



The Role of Midwives in Reducing Maternal Mortality Through Community-Based Health Programs

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ABSTRACT

Maternal mortality rate (MMR) is an important indicator in assessing the effectiveness of a country's health system. Despite various efforts, the MMR in Indonesia is still high compared to other countries in Southeast Asia. This study aims to analyze the role of midwives in reducing MMR through community-based health programs. The research method used was a quantitative approach with a pretest-posttest design without a control group. The study sample consisted of 50 pregnant women who were selected by purposive sampling in study area X. The intervention program included maternal health education and counseling by midwives. The results showed a significant increase in pregnant women's understanding of pregnancy health, with an average pretest score of 60.04 and increased to 85.6 at posttest ($p(00.00) < 0.05$). The educational efforts led by midwives have demonstrated effectiveness in enhancing pregnant women's awareness of danger signs during pregnancy, improving nutritional practices, and promoting preparedness for safe childbirth. These outcomes highlight the educational role of midwives as a crucial factor in maternal health interventions, contributing significantly to the reduction of maternal mortality rates (MMR). Strengthening midwives' capacity and ensuring supportive health policies are essential steps toward optimizing their role in education and achieving the Sustainable Development Goals (SDGs) related to maternal health.

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INTRODUCTION

Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) are essential indicators in measuring the effectiveness of maternal and child health programs, where the high rate in Indonesia remains a major concern in national development because it reflects the level of welfare of a nation (Respati et al., 2019). In an effort to reduce these mortality rates, the role of midwives is very crucial, considering that they are health workers who provide midwifery services and care to mothers and babies in various regions, both urban and rural. In addition, midwives have a strategic responsibility to ensure that every mother and baby has an optimal quality of life through a preventive approach to reduce the risk of disease and death (Oruh, 2021).

According to data from the World Health Organization (WHO) in 2018, around 25-50% of maternal deaths are caused by complications associated with pregnancy, childbirth, and the postpartum period. The success of maternal health programs can be evaluated through various indicators, one of which is the Maternal Mortality Rate (MMR). MMR is a ratio that measures the number of maternal deaths during pregnancy, childbirth, or the postpartum period due to factors directly related to these conditions or their management, but does not include deaths caused by external factors such as accidents or injuries, per 100,000 live births (Utami et al., 2020).

Based on data from the World Health Organization (WHO) in 2019, the number of maternal mortality rates (MMR) globally reached 303,000. Meanwhile, in the Association of Southeast Asian Nations (ASEAN) region, the MMR was recorded at 235 per 100,000 live births (ASEAN Secretariat, 2020). In Indonesia, based on data from the Indonesian Demographic and Health Survey (IDHS), the MMR in the 2007-2012 period was recorded at 359 per 100,000 live births, then decreased to 305 per 100,000 live births. In 2019, the number of maternal deaths in Indonesia reached 4,221, equivalent to 422.1 deaths per 100,000 live births (Kemenkes RI, 2019).

Indonesia's maternal mortality rate (MMR) is still the highest in Southeast Asia and far from the Sustainable Development Goals (SDGs) targets of 183 per 100,000 live births by 2024 and less than 70 per 100,000 live births by 2030, emphasizing the need for more strategic and comprehensive initiatives. To achieve these targets, a reduction in MMR of at least 5.5% per year is required. According to Suparman (2020), the main causes of maternal mortality include hypertensive disorders in pregnancy (33.1%), obstetric bleeding (27.03%), non-obstetric problems (15.7%), other obstetric complications (12.04%), pregnancy-related infections (6.06%), and other factors (4.81%) (Suparman, 2020).

Midwives, as the primary health workers in efforts to accelerate the reduction of maternal mortality rate (MMR) and infant mortality rate (IMR), are required to adapt to various changes to ensure that the services provided remain of high quality, optimal, and aligned with the expected goals. With the rapid development in the medical field, midwifery services must also be able to follow and adapt to technological advances and other medical practices to remain relevant and effective in improving the quality of maternal and infant health. Recent studies highlight the importance of integrating digital technologies into midwifery practices. For instance, the utilization of telehealth has been shown to enhance midwifery services, especially during the COVID-19



pandemic, by providing remote consultations and continuous care to pregnant women, thereby maintaining service quality amidst restrictions (Algifnita & Wittiarika, 2022).

Midwives play a strategic role in reducing MMR and IMR through the provision of sustainable services that emphasize prevention. This is realized through the provision of health education, counseling, and health promotion, as well as handling quality normal childbirth. In addition, midwives also implement the principles of partnership and empowerment of women, and conduct early detection of cases that require referral to ensure timely treatment (Kemenkes, 2024).

Quality midwifery services are services that are in accordance with professional standards, midwives' code of ethics, and supported by strong interpersonal relationships. As the main health worker in accelerating the reduction of maternal mortality rate (MMR) and newborn infant mortality rate (IMR), midwives are required to adapt to various changes to ensure optimal service and achieve the expected goals. Along with the rapid development in the medical field, midwifery services must also be able to adjust and keep pace with advances in medical and other health services to remain relevant and effective (Natasha & Niara, 2020).

Although there have been many studies on efforts to reduce MMR, there are still gaps in the effectiveness of maternal health program implementation. Several studies have highlighted the importance of the involvement of health workers, especially midwives, in early detection of pregnancy risks and ensuring delivery readiness. However, there are still many challenges in implementing these programs, including lack of access to adequate health facilities and limitations in health education for pregnant women. Recent research by Orwa et al. (2020) has demonstrated that Birth Preparedness and Complication Readiness (BPCR) remains an effective strategy in reducing maternal mortality. This program highlights the critical role of trained midwives in assisting childbirth and educating pregnant women about danger signs during pregnancy and the availability of emergency obstetric services.

Based on the identification of these gaps, this study aims to analyze the factors that influence the high Maternal Mortality Ratio (MMR) in Indonesia and explore the role of midwives in reducing maternal mortality. A significant contributing factor to the high MMR is the low level of maternal health literacy among pregnant women, which impedes timely health-seeking behavior. A qualitative study by Putri et al. (2023) revealed that many pregnant women in Indonesia have limited ability to comprehend and apply health-related information, leading to delays in recognizing danger signs during pregnancy and seeking appropriate care. Furthermore, emphasized that enhancing maternal health literacy is crucial in efforts to reduce maternal mortality, as it influences pregnant women's decision-making and health behaviors. By understanding the main causative factors and obstacles faced in midwifery services, it is hoped that this study can provide recommendations for more effective service programs in an effort to reduce MMR. The novelty of this study lies in the integrative approach that combines the analysis of clinical and non-clinical factors in efforts to reduce MMR, with a focus on the role of health workers in improving access and quality of care for pregnant women and maternity (Nursanti et al, 2021)



METHODS

This study employed a quantitative method with a pretest-posttest design without a control group to analyze the effectiveness of counseling-based maternal health education in increasing pregnant women's understanding and awareness of pregnancy health, as well as efforts to reduce the Maternal Mortality Ratio (MMR) (Creswell, 2023). The study population was pregnant women in study area X with a sample of 50 people selected using purposive sampling technique based on certain criteria. The independent variable in this study was the education and counseling program facilitated by midwives, while the dependent variable was the level of understanding of pregnant women measured through pretest and posttest. The research instrument was a questionnaire that included a pretest, educational materials based on WHO and Ministry of Health guidelines, and a posttest to assess changes in understanding. The role of midwives in this program includes education providers, health supervisors, community mediators, and program evaluators. The research procedure included the preparation stage (material preparation and questionnaire validation), the data collection stage (pretest, counseling, and posttest), and the data analysis stage using the paired t-test statistical test with a significance level of 95% ($\alpha = 0.05$). This study has met the ethical principles of research by obtaining informed consent from each respondent and ensuring the confidentiality of the data collected.

RESULTS

The analysis was carried out in accordance with the data obtained from respondents including the age and class of respondents. An overview of the analysis of respondent characteristics is illustrated in table 1 below as follows:

1. Respondent Characteristics

The following table presents the characteristics of the respondents involved in this study. This section provides an overview of the distribution of respondents based on key demographic and clinical variables, including age, education level, and trimester of pregnancy. The data aim to describe the general profile of the study population, which serves as a foundation for further analysis in this research.

Table 1. Respondent Characteristics

Respondent Characteristics	Frequency (n)	Percentage (%)
Age		
< 20 years	4	8
20 – 35 years	30	60
> 35 years	16	32
Education		
School graduate (SD, SMP, SMA)	38	76,0
College Graduation	12	24,0
Trisemester of Pregnancy		
I	8	16,00



II	18	36,00
III	24	48,00

The results showed the characteristics of respondents, the results obtained showed that the respondents with the most age were 20-35 years as many as 30 people (60.0%), the most recent education was school graduates (elementary, junior high, high school) as many as 38 people (76.0%), and the most trimester birth in trimester III as many as 24 people (48.0%).

2. Average Distribution Before and After Pregnant Women Participated in Education and Counseling Programs Facilitated by Midwives

The following table presents the average distribution of outcomes before and after pregnant women participated in education and counseling programs facilitated by midwives. This analysis aims to evaluate the changes that occurred following the intervention, highlighting the effectiveness of educational and counseling activities in improving knowledge, attitudes, or health-related behaviors among pregnant women. The results provide an overview of the impact of midwife-led programs on maternal health outcomes.

Table 2. Average Distribution Before and After Pregnant Women Participated in Education and Counseling Programs Facilitated by Midwives

Variable	n	Average comprehension score	Standard Deviation	<i>p value</i>
Pretest	50	60,04	1,916	0,00
Postest	50	85,60	2,259	

Based on this study which involved 50 pregnant women as respondents who participated in the Maternal Health Education and Counseling program. The pretest results showed that the average score of understanding of pregnant women before being given counseling was 60.04. After being given education and counseling by midwives, the posttest results showed an increase with an average score of 85.6. Statistical analysis using paired t-test showed that there was a significant difference between the pretest and posttest scores with a *p value* of $0.00 < 0.05$, indicating that the education program facilitated by midwives had a positive impact on improving pregnant women's understanding of pregnancy health. In addition, 85% of respondents stated that the counseling provided was very helpful in understanding the danger signs of pregnancy, the importance of nutritional intake, and preparation for safe delivery. Thus, the role of midwives in community-based maternal health education and counseling is proven to be effective in increasing the awareness and readiness of pregnant women in facing the pregnancy process and effective in reducing maternal mortality in childbirth.

DISCUSSION

Role is one of the functions possessed by individuals in a profession, including midwives. As health workers, midwives have a strategic position in efforts to reduce maternal mortality rates (MMR) and infant mortality rates (IMR). Recent studies highlight that midwives, when fully integrated into the healthcare system with appropriate education, regulation, and support, can provide a wide range of essential health services, significantly contributing to the reduction of



maternal mortality (Khan et al, 2024). In carrying out their duties, midwives provide sustainable and holistic midwifery services, focusing on aspects of prevention and health promotion based on partnerships and community empowerment. Midwives, alongside other health workers, hold a central role in reducing maternal and neonatal mortality by providing comprehensive care that includes prevention and health promotion. Their core responsibilities extend beyond clinical assistance to include education and counseling during antenatal check-ups, nutritional support, and birth preparedness. Through routine examinations under normal pregnancy conditions and early identification of childbirth risks, midwives contribute to improving maternal outcomes. To support these efforts, an effective and efficient health service system is essential particularly one that prioritizes emergency preparedness for maternal and newborn complications. This program aims to improve the quality of care provided in all aspects of the midwifery profession, both to individuals, families, and communities, by considering input, process, and output aspects to ensure safe and quality services (Hardianti et al, 2019).

One form of midwives' role in reducing maternal and infant mortality is through active participation in the midwifery profession. This role includes the function of midwives as implementers, managers, educators, and researchers, which overall aims to provide sustainable midwifery services. In carrying out their duties, midwives contribute through midwifery care which includes promotive, preventive, curative, and rehabilitative approaches. In addition, the involvement of midwives in health programs allows collaboration with other health teams or personnel to improve community-based health services, thus providing a broader and more effective impact in efforts to reduce maternal and infant mortality (Khan, 2024).

In community-based health programs, midwives have a multifunctional role that includes providing midwifery services, managing midwifery services, counseling and counseling for clients, education and guidance, and clinical facilitation. In addition, midwives also act as drivers of community participation, empowering women, and researchers in the field of midwifery (Oliver, 2019). Midwifery services provided are based on professional knowledge and competencies that continue to be developed according to client needs. However, provisions regarding the midwifery profession are still scattered in various laws and regulations, which have not fully accommodated the legal needs of both midwives and the community. This causes legal uncertainty in midwifery practice, which has the potential to affect service equity, professional protection, and legal guarantees for midwives as service providers and the community as service recipients.

Midwives have a crucial role in community-based health programs, especially in maintaining the health of mothers and babies and reducing maternal and neonatal mortality rates. Efforts made by midwives include prevention, early detection, and handling cases that pose a high risk to the safety of mothers and babies. Based on patterns observed in the last 5-10 years, the main causes of maternal mortality are relatively consistent, with three main factors, namely hypertensive disorders in pregnancy (33.07%), pregnancy complications, and obstetric hemorrhage (27.03%). Meanwhile, infant mortality is generally caused by various factors, including complications of intrapartum events, respiratory and cardiovascular disorders, congenital abnormalities, infections,



and low birth weight and prematurity. With a deep understanding of these causal patterns, midwives can optimize appropriate interventions to improve maternal and infant safety.

The results showed a significant increase in pregnant women's understanding of pregnancy health after participating in the Education and Counseling program facilitated by midwives. The average pretest score of 60.2 increased to 85.6 in the posttest, and the paired t-test results ($0.00 < 0.05$) confirmed that the difference was statistically significant. This increase indicates that counseling delivered interactively and tailored to the needs of the community can increase the knowledge and awareness of pregnant women about the importance of balanced nutrition, early detection of pregnancy danger signs, and preparation for safe delivery.

The role of the midwife as the main facilitator proved crucial to the success of this program. Midwives not only deliver educational materials, but also function as mediators between health services and the community, and monitor the health conditions of pregnant women before and after counseling. This finding is in line with several previous studies that emphasize that the involvement of health workers, especially midwives, can increase the effectiveness of community-based health programs in reducing the risk of pregnancy complications and maternal mortality (Sunarsih 2020).

Although the results show a positive impact of the extension program, there are several limitations that need to be considered. First, the limited sample size (50 respondents) may not be representative enough to describe the general condition. Secondly, measurements made through questionnaires are potentially influenced by respondent bias, such as social impressions or inaccuracy in recalling information. Therefore, further research with a larger sample size and diverse measurement methods is recommended to strengthen the validity of the findings.

Overall, the Maternal Health Education and Counseling program facilitated by midwives showed effectiveness in improving the understanding of pregnant women, which has the potential to reduce maternal mortality through improved early detection and preparedness for pregnancy complications. These results confirm the importance of integrating the role of midwives in community-based health strategies to achieve more optimal maternal health goals (Sunarsih, 2020).

CONCLUSIONS

This study highlights the strategic role of midwives in reducing maternal mortality rates (MMR) through community-based health programs. Based on the results of the study, it was found that the Maternal Health Education and Counseling program facilitated by midwives had a significant impact in increasing pregnant women's understanding of pregnancy health, early detection of complications, and better preparation for childbirth. The significant increase in understanding scores between pretest and posttest shows that the intervention carried out by midwives is effective in increasing the awareness and readiness of pregnant women in facing the process of pregnancy and childbirth..

Midwives have a multifunctional role in community-based health programs, not only as midwifery service providers but also as educational facilitators, drivers of community participation, and empowerers of women in improving maternal and infant health. With the active involvement



of midwives, pregnant women can more easily access relevant health information, thereby reducing the risk of pregnancy complications and increasing delivery safety rates.

Although this study shows positive results, there are some limitations that need to be considered, such as the limited sample size and potential bias in data measurement. Therefore, further research with a wider scope and more diverse methods is needed to strengthen these findings.

This study confirms that the role of midwives in community-based health programs is crucial in reducing the Maternal Mortality Ratio (MMR). Midwives' core competencies encompass not only clinical care but also preventive and promotive efforts through education and counseling during antenatal care, childbirth, and the postpartum period. These services aim to enhance pregnant women's knowledge and awareness regarding pregnancy health, enabling early detection of complications and timely decision-making. For instance, a study by Susanti et al. (2022) highlighted the importance of midwives' competencies in providing continuity of care, including education and counseling, to improve maternal health outcomes in Indonesia. Additionally, research by Putri et al. (2023) emphasized that midwives play a significant role in educating pregnant women about labor and childbirth readiness, which contributes to reducing maternal mortality. Therefore, integrating midwives' roles into maternal and child health policies is essential to achieve better health development targets. With a holistic and community-based approach, it is hoped that maternal mortality rates can continue to be reduced, thereby improving the quality of life for mothers and babies in Indonesia.

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