

## Early Detection of High-Risk Pregnancy Through 14T Antenatal Care Examination at the North Ponorogo Health Center

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### ABSTRACT

High-risk pregnancy remains one of the major contributors to maternal and neonatal morbidity and mortality. Early detection through comprehensive antenatal care (ANC) services is essential to prevent pregnancy complications. One of the integrated antenatal service standards implemented in Indonesia is the 14T antenatal examination, which includes physical assessment, laboratory examination, preventive interventions, and health education for pregnant women. This community engagement activity aimed to detect high-risk pregnancies early through the implementation of the 14T antenatal examination and to improve pregnant women's knowledge regarding the importance of routine antenatal care. The activity was conducted in February 2023 at the North Ponorogo Health Center involving 15 pregnant women who attended antenatal visits. The implementation consisted of pregnancy examinations based on the 14T standard and health education regarding pregnancy care and danger signs during pregnancy. Knowledge assessment was conducted using a questionnaire before and after the educational intervention. The results showed that most pregnant women had normal pregnancy conditions; however, several risk factors were identified, including low hemoglobin levels, elevated blood pressure, and poor nutritional status based on mid-upper arm circumference measurements. Evaluation results indicated an increase in pregnant women's knowledge after the education session. The proportion of participants with good knowledge increased from 20% before education to 73.3% after education. These findings indicate that the 14T antenatal care examination combined with health education effectively supports early detection of high-risk pregnancies and improves pregnant women's awareness regarding the importance of routine antenatal care to maintain maternal and fetal health.

**Keywords** : Antenatal Care, Community Engagement, High-Risk Pregnancy

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### INTRODUCTION

Pregnancy is a physiological process that requires continuous monitoring to ensure the health and safety of both mother and fetus. However, under certain conditions, pregnancy may develop into a high-risk pregnancy that can potentially lead to serious complications if not

detected and managed early. High-risk pregnancy refers to a pregnancy accompanied by one or more risk factors that increase the possibility of health complications for the mother or fetus during pregnancy, childbirth, or the postpartum period.

Maternal and infant mortality rates remain important indicators in assessing the overall health status of a population. In Indonesia, the number of maternal deaths reached approximately 4,482 cases in 2023 and decreased to around 4,150 cases in 2024, with a Maternal Mortality Ratio (MMR) of 189 per 100,000 live births. Meanwhile, the Infant Mortality Rate (IMR) ranges from 16.8 to 23.5 per 1,000 live births. Based on the Indonesia Health Survey (SKI) 2023 (Ministry of Health of the Republic of Indonesia, 2023), pregnancy complications are one of the main factors contributing to maternal and infant mortality, with the risk of infant death increasing by approximately 2.18 times among mothers experiencing complications. The majority (around 70–80%) of maternal deaths are associated with complications during pregnancy, childbirth, and the postpartum period, such as hypertension, haemorrhage, and infection, which are actually preventable through comprehensive and high-quality antenatal care (ANC). Therefore, early detection of pregnancy risk factors is a key strategy in reducing morbidity and mortality among mothers and infants.

In Indonesia, integrated antenatal services are implemented through the 14T antenatal care standard, which consists of fourteen examination components including body weight measurement, blood pressure assessment, fundal height measurement, fetal heart rate examination, iron supplementation, laboratory tests, counselling, and case management according to medical indications. The implementation of this standard aims to ensure that pregnant women receive comprehensive healthcare services covering preventive, promotive, and curative aspects.

North Ponorogo Health Center plays an important role in providing primary maternal healthcare services, including antenatal care. However, some pregnant women still attend antenatal visits irregularly or too late, resulting in suboptimal detection of pregnancy risks. Therefore, community engagement activities focusing on early detection of high-risk pregnancy through the 14T antenatal examination are important to improve maternal health services.

This article aims to describe the implementation and outcomes of early detection of high-risk pregnancy through the 14T antenatal care examination at Ponorogo Utara Public Health Center, Ponorogo Regency, and to evaluate its benefits in improving antenatal care services and pregnant women's knowledge.

## **METHOD**

This study was conducted as a community engagement activity at the North Ponorogo Health Center, Ponorogo Regency. The participants were pregnant women who attended antenatal care visits during the implementation period.

The respondent selection method in this activity used accidental sampling, namely pregnant women who came for antenatal care visits at the North Ponorogo Health Center during the implementation period. All pregnant women who were present and willing to participate in the examination and education were included as respondents.

The activity consisted of three main stages: preparation, implementation, and evaluation. During the preparation stage, coordination was conducted with the health center staff, followed by scheduling the activity and preparing examination tools and materials according to the 14T antenatal care standard.

The implementation stage involved conducting antenatal examinations directly for pregnant women based on the fourteen components of the 14T standard. These examinations included measurements of body weight, blood pressure, fundal height, fetal heart rate, mid-upper arm circumference, haemoglobin levels, urine protein, urine glucose, immunization status, and administration of iron supplements. In addition, health education was provided regarding pregnancy care, danger signs during pregnancy, and the importance of regular antenatal visits.

The evaluation stage involved analysing the examination results to identify pregnant women with potential risk factors. Pregnant women's knowledge regarding antenatal care was assessed before and after the educational intervention using a questionnaire. The data obtained were analysed descriptively and presented in the form of frequency and percentage distributions.

## RESULTS

The 14T antenatal examination was conducted on 15 pregnant women who attended antenatal visits at North Ponorogo Health Center. The examination results indicated that most participants had normal pregnancy conditions; however, several risk factors were still identified.

Table 1. Results of 14T Antenatal Examination Among Pregnant Women

No	14T Examination Component	Normal n (%)	Abnormal / Risk n (%)
1	Body weight measurement	11 (73.3)	4 (26.7)
2	Blood pressure	12 (80.0)	3 (20.0)
3	Fundal height	13 (86.7)	2 (13.3)
4	Fetal heart rate	14 (93.3)	1 (6.7)
5	Mid-upper arm circumference (MUAC)	10 (66.7)	5 (33.3)
6	Haemoglobin examination	9 (60.0)	6 (40.0)
7	Urine protein examination	14 (93.3)	1 (6.7)
8	Urine glucose examination	15 (100)	0 (0)
9	TT immunization status	12 (80.0)	3 (20.0)
10	Iron (Fe) tablet administration	13 (86.7)	2 (13.3)
11	Nutritional counselling	15 (100)	0 (0)
12	Delivery preparation counselling	15 (100)	0 (0)
13	Fetal presentation examination	13 (86.7)	2 (13.3)
14	Pregnancy risk assessment	10 (66.7)	5 (33.3)

**Source:** Primary data, 2023

The most frequently identified pregnancy risk factors were anemia (low haemoglobin levels), poor nutritional status based on MUAC measurements, and elevated blood pressure. These findings highlight the importance of comprehensive antenatal care examinations for early detection of pregnancy risks.

Table 2. Pregnant Women's Knowledge About 14T Antenatal Examination Before and After Education (n = 15)

Knowledge Level	Before Education n (%)	After Education n (%)
Good	3 (20.0)	11 (73.3)
Moderate	6 (40.0)	3 (20.0)
Poor	6 (40.0)	1 (6.7)
Total	15 (100)	15 (100)

The evaluation results indicate an improvement in pregnant women's knowledge after the educational intervention. Before education, most participants had moderate and poor knowledge levels. After education, the majority of pregnant women demonstrated good knowledge regarding the importance of the 14T antenatal care examination.

## DISCUSSION

The community engagement activity aimed at early detection of high-risk pregnancy through the implementation of the 14T antenatal care examination was conducted at North Ponorogo Health Center involving 15 pregnant women. Integrated antenatal care services play an important role in identifying pregnancy risk factors early and preventing complications that may occur during pregnancy and childbirth (Ministry of Health of the Republic of Indonesia, 2020; Nurjanah & Lestari, 2021).

The results of the examination showed that most pregnant women had normal pregnancy conditions; however, several health risk factors were still identified. One of the most common findings was anemia, where 40% of pregnant women had haemoglobin levels below normal. Anemia during pregnancy remains a major public health concern and is associated with increased risks of maternal fatigue, premature delivery, and low birth weight infants (World Health Organization, 2021; Damayanti & Nasriyah, 2024). Therefore, routine haemoglobin examination and adequate iron supplementation are essential components of antenatal care services.

The examination of mid-upper arm circumference also showed that 33.3% of pregnant women had poor nutritional status. Maternal nutritional status during pregnancy plays a crucial role in fetal growth and development. Inadequate maternal nutrition may increase the risk of intrauterine growth restriction and other pregnancy complications (Ratnaningtyas & Indrawati, 2023; Widyawati et al., 2025). Continuous monitoring of maternal nutrition and provision of appropriate nutritional counselling are therefore necessary during antenatal care visits.

Another important finding was that 20% of pregnant women had blood pressure levels above normal. Elevated blood pressure during pregnancy may indicate early signs of hypertensive disorders such as preeclampsia, which can lead to serious maternal and fetal complications if not detected early (Putri, Handayani, & Wibowo, 2023; StatPearls Contributors, 2025). Regular monitoring of blood pressure is therefore an essential component of the 14T antenatal examination.

In addition to physical examination, this activity also emphasized health education for pregnant women regarding the importance of routine antenatal care and understanding the components of the 14T examination. Health education is considered an important strategy in improving pregnant women's knowledge and awareness of pregnancy risks (Prafitri, Suparni, & Setianto, 2025). The evaluation results demonstrated a significant improvement in knowledge after the educational intervention, where the proportion of pregnant women with good knowledge increased from 20% to 73.3%.

Improved knowledge is expected to influence pregnant women's health behaviour, including regular antenatal visits, adherence to iron supplementation, and maintaining adequate nutritional intake during pregnancy. These behavioural changes are important for reducing pregnancy risks and improving maternal and fetal health outcomes (Susilawati & Yanti, 2025; Widyawati et al., 2025).

Overall, the implementation of the 14T antenatal examination combined with health education proved to be effective in supporting early detection of high-risk pregnancies and improving pregnant women's awareness regarding maternal health care services.

Antenatal examination using the 14T standard is one of the important efforts to improve the quality of antenatal care services and to enable early detection of high-risk pregnancies. The implementation of the 14T examination allows healthcare workers to conduct a comprehensive assessment of the condition of both the mother and the fetus, including physical examinations, nutritional status assessment, blood pressure measurement, and the necessary laboratory tests.

Based on the results obtained, the detection of high-risk pregnancies can be carried out more optimally if all components of the 14T examination are implemented completely and according to the established standards. This comprehensive examination helps healthcare workers identify risk factors such as anemia, hypertension during pregnancy, poor nutritional status, and a history of diseases that may affect pregnancy. Thus, interventions or management can be carried out more quickly to prevent complications in both the mother and the fetus. The success of detecting high-risk pregnancies is not only influenced by the completeness of the 14T examination but also by the compliance of pregnant women in attending routine antenatal visits. The lack of awareness among pregnant women to undergo regular antenatal check-ups may lead to delays in detecting risk factors that arise during pregnancy.

Therefore, there is a need to increase education for pregnant women regarding the importance of complete antenatal examinations according to the 14T standard. In addition, healthcare workers in healthcare facilities also need to ensure that all components of the 14T examination are carried out consistently so that early detection of high-risk pregnancies can be performed optimally, thereby reducing the incidence of pregnancy complications and improving the health of both mothers and babies.

## **CONCLUSION**

The community engagement activity through the implementation of the 14T antenatal care examination among 15 pregnant women at North Ponorogo Health Center successfully identified both normal pregnancy conditions and several risk factors, including anemia, poor nutritional status, and elevated blood pressure. Health education regarding the 14T antenatal examination significantly improved pregnant women's knowledge, with the proportion of good knowledge increasing from 20% to 73.3%.

Continuous monitoring and nutritional counselling are recommended for pregnant women with identified risk factors. In addition, regular educational programs on antenatal care should be implemented to enhance pregnant women's awareness and encourage routine antenatal visits. Further program evaluation and follow-up interventions are necessary to improve the effectiveness of maternal health promotion efforts.

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