published: 1 April 2026
doi: 10.21070/midwiferia.v11i2.1767

The Preeclampsia Free Village Initiative Through Early Detection Among Pregnant Women in the Service Area of the Kokop Community Health Care

Zaitun Ermawati[1*], Novi Anggraeni[2], M. Hasinuddin[3], Eny Susanti[4]

[1,2,3,4]Master's Program in Health Administration, Noor Husa Mustofa University
Email: istiqomaharosbaya@gmail.com

OPEN ACCESS

ISSN 2548-2246 (online)
ISSN 2442-9139 (print)
Edited by: Roseline Florence Gomez
Reviewed by: Evi Wahyuntari
Nidatul Khofiyah
**Correspondence:*
Zaitun Ermawati
istiqomaharosbaya@gmail.com
Received: 22 Des 2025
Accepted: 19 Des 2025
Published: 2 Janl 2026
Citation: Zaitun Ernawati (2026) The Preeclampsia Free Village Initiative Through Early Detection Among Pregnant Women in the Service Area of the Kokop Community Health Care Midwiferia Jurnal Kebidanan. 12:1. doi: 10.21070 / midwiferia.v11i2.1767

Abstract

WHO (World Health Organization) estimates that pre- The The exact causes of preeclampsia and eclampsia remain unclear. Several studies have examined factors influencing preeclampsia occurrence. Radjamuda and Montolalu identified age and history of hypertension (preeclampsia) as associated factors This study aimed to analyze differences in the number of high-risk preeclampsia cases detected before and after implementation of the preeclampsia-free village movement method. The study employed a quasi-experimental design using a one-group pretest–posttest approach. Research subjects were selected through simple random sampling, with a total sample of 38 participants. Data were analyzed using the Wilcoxon signed-rank test with a significance level of $p < 0.05$. The statistical analysis yielded a significance value of 0.000, which is lower than $\alpha = 0.05$, indicating a statistically significant increase and a significant difference in the number of high-risk preeclampsia cases detected before and after the implementation of the preeclampsia-free village movement method.

Keywords: *Early detection, preeclampsia, Maternal and Child Health Handbook*

INTRODUCTION

Preeclampsia is a high-risk condition in pregnant women, characterized by hypertension occurring after 20 weeks of gestation (>20 weeks). It can develop during pregnancy, labor, or the postpartum period (Kurniawati et al., 2020). Preeclampsia is defined by a blood pressure of at least 140/90 mmHg on two separate measurements taken 4–6 hours apart in previously normotensive women after 20 weeks of gestation or in the early postpartum period, accompanied by proteinuria. Proteinuria is considered minimally positive at 1+ on dipstick testing or exceeds 300 mg in 24-hour quantitative protein measurement (Anggraeni et al., 2024).

Preeclampsia is a pregnancy-related hypertensive disorder characterized by placental malperfusion and multi-organ injury. Hypertension is a risk factor for the occurrence of preeclampsia; in other words, a history of hypertension increases the risk of preeclampsia by 1.591 times compared to those without a history of hypertension(Novi Anggraenia, 2024).

According to WHO data from 2023, maternal mortality remains very high. In 2020, approximately 287,000 maternal deaths occurred during and after pregnancy and childbirth, with nearly 95% of all maternal deaths occurring in low- and middle-income countries. Sub-Saharan Africa accounted for around 70% of maternal deaths (202,000), while South Asia contributed about 16% (47,000). The primary causes of maternal mortality are complications during and after pregnancy and childbirth, most of which develop during pregnancy and are largely preventable or treatable. The main complications responsible for nearly 75% of maternal deaths are hemorrhage, infection, hypertension (preeclampsia), and childbirth-related complications (Organization, 2025).

In Indonesia, the Maternal Mortality Rate (MMR) was 4,627 (0.098%) in 2020 and increased to 7,389 (0.166%) in 2021. East Java Province recorded the highest maternal mortality at 1,279 deaths (0.24%), while North Kalimantan reported the lowest at 29 deaths (0.22%). According to the East Java Provincial Health Office, maternal deaths in Bangkalan were 13 cases in 2020, 42 cases in 2021, and 16 cases in 2022, making it the third highest in the province.

The exact causes of preeclampsia and eclampsia remain unclear. Several studies have examined factors influencing preeclampsia occurrence. Radjamuda and Montolalu identified age and history of hypertension (preeclampsia) as associated factors (Bakri & Hardian, n.d.). Prasetyo, Wijayanegara, and Yulianti found associations between maternal characteristics—including occupation, age, and parity—and preeclampsia incidence (Prasetyo et al., 2015).

Preeclampsia and eclampsia pose risks to maternal and fetal health via placental complications. Eclampsia incidence in developing countries ranges from 1:100 to 1:1,700. Some cases of preeclampsia are initially mild but may progress to seizures (eclampsia) later in pregnancy. Untreated eclampsia can result in heart failure, kidney failure, cerebral hemorrhage, and death. Preeclampsia can also lead to persistent hypertension if symptoms appear early and persist, though some experts argue that postpartum hypertension may reflect preexisting hypertension (ANGGRENI et al., 2018).

According to the Indonesian Obstetrics and Gynecology Association (POGI), preeclampsia often presents without clear early symptoms but can worsen rapidly. Primary prevention is crucial to reduce its incidence. Health practitioners are expected to identify preeclampsia risk factors and implement appropriate control measures (Noroyono et al., 2016)

Preventive measures include ensuring that all pregnant women have access to quality maternal health services, including antenatal care, delivery by trained health personnel, postpartum care, referrals and specialized care for complications, maternity leave, and family planning services. Maternal health services are provided throughout pregnancy, divided into the first, second, and third trimesters (Mulyaningsih, 2020). The “Preeclampsia-Free Village” initiative aims to prevent preeclampsia through routine, high-quality prenatal checkups, improving early detection and management. Screening guidelines are included in the Maternal and Child Health (MCH) handbook, maximizing the use of Posyandu and auxiliary health centers as service points for pregnant women, and promoting the role of community health workers for home visits—previously more focused on main health centers—so that people in remote areas and those engaged in activities during prenatal classes can participate in these activities. Research by Agung Mulyaningsih indicates that the use of the KMA handbook is effective for the early detection of preeclampsia (Mulyaningsih, 2020). The KMA handbook is crucial for pregnant women as it documents the mother’s health throughout pregnancy and provides information on her condition. This enables monitoring of blood pressure and weight, facilitating the early detection of preeclampsia and eclampsia at each visit (Mulyaningsih, 2020).

METHODS

Type of Research

This study employed a quasi-experimental design with a single-group pre-test and post-test approach. The independent variable in this study was the “Preeclampsia-Free Village” initiative through early detection of pregnant women, while the dependent variable was the detection of preeclampsia risk. Screening was conducted by the researchers using the Maternal and Child Health (MCH) handbook. The study began with

an orientation session for community health workers on preeclampsia risk detection using the MCH handbook.

Time and Location

This innovation was implemented in the service area of Kokop Primary Health Center, Bangkalan Regency. Primary data were obtained through questionnaires completed by midwives. Data collection was conducted at the health center and through home visits by midwives from July to September 2025.

Sampling Technique, Sample Size, and Inclusion Criteria

The study population consisted of pregnant women in the service area of Kokop Primary Health Center, totaling 42 patients, with a sample of 38 patients. The inclusion criteria were pregnant women with gestational age <20 weeks who possessed a Maternal and Child Health (MCH) handbook and were willing to participate by signing an informed consent form after receiving a full explanation. High-risk screening for pregnancy-induced hypertension (preeclampsia) was conducted using the MCH handbook for pregnant women with gestational age <20 weeks. A pregnant woman was classified as high-risk for preeclampsia if two or more risk factors were identified.

Data analysis

Data analysis was conducted using the Wilcoxon signed-rank test.

Ethical Consideration

Ethical approval for this study was obtained from the Health Research Ethics Committee of Noor Huda Mustofa University under ethical clearance number 2789/KEPK/UNIV-NHM/EC/VII/2025 and all respondents signed an informed consent form after receiving a full explanation prior to data collection.

FINDINGS AND DISCUSSION

Table 1. Frequency Distribution of Respondent Education

NO	CATEGORY	N	(%)
1	Primary Education	19	50.0
2	Secondary Education	9	23.7
3	Higher Education	10	26.3
	Total	38	100.0

Source: Primary Data, 2025

Table 1 shows that half of the pregnant women in the service area of Kokop Primary Health Center had a primary education, while smaller proportions had secondary and higher education.

Table 2. Frequency Distribution of Respondent Occupation

NO	CATEGORY	N	(%)
1	Housewife	4	10.5
2	Farmer	16	42.1
3	Private Sector Employee	12	31.6
4	Civil Servant / Police	6	15.8
	Total	38	100.0

Source: Primary Data, 2025

Table 2 shows that nearly half of the pregnant women in the service area of Kokop Primary Health Center were farmers, while smaller proportions were housewives, private sector employees, and civil servants or police.

Table 3. Frequency Distribution of Gestational Age

NO	CATEGORY	N	(%)
1	First Trimester	25	65.8
2	Second Trimester	12	31.6
3	Third Trimester	1	2.6
	Total	38	100.0

Source: Primary Data, 2025

Table 3 shows that the majority of pregnant women in the service area of Kokop Primary Health Center were in the first trimester, while smaller proportions were in the second and third trimesters.

Table 4. Frequency Distribution of Maternal Parity

NO	CATEGORY	N	(%)
1	Primigravida	20	52.6
2	Multigravida	05	13.2
3	Grandemultigravida	13	34.2
	Total	38	100.0

Source: Primary Data, 2025

Table 4 shows that more than half of the pregnant women in the service area of Kokop Primary Health Center were primigravida, while smaller proportions were multigravida and grand multigravida.

Table 5. Midwives' Highest Education Level

NO	CATEGORY	N	(%)
1	Midwifery Profession	36	95
2	Diploma III in Midwifery	2	05
	Total	38	100.0

Table 5 shows that nearly all midwives in the service area of Kokop Primary Health Center held a Midwifery Profession degree, while a small proportion held a Diploma III in Midwifery.

Table 6. Early Detection of High-Risk Pregnancy Before and After the Intervention

High-Risk Detection	Before		After	
	N	%	N	%
Not Detected	30	79	25	66
Detected	8	21	13	34
Total	38	100	38	100
wilcoxon test	*Asymp. Sig. (2-tailed) = 0,000*			

Table 6 shows that before the intervention, the majority of pregnant women in the Kokop area (79%) were classified as not detected without signs of preeclampsia, while a smaller proportion (21%) were identified as at risk for preeclampsia. After the intervention, the results indicated that most pregnant women (66%) were detected with preeclampsia risk signs, and a smaller proportion (34%) were not detected as at risk. Statistical analysis using the Wilcoxon signed-rank test in SPSS yielded an Asymp. Sig. (2-tailed) value of 0.000. Since the p-value (0.000) is less than $\alpha = 0.05$, it can be concluded that there is a statistically significant difference in preeclampsia risk detection before and after the implementation of the "Village Free from Preeclampsia" innovation through screening using the Maternal and Child Health (KIA) handbook.

The Effect of the "Village Free from Preeclampsia" Movement through Early Detection of Pregnant Women on Preeclampsia Risk Detection

The results of the statistical analysis using the Wilcoxon signed-rank test in SPSS showed an Asymp. Sig. (2-tailed) value of 0.000. Since the p-value (0.000) is less than $\alpha = 0.05$, it can be concluded that there is a statistically significant difference in preeclampsia risk detection before and after the implementation of the "Village Free from Preeclampsia" initiative using screening with the Maternal and Child Health (KIA) handbook.

Before the intervention, the majority of pregnant women in the Kokop area (79%) were classified as normal without signs of preeclampsia, while a smaller proportion (21%) were detected as at risk. After the intervention, 66% of pregnant women were detected with preeclampsia risk signs, and 34% were not detected as at risk. This indicates an increase in the identification of high-risk pregnancies following the intervention. The "Village Free from Preeclampsia" initiative aims to identify pregnant women at risk of preeclampsia using the KIA handbook, implemented by a specially formed team from Kokop Primary Health Center as the screening instrument. Blood pressure measurement in pregnancies <20 weeks serves as an initial screening to help identify potential preeclampsia risk and guide intensive monitoring and care to prevent maternal and neonatal complications (Singh et al., 2021)

Preeclampsia screening should ideally be conducted before 20 weeks of gestation to enable early detection and optimal prevention of complications (Nzelu et al., 2024). However, screening should still be performed for pregnant women presenting after 20 weeks of gestation, given that preeclampsia is typically clinically diagnosed after this gestational age (NICE, 2023). A screening result is considered positive if at least two yellow indicators or one red indicator are identified (based on the screening instrument used in this study/intervention), indicating a risk of preeclampsia and requiring referral to a higher-level healthcare facility for further evaluation and monitoring (WHO, 2025)

Education on preeclampsia encompasses understanding causes, symptoms, diagnosis, management, and complications, while screening involves early detection through routine blood pressure and urine tests, along with optional tests to identify risks and prevent serious maternal and fetal complications. In this innovation, most respondents had a primary education. Maternal education is crucial for recognizing warning signs, engaging in preventive actions, and understanding the importance of early detection. Higher educational attainment generally correlates with greater health knowledge, facilitating better reception and application of health information (Fox et al., 2019). Pregnant women with limited education can still recognize the warning signs of pregnancy, provided that the educational approach is tailored to simple, visual, and repetitive learning methods. The key lies not in educational attainment, but in the right communication methods—one of which is providing health education during prenatal checkups. This information is also available on social media, where there is currently a wealth of news about maternal and child health sourced from social media platforms.

After the intervention, high-risk detection increased from 21% to 34%. The village team, consisting of local representatives and community health cadres, worked synergistically to conduct early screening and determine preventive measures. Midwives in Kokop were predominantly professionally trained, which enhanced their capacity for screening, prevention, and early management of preeclampsia. Skilled midwives with adequate knowledge are more confident in patient education, follow-up, and primary care delivery.

Parity also influenced preeclampsia risk: over half of the pregnant women were primigravida, with smaller proportions being multigravida or grand multigravida. Primiparous women face higher complication risks due to underdeveloped reproductive organs and psychological readiness, while women with high parity (>4) may experience pregnancy complications affecting birth outcomes. Previous research supports the link between parity and preeclampsia, with higher incidence among primipara and grand multipara (Suryadana, 2024).

The study confirms that the “Village Free from Preeclampsia” initiative, using the MCH handbook, significantly improved early detection of preeclampsia risk. The handbook effectively increases maternal

knowledge regarding danger signs and preventive measures, serving as a key tool for communication and education for mothers, families, and communities. It also supports monitoring of maternal and child health, including referrals, nutrition, immunization, and child growth and development (Merben & Hidayanti, 2024)(Rustina & Efendi, 2020)

These findings underscore the strategic role of the KIA handbook as both an educational and communication instrument, enhancing community involvement in maternal and child health monitoring.

CONCLUSIONS

There was a statistically significant difference in the detection of preeclampsia risk before and after the implementation of the "Preeclampsia-Free Village" initiative through screening using the Maternal and Child Health (MCH) handbook. The government is expected to emphasize community empowerment, health education, early detection, and strengthening the use of the MCH handbook, including training for health workers, monitoring, integration of health services, and public awareness campaigns to ensure the sustainability of the early detection program for high-risk pregnancies. A community-based approach through village officials and the MCH Handbook has proven effective in raising awareness among pregnant women

ACKNOWLEDGEMENTST

The researchers would like to express their gratitude to the innovation team, including the Head of Kokop Primary Health Center, the midwives responsible for the area, and the pregnant women who contributed to the implementation of this project. Thanks are also extended to all parties who were willing to participate in this innovation project.

REFERENCES

Anggraeni, N., Sulistyono, A., Prabowo, G. I., & Aditiawarman, A. (2024). The effect of administering salted fish extract as a model of pregnancy hypertension in mus musculus balb-c strain through blood pressure and urinary protein measurements. *Journal of Medicinal and Pharmaceutical Chemistry Research*, *6*(12), 1787–1796.

Bakri, S., & Hardian, H. (n.d.). High Seafood Intake During Pregnancy and Low Blood Pressure Among Coastal Pregnant Women in Indonesia. In *Article in Malaysian Journal of Medicine and Health Sciences* ·. https://www.researchgate.net/publication/348230587

Kurniawati, D., Septiyono, E. A., & Sari, R. (2020). Preeklampsia dan Perawatannya (MK Jauhari, S. Psi., S. Kep., Ns. & Ilustrasi. *KHD Produkctuion Redaksi*.

Merben, O., & Hidayanti, A. N. (2024). Efektifitas Penggunaan Buku Kia Dan Kelas Ibu Hamil Terhadap Pengetahuan Ibu Hamil Mengenai Tanda Bahaya Pada Kehamilan Di Puskesmas Ranjeg Tahun 2024. *The Shine Cahaya Dunia Ners*, *9*(01), 91–105.

Noroyono, W., Irwinda, R., Frisdiantiny, E., Karkata, M. K., Mose, J. C., Chalid, M. T., Siswishanto, R., Ourwaka, B. T., Tobing, C. L., & Wardhana, M. P. (2016). *Pedoman Nasional Pelayanan Kedokteran Diagnosis dan Tatalaksana Pre-Eklampsia*.

Novi Anggraenia, et al. (2024). *The Alteration Of TNF-A, MMP-9, And E-Selectin Expression In BALBC Mice As A Model of Pregnancy induced Hypertension Induced Hypertension Induced By salted Fish Extract and NaCl.pdf* (pp. 171–183). AFJBS.

Nzelu, D., Palmer, T., Stott, D., Pandya, P., Napolitano, R., Casagrandi, D., Ammari, C., & Hillman, S. (2024). First trimester screening for pre-eclampsia and targeted aspirin prophylaxis: a cost-effectiveness cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology*, *131*(2), 222–230.

Organization, W. H. (2025). *Trends in maternal mortality estimates 2000 to 2023: estimates by WHO, UNICEF*. UNFPA, World Bank Group and UNDESA/Population Division.

Prasetyo, R., Wijayanegara, H., & Yulianti, A. B. (2015). Hubungan antara Karakteristik Ibu Hamil dengan Kejadian Preeklamsi di RSUD Al-Ihsan Kabupaten Bandung. *Prosiding Pendidikan Dokter*, *2*, 1030–1033.

Rustina, Y., & Efendi, D. (2020). Literature Review: Pemanfaatan Buku Kesehatan Ibu dan Anak (KIA) serta Potensi Pengembangan Selanjutnya. *Jurnal Kesehatan*, *11*(2), 311–321.

Singh, S., Mohakud, S., Naik, S., Jena, S. K., Sethi, P., & Nayak, P. (2021). Predictors of posterior reversible encephalopathy syndrome in women with hypertension in pregnancy: A prospective observational study. *Pregnancy Hypertension*, *23*, 191–195.

Suryadana, F. U. (2024). Faktor Risiko Yang Mempengaruhi Kejadian Preeklampsia Pada Ibu Hamil Di RSUD Jendral Ahmad Yani Kota Metro Lampung Tahun 2022. *Tesis Magister Kesmas*.

WHO. (2025). Obstetric Problems. *Practical General Practice-E-BOOK: Practical General Practice-E-BOOK*, 219.