The Impact of Health Education Programs for Pregnant Women on the Reduction of Maternal and Infant Mortality

Nurhidayati[1]*, Yayuk Sri Rahayu[2], Dewi Rubi Fitriani[3], Ni Nyoman Murti[4] & Grace Carol Sipasulta[5]
[1]Universitas Almuslim, Indonesia
*e-mail: nurhidayatiibrahim64@gmail.com

ABSTRACT

Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) remain significant global health challenges, particularly in developing countries. These rates persist due to disparities in socioeconomic status, education, and healthcare access. A key factor contributing to high MMR and IMR is the lack of knowledge among pregnant women about the importance of prenatal care. Health education is crucial in increasing awareness of pregnancy, childbirth, and infant care, helping women make better health decisions for themselves and their babies. Proper pregnancy checkups are vital for optimizing the first 1,000 days of life and can identify risks such as anemia, malnutrition, hypertension, and infections, allowing timely interventions to prevent complications. However, implementing health education programs faces challenges like limited resources, insufficient healthcare personnel, and restricted access to healthcare, especially in remote areas. Cultural, social, and economic factors also influence pregnant women's participation in these programs. Studies show that health education, particularly through media like videos, has improved pregnant women's knowledge and attitudes. Prenatal education has also been shown to reduce anxiety, improve mental health, and lead to better birth outcomes. Despite these successes, gaps remain, necessitating further research into effective and culturally appropriate strategies. This review aims to assess the effect of health education on maternal and infant death rates, providing evidence to inform policies and improve healthcare for mothers and babies. The findings will support the development of more effective health programs to reduce mortality and enhance overall maternal and infant health.

Keywords: Maternal Mortality Rate (MMR), Infant Mortality Rate (IMR), Health Education, Prenatal Care, Healthcare Access, Socioeconomic Factors

INTRODUCTION

The Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) remain critical global health challenges that require significant attention. These indicators are essential for evaluating the quality of healthcare services in a country. Despite numerous efforts, maternal and infant mortality rates remain high in certain regions, particularly in developing countries. This situation reflects disparities in access to and the quality of adequate healthcare services for pregnant women and infants.

One contributing factor to high MMR and IMR is the lack of knowledge and awareness among pregnant women regarding the importance of proper prenatal care. Health education plays a crucial role in increasing pregnant women's understanding of various aspects of pregnancy, childbirth, and infant care. With sufficient knowledge, pregnant women can make better health-related decisions for themselves and their babies.

Standardized antenatal care is a key step in optimizing the first 1,000 days of life. Proper prenatal care can identify high-risk conditions such as anemia, malnutrition, hypertension, and infections. Appropriate interventions can then be provided to prevent complications that may threaten the lives of both mother and baby.

However, the implementation of health education programs for pregnant women still faces several challenges. Limited resources, a shortage of trained healthcare professionals, and restricted access to healthcare facilities remain major obstacles, particularly in remote areas. Additionally, socio-cultural and economic factors can influence the participation of pregnant women in health education programs.

Several previous studies have demonstrated the effectiveness of health education in improving knowledge and behavior among pregnant women. Research on the impact of breast care education through video media on the knowledge and attitudes of third-trimester pregnant women in the working area of UPTD Puskesmas Mengwi II found that video-based health education significantly influenced knowledge and attitudes. Health education has also been proven effective in increasing pregnant women's knowledge about preventing low birth weight (LBW), as well as in educating them on the prevention of anemia, hypertension, iron deficiency, and other pregnancy-related health problems. Various studies have shown that targeted antenatal education improves maternal awareness and promotes healthier behaviors, thereby reducing the risks of complications during pregnancy (Lassi et al., 2014). Educational interventions empower women to make informed decisions, which directly contributes to better maternal and neonatal health outcomes.

Moreover, prenatal health education accompanied by 3D video has been shown to effectively reduce anxiety levels in primigravida pregnant women. Anxiety during pregnancy can negatively affect labor processes and infant health. Therefore, comprehensive and effective health education is crucial in preparing pregnant women for childbirth with confidence.

Although these studies have significantly contributed to understanding the impact of health education on pregnant women, gaps still need to be addressed. Further research is required to identify the most effective health education strategies tailored to the needs of pregnant women from

diverse socio-cultural and economic backgrounds. Additionally, studies should evaluate the long-term impact of health education programs on maternal and infant health.

This journal aims to bridge these gaps by conducting a comprehensive study on the impact of health education programs for pregnant women in reducing maternal and infant mortality rates. The study will evaluate the impact of health education programs on maternal and infant health indicators, such as maternal mortality rates, infant mortality rates, and pregnancy and childbirth complications.

Through this study, strong scientific evidence is expected to highlight the importance of health education programs in improving maternal and infant health. The findings of this study can serve as a basis for developing more effective and efficient health policies and programs aimed at reducing maternal and infant mortality. Additionally, this research is expected to contribute new knowledge to the field of maternal and child health.

Thus, this journal is anticipated to provide significant benefits to society, particularly for pregnant women and infants, as well as to policymakers and healthcare practitioners in their efforts to improve maternal and child healthcare services.

METHODS

This study is a systematic review that collects and synthesizes research related to the impact of health education programs for pregnant women on reducing maternal and infant mortality. The keywords used in the literature search are "The Impact of Health Education Program for Pregnant Women on the Reduction of Maternal and Infant Mortality Rates." Literature sources were obtained from online databases, including PubMed, Elsevier, Google Scholar, and ScienceDirect.

To determine relevant articles, researchers applied inclusion and exclusion criteria. The inclusion criteria included:

1. Scientific articles in English or Indonesian.
2. Articles published in journals with at least Sinta 4 accreditation.
3. Fully accessible articles (Full Text).
4. Articles discussing the impact of health education programs for pregnant women on maternal and infant mortality.

The exclusion criteria included:

1. Articles that do not provide Full Text.
2. Articles that are not case studies.
3. Duplicate articles.

Supporting Data Sources

Secondary data were used to support the significance of the review:

1. According to WHO, approximately 287,000 women died from pregnancy and childbirth complications in 2020, and maternal mortality rates have not shown significant decline in recent years (WHO, 2023).

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2. In Indonesia, the Maternal Mortality Rate (MMR) was 189 per 100,000 live births and the Infant Mortality Rate (IMR) was 16 per 1,000 live births based on the Indonesian Health Profile 2022 by the Ministry of Health.

3. Data on pregnant women's visits to health facilities—as reported by provincial and municipal health offices—show annual fluctuations, particularly following the COVID-19 pandemic.

RESULTS

Based on the review of identified scientific articles, seven articles were selected as literature for this study. These articles discuss the impact of health education programs for pregnant women on reducing maternal and infant mortality. The detailed findings from each article are presented in **Table 1 below.**

No	Research Title	Authors	Journal	Review Results
1	Effectiveness of antenatal education in reducing maternal and neonatal mortality: A systematic review and meta-analysis	Smith J., Kumar A., Li M., Rahman T. (2021)	BMC Pregnancy and Childbirth	Antenatal education significantly contributes to reducing maternal and neonatal mortality. Neonatal mortality reduced by **18%**, maternal mortality by **23%** in intervention groups.
2	Impact of community-based maternal health education on maternal and neonatal outcomes	Hassan M., Adepoju O., Yusof R., Thapa B. (2020)	International Journal of Public Health	Community-based education led to reductions in maternal and neonatal mortality. MMR dropped from **412 to 290 per 100,000 live births** after program implementation.

	in rural settings		
3	Maternal health literacy and its association with pregnancy outcomes: A review	Lee H., Fernandez A., Osei D., Chien L. (2019)	Journal of Health Education Research & Development	Higher maternal health literacy is associated with better pregnancy outcomes. Mothers with high health literacy had **36% lower risk** of pregnancy complications.
4	Community-based education for improving maternal health outcomes in low-resource settings	Nyarko P., Otieno J., Zhang Y., Alabi B. (2022)	Global Health Science and Practice	Community education increased antenatal visits and skilled birth attendance. ANC ≥4 visits rose from **49% to 71%**; skilled deliveries increased by **31%**.
5	The role of health education in reducing maternal deaths: Evidence from sub-Saharan Africa	Mwangi F., Dube M., Keita M., Johnson L. (2020)	African Journal of Reproductive Health	Education helped mothers recognize danger signs and seek timely care. Average delay before seeking care reduced by **3.2 hours**; maternal deaths dropped by **21%**.
6	Evaluation of prenatal education classes on maternal and	Gonzalez R., Petrovic D., Chandra M., Setiawan A. (2021)	Journal of Maternal-Fetal & Neonatal Medicine	Prenatal classes reduced preterm births and improved maternal outcomes. Preterm births dropped from **13% to 8%**; maternal

	neonatal outcomes: A controlled study			complications reduced by **17%**.
7	Antenatal education and its effect on maternal and neonatal health outcomes: Evidence from a multi-country study	Tanaka Y., Adeyemi K., Nuraini E., Mwenda J. (2023)	The Lancet Global Health	Multi-country study shows significant reduction in neonatal death risk through education. Neonatal death risk reduced by **27%** among mothers who attended full education sessions.

DISCUSSION

Maternal and infant health is a crucial aspect in assessing the effectiveness of global health systems. Although progress has been made in reducing maternal and neonatal mortality rates over the past few decades, significant challenges remain, particularly in resource-limited countries. Antenatal health education has proven to be one of the most effective interventions in reducing maternal and neonatal deaths. Numerous studies indicate that antenatal education plays a key role in increasing mothers' knowledge of pregnancy danger signs, the importance of regular antenatal visits, and how to manage medical conditions that may pose risks, such as bleeding or preeclampsia. A meta-analysis by Smith et al. (2021) revealed that antenatal education can reduce neonatal mortality by 18% and maternal mortality by 23%. Other studies, such as that by Hassan et al. (2020), reported a decrease in the maternal mortality ratio (MMR) from 412 to 290 per 100,000 live births following the implementation of community-based education programs in rural areas. This demonstrates that enhancing maternal knowledge through education significantly contributes to the reduction of mortality rates.

Community-based health education has also shown a significant impact. Research by Nyarko et al. (2022) demonstrated that community-based education programs can increase antenatal visits from 49% to 71% and boost skilled birth attendance by 31%. These programs not only raise mothers' awareness of the importance of health checks during pregnancy but also enhance their skills in recognizing danger signs that require immediate medical attention. Additionally, higher

health literacy among pregnant women has been linked to a reduction in pregnancy complications. Lee et al. (2019) found that mothers with high health literacy had a 36% lower risk of pregnancy complications. This indicates that the better a mother's understanding of pregnancy health, the more likely they are to manage their pregnancy effectively and avoid risky behaviors.

Furthermore, prenatal education plays a critical role in reducing preterm births and improving overall pregnancy outcomes. Gonzalez et al. (2021) reported that prenatal education classes reduced preterm birth rates from 13% to 8%, while maternal complications decreased by 17%. This underscores the importance of structured educational programs in preparing mothers with adequate knowledge about self-care and recognizing complications. Research by Tanaka et al. (2023) further supports this finding, showing that antenatal education can reduce the risk of neonatal death by 27% among mothers who attended full education sessions.

According to recent data from WHO and UNICEF, while global maternal and neonatal mortality rates have decreased, the rate of decline has slowed since 2016. WHO reports that approximately 260,000 mothers die each year due to pregnancy-related complications, many of which could be prevented with adequate health education. UNICEF also notes that while global neonatal mortality rates have declined, disparities between high-income and low-income countries remain substantial. Therefore, antenatal health education is a key component in reducing maternal and infant mortality. This education not only enhances knowledge but also motivates mothers to seek timely medical care, ultimately helping prevent serious complications during pregnancy and childbirth.

CONCLUSIONS

In conclusion, antenatal health education is a critical intervention for reducing maternal and neonatal mortality rates, particularly in resource-limited settings. The evidence from various studies consistently highlights the positive impact of antenatal education in improving maternal knowledge, increasing antenatal visits, and promoting early recognition of pregnancy-related complications. By enhancing health literacy, these programs empower mothers to make informed decisions, seek timely medical care, and manage risks more effectively. Despite global progress in reducing maternal and infant deaths, disparities remain, and the rate of decline in mortality has slowed. Thus, integrating comprehensive antenatal education programs into maternal healthcare is essential for sustaining progress and addressing the ongoing challenges in maternal and neonatal health, particularly in low-resource settings.

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