Effect of midwife competence training in primary healthcare facilities on obstetric risk early detection

Ai Nur Zannah, Yuningsih Yuningsih,[1] Asri Iman Sari,[1] Eka Afdi Septiyono[2]

[1]Department of Midwifery, Faculty of Health Science, Universitas Dr. Soebandi, Jember; [2]Department of Maternity Nursing, Faculty of Nursing, Universitas Jember, Indonesia

Abstract

Early detection of obstetric risk is the main competence of midwives to anticipate the mother's inability to adapt during pregnancy. The early detection competence of midwives determines the success of obstetric risk management, preventing pain and even death of mothers and babies. This study aimed to analyze the effect of obstetric risk early detection training on improving the competence of midwives in basic health care facilities. The study employed a quasi-experimental pre-posttest design with a control group. The samples were selected based on inclusion criteria, encompassing independent practice midwives and public health center midwives. The study comprised 27 midwives in the treatment group and 27 in the control group. The determination of and control groups was conducted through simple random sampling. Data analysis involved the use of Mann-Whitney and T-tests. The results indicated a significant difference in the increase in midwife competence within the treatment group post-training ($p<0.001$), with a notable improvement of 34.5%, compared to a 14.53% rise in midwife competence within the control group after reading the training module. Although a slight decrease in competence was observed after 2-4 weeks of training, the posttest values remained considerably higher than the pretest values. These findings underscore the impact of training on midwife competence, emphasizing the continual need for midwives to enhance their skills to elevate the health outcomes for the mothers and children under their care.

Correspondence: Ai Nur Zannah, Department of Midwifery, Faculty of Health Science, Universitas dr. Soebandi, Jember, Indonesia.
E-mail: ainz@uds.ac.id

Key words: competence, early detection, midwife, training.

Contributions: ANZ, conceptualization, data curation, formal analysis, methodology, validation, visualization, writing – original draft, review and editing; YY, conceptualization, investigation, methodology, validation, and writing – original draft, review and editing; AIS, conceptualization, methodology, formal analysis, validation, and writing – original draft, review and editing. All the authors have read and approved the final version of the manuscript and agreed to be held accountable for all aspects of the work.

Funding: none.

Conflict of interest: the authors declare no potential conflict of interest.

Ethics approval and consent to participate: the research has received ethical approval from the Health Research Ethics Commission, Faculty of Health Science, Universitas dr. Soebandi, based on ethical certificate No.244/KEPK/UDS/VI/2022. During the research, the researcher pays attention to the ethical principles of information to consent, respect for human rights, beneficence and non-maleficence.

Patient consent for publication: written informed consent was obtained for anonymized patient information to be published in this article.

Availability of data and materials: all data generated or analyzed during this study are included in this published article.

Acknowledgements: the authors would like to thank Universitas Dr. Soebandi for their valuable insights and contributions to this study.

Received: 11 September 2023.
Accepted: 20 December 2023.
Early access: 30 January 2023.

Healthcare in Low-resource Settings 2024; 12:11767
doi:10.4081/hls.2024.11767

Introduction

Obstetric risk is psychological or physical abnormalities and pregnancy difficulties that may worsen maternal and neonatal outcomes.[1] The World Health Organization (WHO) defines risk factors as traits or circumstances of an individual associated with a higher probability of developing or going through a serious condition likely to result in mortality.[2] Midwives, one of the key players in fundamental maternal health services, especially obstetric care services, must have promotional and preventive competencies that also involve family members, the community, and advocacy to increase appropriate referrals and prevent delays that lead to Maternal Mortality Rate (MMR).[3] This is in addition to foster visits by trained Community Health Workers (CHWs) to the mother's home.[4,5]

Every year, an additional 10,000 pregnant women at high risk for complications are born, and the primary complications (postpartum hemorrhage, infections, pre-eclampsia, and eclampsia) contribute to approximately 75% of all maternal deaths.[6] Despite addressing a broader spectrum of issues in Indonesia, the rates of maternal morbidity and mortality have not seen a proportional decrease. The Maternal Mortality Rate in Indonesia has not yet reached the target of 183 per 100,000 live birth by 2024; currently, it stands at 305 per 100,000 live births.[7-10] This situation is purportedly due to limitations in the knowledge, attitudes, and skills of health professionals, particularly midwives, in managing early dangers for pregnant women at risk of obstetrics, including early detection.[11-13]

Early detection is a proactive process that utilizes screening instruments such as the Poedji Rochjati Score Card (KSPR) and the Pregnancy Assessment Monitoring System (PRAMS). Currently, the Maternal and Child Health (MCH) handbook is also employed to identify risk factors that may not have manifested

symptoms or complaints. This process involves the active participation of pregnant women, their husbands, families, as well as trained health and non-health workers, including traffickers, cadres, and cadets. The early detection operations are conducted meticulously, methodically, and repeatedly until reaching the delivery stage.[14,15] There is a need for efforts to enhance the competence of midwives, and one effective avenue is through training. Training represents a systematic effort to enhance knowledge, skills, and work attitudes through a structured learning process, with evaluations measuring progress towards the expected changes in performance behavior.[16-18] This study aimed to analyze the effect of early detection training on the risk of obstetrics on improving the competence (knowledge and skills in early obstetric risk detection) of midwives in primary health care facilities.

Materials and Methods

This study used a quasi-experimental design pretest–posttest with a control group. The assessment was conducted thrice, utilizing the observational method and questionnaire completion throughout 2022. The pretest was administered at the commencement of the intervention, posttest 1 immediately followed the conclusion of the intervention, and posttest 2 was conducted four weeks after posttest 1. The study included 27 midwives in both the treatment and control groups. The control group consisted of respondents who read and recalled the guidebook or training module attended, focusing on obstetrics, such as normal delivery care training, midwifery update, and Obstetric and Neonatal Emergency First Aid Training. The selection of midwives in both groups was accomplished through simple random sampling from those working in healthcare facilities meeting specific inclusion criteria: possessing a minimum midwifery with diploma degree, holding a valid license to practice as a midwife, having three years of work experience, and demonstrating the capacity to assist with five births per month. The data were initially analyzed using primary data collected through knowledge surveys and skill observations in early obstetric risk detection conducted over four weeks as part of midwives' competency tests for obstetric risk early detection.[11] The assessment of the data involved utilizing statistical methods such as the Mann-Whitney test, T-test, and Wilcoxon test. The Jember District Health Office granted approval for the study to proceed, ensuring adherence to research ethics principles. The Faculty of Health Sciences, Universitas Dr. Soebandi, issued a research permit after completion of the review by the health research ethics committee (No. 244/KEPK/UDS/VI/2022). Throughout the research process, the researcher maintained a commitment to ethical principles, including informed consent, respect for human rights, and considerations of beneficence and non-maleficence.

Results

The research respondents comprised individuals with varying characteristics, including age (67% aged ≥35 years), education (52% with a D4 degree), and work experience (74% with ≥10 years of experience). Regarding midwife competence, which involved knowledge and skills in early obstetric risk detection, there was no significant difference observed between the treatment and control groups (p>0.05), allowing for a meaningful comparison of all respondents. Table 1 served as an illustrative example of this. Table 2 indicates that there was a significant improvement (p<0.001) in the knowledge and skills of midwives in the early detection of obstetric risk within the treatment group, with a much

Table 1. Midwives' competence (knowledge and skills) in identifying obstetric risk before training.

Variable midwife competence	Category		p
	Treatment	Control	
Knowledge			0.419**
x̄(SD)	67.83 (10.5)	65.5 (11.7)	
Median	70	65	
Range	40-85	45-85	
Skills			0.458*
x̄(SD)	73.17 (6.2)	73.33 (5.5)	
Median	76	71	
Range	57-81	62-86	

*Mann Whitney test; **unpaired t test.

Table 2. Midwives' competence (knowledge and skills) in identifying obstetric risk before-after training.

Variable midwife competence	Category				p
	Treatment		Control		
	Pretest	Posttest	Pretest	Posttest	
Knowledge					<0.001*
x̄(SD)	67.83 (10.5)	86.83 (4.2)	65.5 (11.7)	73-83 (8.6)	
Median	70	85	65	70	
Range	40-85	80-95	45-85	55-90	
Increase (%)	31.06	14.53	<0.001*		
Skills					<0.001*
x̄(SD)	73.17 (6.2)	97.78 (3,9)	73.33(5.5)	76.67 (9.8)	
Median	76	100	71	71	
Range	57-81	86-100	62-86	67-100	
Increase (%)	34.59	4.46	<0.001*		

*Mann Whitney test.

higher increase (34.59%) compared to the control group (4.46%). This midwife competency posttest measurement represents the final posttest (posttest 2, measured 2-4 weeks after training), following the earlier completion of posttest 1 (measured shortly after training) between the treatment and control groups, as illustrated in Table 3.

Table 3 demonstrated a decrease in midwife competence in measurements taken 4 weeks after training in both the treatment and control groups, with insignificant differences ($p > 0.005$). This decline can be attributed to the passage of time, reflecting changes in the behavior of some individual midwives regarding the competencies learned during training and their application in the workplace (beyond the classroom setting).

Discussion

The results revealed a significant improvement in midwife competence before and after training, indicating an increase of 34.59%. Competence, encompassing cognitive/knowledge, affective/attitude, and psychomotor/skill abilities, is a trait possessed by individuals within their respective professions.[19] Training emerges as one of the most effective strategies for enhancing competence, with 40% of these acquired competencies being applied in the workplace, 25% lasting for six months, and only 15% enduring for up to a year.[20] In this study, competence was derived from a combination of knowledge and skills acquired in the early detection of obstetric risk.

Midwives' knowledge in the early detection of obstetric risk exhibited a significant difference before and after training, with a percentage increase of 31%. Similarly, in the control group, who read the module and recalled the training that had been conducted, there was an increase in knowledge by 14.5%. Knowledge, a cognitive dimension of competence, involves understanding theories comprising facts or procedures related to intellectual abilities such as memory and problem-solving. This dimension can influence the mindset and understanding of the information received.[21,22] Midwives can enhance their knowledge through the educational process, participation in training, conferences, and seminars, as well as reading and studying journals, materials, books, and explanations from other professionals.

Skill assessment is conducted through direct observation when midwives perform services, particularly in the early detection of obstetric risk. The results indicated a notable increase of 34.6% in midwife skills after training within the treatment group, contrasting with the control group, which experienced a 4.5% rise. The study's findings, indicating an enhancement in competence post-training, align with previous research. Brief training in health services, including obstetrics, has proven effective in increasing knowledge and skills among healthcare providers working in maternity wards in sub-Saharan Africa and Asia.[23] Public health center midwives, village midwives, and independent practice midwives, who implement basic health service facilities, are required to be skilled in delivering midwifery care as per their authority.

Midwives are considered competent when their knowledge scores reach 80 or above, and clinical skill scores are at 100. The competence of the control group increased by 7% when it read the module but did not participate in training at that time. Respondents retained what they learned from the module and remembered the training they had received.[24] Additionally, respondents had consistently applied this competency since the beginning, and prior research has indicated that frequent use enhances a person's competence. The training, which covers Normal Delivery Care (APN), Contraceptive Technology Up to Date (CTU), and Midwifery Update (MU), is mandatory for midwives to carry out midwifery services.

Competence in the early detection of obstetric risks is not only the procedure of upbringing during early detection of risk but also knowledge, communication, and skills before and after the early detection. The results of observations of communication and clinical skills of midwives in the early detection of obstetric risks before training are still not following Standard Operating Procedures (SOPs). There is no preparation of counseling/communication information materials at the beginning and end of care related to screening/early detection of red flags, lack of maintaining client privacy and principles of infection prevention during care, skills to explore problems and complaints in anamnesis, as well as active listening and helping clients make informed decisions.[25,26] However, the lack of such skills after training improves according to SOPs.

The results also showed that some midwives' competence declined after 2-4 weeks, particularly in knowledge from both the treatment and control groups, with no discernible differences. The deterioration is brought on by time, modifications in certain midwives' behavior, and the competencies they picked up outside of the classroom while training.[24] Additionally, where there is no

Table 3. Midwives' competence (knowledge and skills) in identifying obstetric risk before-after training.

Variable midwife competence	Category					
	Treatment			Control		
	Pretest	Posttest 1	Posttest 2	Pretest	Posttest 1	Posttest 2
Knowledge						
x̄(SD)	67.83 (10.5)	88.17 (4.8)	86.83 (4.2)	65.5(11.7)	74.67 (8.9)	73.83 (8.6)
Median	70	90	85	65	70	70
Range	40-85	80-95	80-95	45-85	55-90	55-90
p	<0.001**	0.011**	<0.001**	<0.001**	0.096*	<0.001**
Skills						
x̄(SD)	73.17 (6.2)	97.62 (4.1)	97.78 (3.9)	73.33 (5.5)	76.83 (9.7)	76.67 (9.8)
Median	76	100	100	71	74	71
Range	57-81	86-100	86-100	62-86	67-100	67-100
p	<0.001**	0.803**	<0.001**	0.017*	0.792*	0.017*

*Paired t test **Wilcoxon test.

compensation, both positive and negative consequences, from professional organizations, the health service, and where midwives work for the professionalism of midwives, a decrease in competence can also be brought on by a lack of motivational reinforcement. Researchers proposed several elements to support the recruitment, retention, and motivation of health workers and enhance the quality of their work: high-quality health facilities, providing adequate training either during their education or after they start working, continuous education, paid vacations, allowances for overtime, proper evaluations of their work, and incentives[27]. However, because researchers and enumerators directly observe skills when midwives provide care to pregnant women, birth mothers, and postpartum mothers, there is a potential for bias in the conducted research.

Conclusions

Midwives demonstrate increased capability in identifying obstetric risks early, with competencies showing the most significant improvement. Within 4 weeks following training, there was a slight drop; however, it was not statistically significant. Consequently, continual education is required to maintain midwives' competence, involving training in obstetrics and communication, which can contribute to enhancing motivation and character.

References

1. Yunitasari E, Matos F, Zulkarnain H, et al. Pregnant woman awareness of obstetric danger signs in developing country: systematic review. BMC Pregnancy Childbirth 2023;23.
2. Council NR. An Update on Research Issues in the Assessment of Birth Settings: Workshop Summary 2013.
3. Makhfudli M, Efendi F, Kurniati A, et al. Staffing characteristics and their associations with the severe maternal outcomes at indonesian tertiary hospitals. Kontakt 2020;22:40-6.
4. Grant M, Wilford A, Haskins L, et al. Trust of community health workers influences the acceptance of community-based maternal and child health services. African J Prim Heal Care Fam Med 2017;9:1-8.
5. Rochjati P. Common obstetric emergency: (Field experiences on community based antenatal risk screening in village level in East Java, Indonesia). Med J Indones 1996;5:65-75.
6. Mboi N, Syailendrawati R, Ostroff SM, et al. The state of health in Indonesia's provinces, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet Glob Heal 2022;10:e1632-45.
7. Kementerian Kesehatan Republik Indonesia. Profil Kesehatan Indonesia Tahun 2021. Jakarta; 2022.
8. Diana S, Wahyuni CU, Prasetyo B. Maternal complications and risk factors for mortality. J Public Health Res 2020;9:195-8.
9. Amalia SR, Lestari P, Ningrum AG. Causative Factor of Delay in Maternal Referral - Systematic Review. Indones Midwifery Heal Sci J 2022;6:1-14.
10. Say L, Chou D, Gemmill A, et al. Global causes of maternal death: a WHO systematic analysis. Lancet Glob Heal 2014;2:e323-33.
11. Zannah AN. Motivation, persuasive communication, and obstetric risk management training to improve midwives professionalism in preventing maternal death. J Kesehat dr Soebandi 2018;6:9-15.
12. Suarilah I, Nihayati HE, Wahyudi AS, et al. Treatment decision-making experience among Indonesian women with obstetrics and gynecology-related cancer. Med Palliat 2023;22:68-76.
13. Syamsuri DD, Tjokroprawiro BA, Kurniawati EM, et al. Simulation-based training using a novel Surabaya hysterectomy mannequin following video demonstration to improve abdominal hysterectomy skills of obstetrics and gynecology residents during the COVID-19 pandemic in Indonesia: a pre- and post-intervention st. J Educ Eval Health Prof 2022;19.
14. Shulman HB, D'Angelo DV, Harrison L, et al. The pregnancy risk assessment monitoring system (PRAMS): overview of design and methodology. Am J Public Health 2018;108:1305-13.
15. Rochjati P. Skrining Antenatal Pada Ibu Hamil (Edisi 2): Pengenalan Faktor Risiko Deteksi Dini Ibu Hamil Risiko Tinggi. Airlangga University Press; 2011.
16. Michie S, Van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implement Sci 2011;6:1-12.
17. Kurniawati EM, Bachtiar CA, Joewono HT, Utomo B. Knowledge and confidence levels improvement among obstetrics residents regarding caesarean section training using video-mannequins combination. Heliyon 2023;9.
18. Motevalli S, Sulaiman T, Ghani Hamzah MS, et al. The Effects of Cognitive Restructuring and Study Skills Training on Test Anxiety and Academic Achievement among University Students. J Institutional Res South East Asia 2022;20:104-54.
19. Astuti VW, Kusumawati W, Afandi M. Kompetensi Pembimbing Klinik dalam Proses Pembelajaran di Klinik. J Penelit Keperawatan 2016;2.
20. Yusof AN. The relationship training transfer between training characteristic, training design and work environment. Hum Resour Manag Res 2012;2:1-8.
21. Winterton J, Delamare-Le Deist F, Stringfellow E. Typology of knowledge, skills and competences: clarification of the concept and prototype, CEDEFOP, Luxembourg, Office for Official Publications of the European Communities; 2013.
22. Gan S-W, Tan J-P, Ang C-S, et al. Examining a Conceptual Model of Maternal and Paternal Warmth, Emotion Regulation and Social Competence among Preadolescent Children in Malaysia. J Genet Psychol 2022;183:312-27.
23. Ameh C, Adegoke A, Hofman J, et al. The impact of emergency obstetric care training in Somaliland, Somalia. Int J Gynecol Obstet 2012;117:283-7.
24. Alnowaiser A. The impact of work environment, individual characteristics, training design and motivation on training transfer to the work: the case of Saudi Arabian Public Security Organisation. University of Westminster; 2017.
25. Ripursari T. Competence (Knowledge, Attitudes and Skills) Midwifeve to Handling of Obstetric Emergency According to Standard Operational Procedures. J Qual Public Heal 2019;3.
26. Zannah AN. Pengaruh Komunikasi Persuasif Bidan terhadap Pengambilan Keputusan Ibu dan Keluarga yang Mengalami Kehamilan Risiko Tinggi. J Med (Media Inf Kesehatan) 2020;7:101-10.
27. Glenton C, Lewin S, Fretheim A, Nabudere H. countries : a qualitative evidence synthesis (Review). Cochrane Database Syst Rev 2017;CD011558.