportunity to understand and practice emergency procedures.

Simulation methods allow participants to encounter scenarios that mimic real-life situations without endangering patients. Participants can repeat actions, receive feedback from instructors, and correct mistakes throughout the learning process.

Skill improvement can also be influenced by learning methods that actively engage participants. Learning solely focused on theory can increase knowledge, but it may not necessarily result in optimal practical skills. Conversely, a combination of theory and practice allows participants to integrate knowledge with motor skills and decision-making.

c. Effectiveness of PPGD-ON Training on Midwives' Skills

The results of the paired t- test showed a p-value <0.001 , indicating a significant difference between skills before and after training. The average score increase of 20.76 points indicates that the training positively impacted midwives' abilities.

These results support the concept that competency-based training can improve healthcare workers' abilities to respond to emergencies . The training not only provides new information but also provides opportunities to practice procedures directly.

Skills in managing obstetric and neonatal emergencies require the ability to perform rapid assessments, prioritize actions, provide initial care, stabilize patients, work in a team, and determine referral needs. These skills are more easily developed through structured training and simulations than through theoretical learning alone.

Training can also boost the confidence of healthcare workers. When midwives have the opportunity to practice in a safe environment, they can develop more systematic responses when faced with emergency scenarios .





This confidence must be accompanied by adherence to standard operating procedures and professional authority.

d. Implications for Health Services

Improving midwives' skills has important implications for the quality of maternal and neonatal care at the community health center (Puskesmas) level. Skilled midwives are expected to be able to recognize emergencies early, provide initial care according to their competence, stabilize patients, and prepare for appropriate referrals.

PPGD-ON training should not be conducted only once. Emergency competency requires maintenance through *refresher training* , periodic simulations, skills evaluations, and case-based learning.

Successful emergency management is not solely determined by the abilities of individual midwives. The availability of equipment, medications, communication systems, referral transportation readiness, team support, and an integrated service system are also crucial components.

Improving midwife competency through PPGD-ON needs to be accompanied by strengthening the emergency system at Community Health Centers so that the skills acquired can be optimally applied in real services.

4. CONCLUSION AND SUGGESTIONS

a. Conclusion

Based on the results of research on the effectiveness of Obstetric and Neonatal Emergency Management Training (PPGD-ON) on the skills of midwives at Community Health Centers, it can be concluded that there is an increase in midwives' skills after being given training.

The average midwife skill score increased from 61.87 ± 8.24 before training to 82.63 ± 6.71 after training, with an average increase of 20.76 points . The results of the Paired t- test showed a p value <0.001 , so there was a significant difference between midwife skills before and after participating in PPGD-ON training.

Training that combines theory, discussion, demonstration, and simulation can improve midwives' practical skills in recognizing and managing obstetric and neonatal emergencies . Therefore, PPGD-ON training can be a strategy for improving midwife competency in primary healthcare.





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**b. Suggestion**

Community Health Centers are encouraged to conduct regular obstetric and neonatal emergency training, routine simulations, and periodic skills evaluations, while strengthening the availability of emergency equipment and referral systems to support the optimal application of midwives' competencies. Midwives are expected to continuously improve their competencies through refresher training, simulation practice, independent learning, and regular skills assessments, while consistently implementing emergency management procedures in accordance with applicable standards, professional competencies, and scope of practice.

The Health Department is expected to support health worker competency development by organizing standardized emergency training, ensuring equitable access to training opportunities, and conducting regular monitoring and evaluation of midwives' competencies in primary healthcare facilities. Educational institutions are encouraged to strengthen emergency learning through simulation-based education and case scenarios to better prepare graduates for emergency situations. Further researchers are recommended to use research designs involving control groups, larger sample sizes, and longer follow-up periods to assess the sustainability of midwives' skills several months after training.

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