

# Changes in the Health Status of Pregnant Women Through Antenatal Care (ANC): An Analysis of Indonesian National Data

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## Article Info

### Article history:

Received December 29, 2025

Revised January 18, 2026

Accepted February 26, 2026

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### Keywords:

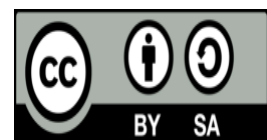
Antenatal Care  
Maternal Health  
K4 Coverage  
Maternal Death

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## ABSTRACT

Maternal health remains a major challenge in health development in Indonesia, particularly in efforts to reduce the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) in line with the targets of the Sustainable Development Goals (SDGs). Antenatal Care (ANC) is a critical preventive intervention that plays a role in improving the health of mothers and fetuses through early risk detection, pregnancy monitoring, and the management of complications. This study aims to analyze changes in the health status of pregnant women through ANC services based on national data in Indonesia. The study employs a descriptive quantitative method with a document review approach using secondary data from the Indonesia Health Profile for 2020–2024. The analysis focuses on ANC coverage, particularly the K4 indicator, trends in maternal mortality rates, and the factors influencing them. The results indicate that K4 ANC coverage fluctuated, with the highest achievement in 2021 at 88.8% and a decline to 80.1% in 2024. The maternal mortality rate also remains relatively high and fluctuates, with disparities across regions in coverage and service quality. The leading causes of maternal mortality are dominated by hemorrhage and hypertension during pregnancy, which are actually preventable through quality ANC services. In conclusion, high ANC coverage has not been fully accompanied by an improvement in the health status of pregnant women. Therefore, strengthening service quality, comprehensive compliance with standards, and improving access to and continuity of services are necessary to reduce the rates of complications and maternal mortality.

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## 1. INTRODUCTION

One of the targets of the Sustainable Development Goals (SDGs) is to reduce the Maternal Mortality Rate (MMR) and the Infant Mortality Rate (IMR), which are used as key indicators of a country's health care quality per 100,000 live births (WHO, 2026). To achieve this goal, the use of antenatal care (ANC) and delivery services provided by healthcare professionals is an essential strategy, as it plays a direct role in improving maternal health, preventing complications, and supporting optimal fetal growth and development from the early stages of pregnancy. Regular ANC visits enable the early detection of risk factors, prompt referrals, and appropriate management of pregnancy and childbirth complications (Pervin et al., 2021).

Antenatal care (ANC) is a critical measure for reducing pregnancy complications and maternal mortality, as well as improving the safety of mothers and babies. ANC includes early risk detection and ongoing promotive, preventive, and curative services, such as monitoring the health of the mother and fetus, nutrition education, immunizations, and counseling on warning signs and childbirth preparation (Rahmatien et al., 2025). Pregnancy is a physiological process, but the majority of maternal and infant deaths and illnesses occur in high-risk pregnancies. About 10–30% of pregnancies are classified as high-risk and account for 70–80% of severe complications. The prevalence varies across countries, ranging from 20–30% in India, 28–34% in hospital or community health center studies, and 14–26% in Ethiopia and Nepal (Johnson et al., 2024; Ng et al., 2025; Rajbanshi et al., 2021; Sharma et al., 2023). Therefore, regular prenatal checkups are an important part of ensuring the safety of both mother and baby.

Globally, pregnancy complications remain the leading cause of maternal morbidity and mortality, particularly in developing countries (WHO, 2019). High-risk pregnancies require close monitoring because they can lead to complications for both the mother and the fetus. Risk factors include maternal factors, comorbid conditions such as hypertension and anemia, and socioeconomic factors such as low educational attainment and limited access to health care (Dashe et al., 2018; Kemenkes RI, 2020). In addition, obstetric complications continue to cause more than 500,000 maternal deaths worldwide each year (Hapsari & Salim, 2023; Nurkhayati & Virma Septavia, 2023).

In Indonesia, the utilization of antenatal care (ANC) services remains suboptimal, even though the coverage of visits has increased. The discrepancy between coverage and service quality indicates that ANC visits are not yet fully in line with established standards. In fact, scheduled ANC visits can effectively prevent various complications during pregnancy and childbirth (Muayah & Ani, 2021). The evaluation of maternal health services is conducted using the K1, K4, and K6 coverage indicators, which reflect the level of access to and continuity of antenatal care in accordance with the 2022 standards of the Ministry of Health of the Republic of Indonesia. The K4 antenatal visit is a key indicator in maternal health care, meaning that pregnant women must attend at least four visits during their pregnancy, with one visit in the first trimester, one in the second trimester, and two in the third trimester. This service aims to detect pregnancy risks early and prevent complications for both the mother and the fetus (Zulhaedah et al., 2025).

According to national data from the 2022 Riskesdas survey, the prevalence of anemia among pregnant women in Indonesia stands at 48.9%. This indicates that nutritional and health issues among pregnant women remain a serious challenge. In addition, cases of Chronic Energy Deficiency (CED), anemia, and preeclampsia are still being reported, contributing to an increased risk of pregnancy complications in various regions. Although the national coverage of ANC K4 has reached 88.8%, there are still variations in achievement across regions, indicating that the quality of maternal health services remains uneven (Kementerian Kesehatan RI, 2022). This data reveals a gap between high service coverage and health outcomes that are not yet fully optimal.

Antenatal care (ANC) also serves as an essential preventive intervention for the early detection of pregnancy risk factors, safeguarding the health of the mother and fetus throughout gestation and preventing obstetric complications through the postpartum period (Hapsari & Salim, 2023). Without routine prenatal care, mothers risk being unaware of the status of their pregnancy, fetal growth, and early signs of complications that could be life-threatening. Failure to attend prenatal

care appointments leads to undetected complications, thereby increasing the risk of illness, maternal mortality, and conditions such as anemia, hypertension, gestational diabetes, fetal growth restriction (FGR), low birth weight (LBW), and the need for neonatal intensive care unit (NICU) treatment compared to mothers who attend prenatal care regularly (Ahmad & Henukh, 2025; Gaikwad et al., 2024; James et al., 2022).

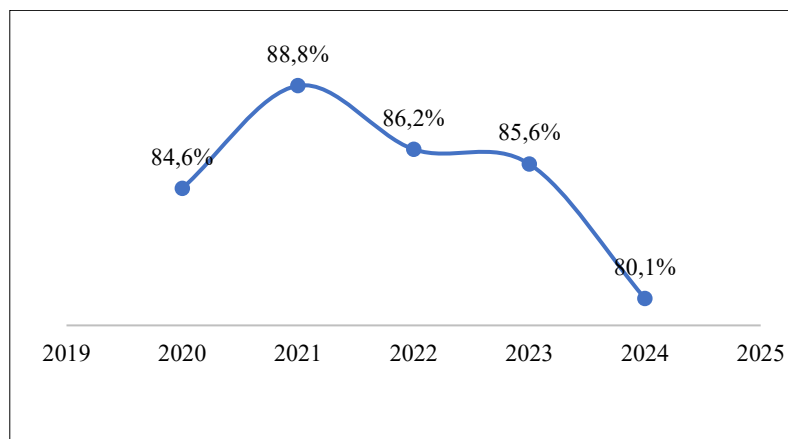
High-risk pregnancies require close monitoring due to the potential for maternal-fetal complications. Major risk factors include maternal factors such as extreme age and a history of pathological obstetric conditions, comorbid conditions such as chronic hypertension/preeclampsia, gestational diabetes, and severe anemia, as well as socioeconomic factors such as low educational attainment and limited access to healthcare services (Aslina et al., 2025; Li et al., 2023). In addition, pregnant women's limited knowledge of the importance of antenatal care, warning signs of pregnancy complications, and adherence to routine checkups remain major barriers to service utilization. Family support, particularly from husbands, also plays a role in determining the success of health service utilization during pregnancy (Green & Kreuter, 2005). ANC has indeed been recognized as a critical intervention, but high coverage has not yet been accompanied by improvements in maternal health or a reduction in pregnancy complications such as anemia and preeclampsia (Kemenkes RI, 2020; WHO, 2019). This indicates a gap between access to services and the quality of their utilization. Given these circumstances, a comprehensive study is needed to analyze changes in the health status of pregnant women through antenatal care (ANC) services, using an analysis of Indonesia's national data. This study is expected to provide insights into the contribution of ANC to improvements in the health status of pregnant women and to serve as a foundation for the sustainable strengthening of maternal health care policies.

## **2. METODE**

This study employs a descriptive quantitative approach using document analysis to examine the coverage of Antenatal Care (ANC) services, particularly the K4 indicators, as part of the transformation of maternal health services in Indonesia. The study utilizes secondary data derived from the Indonesian Health Profile reports published by the Ministry of Health of the Republic of Indonesia for the period 2020–2024. Data collection was conducted systematically through the identification, selection, and comprehensive review of relevant official documents to ensure data validity and consistency. The analysis was carried out using descriptive and comparative methods to present an overview of K4 coverage and to compare its distribution at both national and provincial levels across different years. Furthermore, the study aims to identify trends and patterns in K4 service utilization over time and to interpret their implications for evaluating progress, recognizing challenges, and informing future strategies in the ongoing transformation of maternal health services in Indonesia.

## **3. RESULTS AND DISCUSSION**

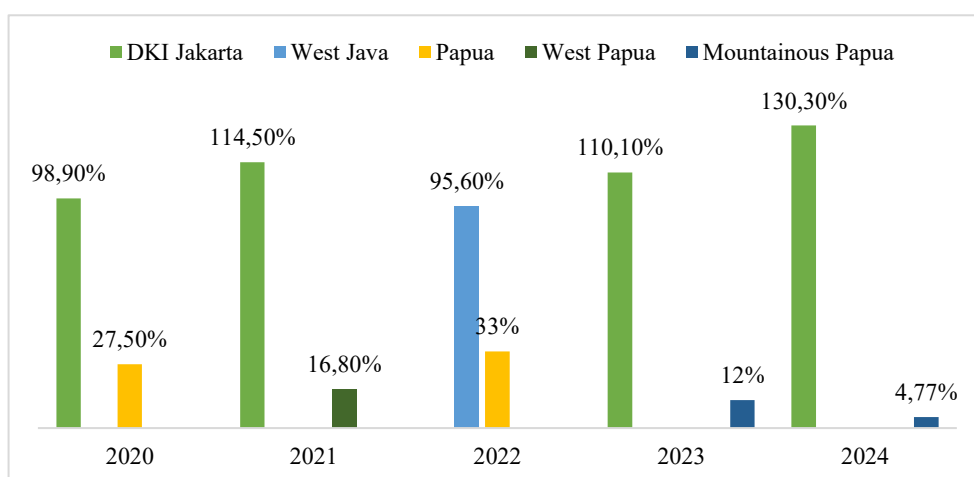
Maternal health care is provided through a continuum-of-care approach, which involves continuous care from the preconception period through pregnancy, childbirth, the postpartum period, and newborn care (World Health Organization, 2016; Kementerian Kesehatan Republik Indonesia, 2020). This approach emphasizes the importance of continuity of care to ensure early detection of risks and appropriate interventions at every stage. In this context, antenatal care (ANC) is a key component, as it serves as the primary gateway to continuous monitoring of pregnant women's health. Therefore, ANC coverage is a critical indicator for assessing the utilization of maternal health services. The graphs showing national ANC coverage for the years 2020–2024 are presented in Figure 1 and Figure 2.



**Figure 1. National ANC Visit 4 Coverage Trends, 2020–2024**

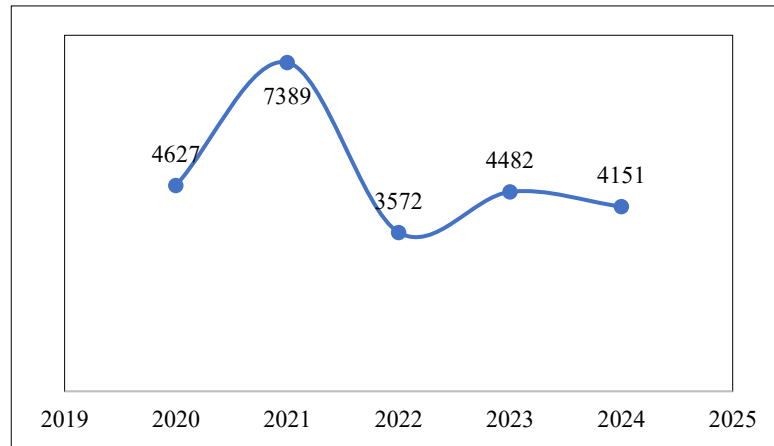
As shown in Figure 1, the coverage of antenatal care (ANC) in Indonesia has fluctuated over the past five years. In 2020, ANC K4 coverage stood at 84.6%, then increased in 2021 to 88.8%. However, after peaking in 2021, ANC K4 coverage has gradually declined, dropping to 86.2% in 2022, 85.6% in 2023, and decreasing significantly to 80.1% in 2024. This decline aligns with findings in various low- and middle-income countries, particularly following the COVID-19 pandemic, which impacted maternal health services. Mobility restrictions, concerns about infection, and the reallocation of health resources were factors contributing to the decline in ANC visits (Aranda et al., 2022; Hailemariam et al., 2021; Murewanhema et al., 2023).

In addition to external factors, the utilization of ANC is also influenced by individual and social factors such as educational level, economic status, maternal knowledge, and decision-making autonomy. Physical and financial barriers to access, including distance to health facilities and transportation costs, also contribute to low adherence to ANC visits. On the other hand, health system factors and service quality are also key determinants, where limited infrastructure and incomplete examinations can reduce the effectiveness of services. Several studies indicate that even though pregnant women have made visits in accordance with standards, the quality of care received is not yet fully optimal (Amungulu et al., 2023; Kibesaa & Yona W Kituaa, 2022).



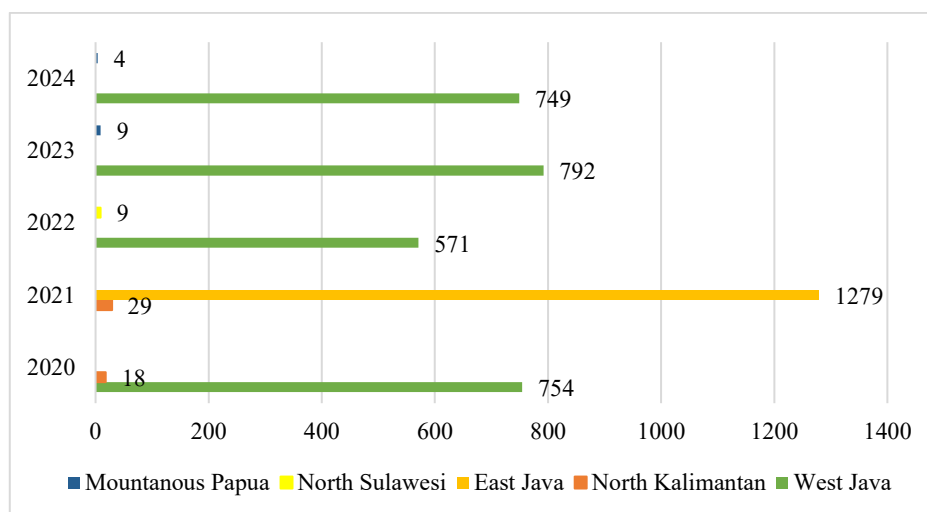
**Figure 2. Comparison of the Highest and Lowest ANC Coverage Rates Across Provinces in Indonesia, 2020–2024**

As shown in Figure 2, there is a significant disparity between the provinces with the highest and lowest ANC coverage in Indonesia. Urban areas such as DKI Jakarta and West Java consistently demonstrate high coverage, even exceeding 100% in some years, while eastern Indonesian regions such as Papua, West Papua, and Papua Pegunungan show much lower coverage. This disparity indicates that the decline in national ANC coverage is influenced not only by general factors but also by regional disparities in the distribution of health services. The availability of health facilities, health personnel, and ease of access are the primary factors driving these differences.



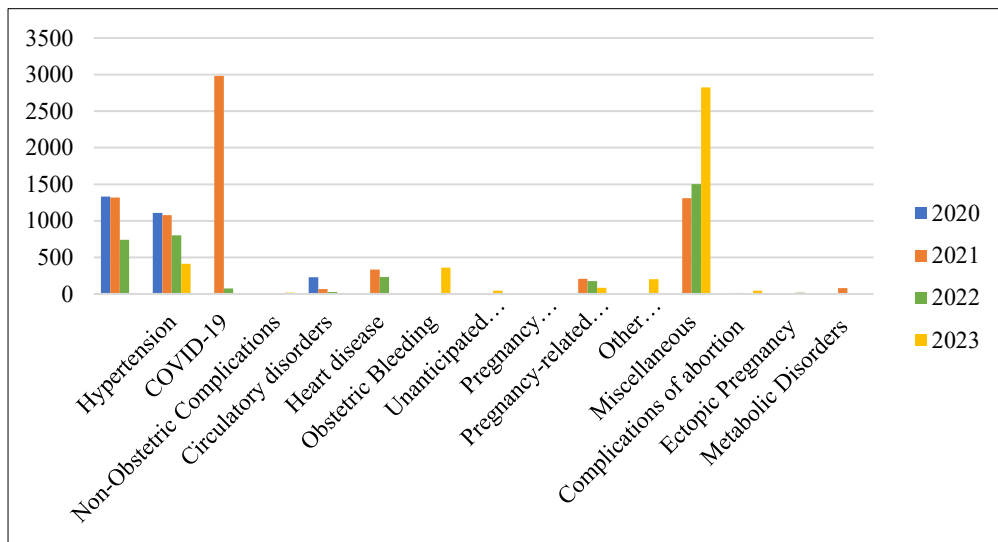
**Figure 3. Trends in Maternal Mortality Rates in Indonesia, 2020–2024**

Figure 3 shows that the maternal mortality rate in Indonesia fluctuated during the 2020–2024 period. The number of maternal deaths increased from 4,627 cases in 2020 to 7,389 cases in 2021, then decreased significantly in 2022 to 3,572 cases. However, the figure rose again in 2023 to 4,482 cases and decreased slightly in 2024 to 4,151 cases. This pattern indicates that maternal health issues have not yet been fully addressed. This means that the increase in ANC coverage has not fully correlated with a decrease in maternal mortality rates. This suggests a gap between access to services and the quality of care received. In other words, although pregnant women have accessed health services, not all of them have received comprehensive care in accordance with established standards.



**Figure 4. Comparison of the Highest and Lowest Maternal Mortality Rates Across Provinces in Indonesia, 2020–2024**

A comparison across provinces shows that West Java consistently recorded the highest maternal mortality rate during the observation period. Only in 2021 did West Java not hold the top spot; instead, East Java did. This indicates that the burden of cases is influenced not only by population size but also by the complexity of health care services and the uneven distribution of resources. Conversely, provinces with the lowest maternal mortality rates show relatively small case numbers, although they still require attention in prevention efforts. From a continuum of care perspective, the lack of integration of services at every stage whether during pregnancy, childbirth, or the postpartum period can lead to delays in the detection and management of complications. This indicates that the success of maternal health services is not determined by a single type of service, but by the continuity of comprehensive care.



**Figure 5. Trends in Causes of Maternal Mortality in Indonesia, 2020–2024**

Based on causes of death, hemorrhage and hypertension during pregnancy are the leading causes that consistently occur every year, with the highest peak in 2020 at 1,330 cases of hemorrhage and 1,110 cases of hypertension. In 2021, there was a surge in maternal deaths due to COVID-19, reaching 2,982 cases. Meanwhile, in subsequent years, causes of death were more dominated by non-obstetric complications, heart diseases, and infections. The high number of maternal deaths due to hemorrhage and hypertension indicates that early detection and management of complications have not been optimal, even though these conditions can be identified through quality ANC services. The gap between high ANC coverage and persistently high maternal mortality rates indicates that quantitative indicators alone cannot fully capture the quality of care. This situation suggests that improvements in the health status of pregnant women depend not only on the number of visits but are more determined by the quality of care provided during each visit. High-quality ANC care is measured not only by the frequency of visits, but also by the comprehensiveness of examinations in accordance with standards. ANC service standards in Indonesia include 12 examination components, such as measurement of weight and height, blood pressure checks, nutritional status assessment via Upper Arm Circumference (UAC), measurement of fundal height, fetal heart rate and presentation checks, administration of tetanus immunization, iron supplementation, laboratory tests, case management, counseling, and an integrated referral system. Each component plays a crucial role in the early detection of pregnancy risks and the prevention of complications (Kemenkes RI, 2020).

The findings of this study indicate that antenatal care (ANC) plays a strategic role in improving the health of pregnant women. These improvements result from the early detection of risk factors, continuous health monitoring, and the provision of appropriate interventions during pregnancy. Pregnant women who were previously at risk of complications such as anemia, hypertension, and fetal growth restriction have the potential to see improvements in their condition if they receive

comprehensive care. This indicates that ANC serves not only as a means of early detection but also as an intervention tool capable of gradually improving maternal health. However, the analysis results indicate that these improvement efforts have not yet been fully realized. Although ANC visit coverage is relatively high, high rates of maternal complications and deaths are still observed, indicating a gap between the quantity of services (coverage) and the quality of care.

According to WHO (2016) Effective ANC services must include comprehensive examinations, good communication between health workers and pregnant women, and the provision of interventions tailored to individual needs; however, regional disparities remain a significant factor affecting the success of these services, where limited access to facilities and healthcare personnel results in low coverage and service quality, as highlighted by the Ministry of Health of the Republic of Indonesia's (2022) report on uneven distribution, particularly in eastern Indonesia. Furthermore, from the perspective of behavioral determinants, low maternal compliance with ANC visits is influenced by factors such as knowledge, attitudes, and family support, as explained in Lawrence Green's health behavior model; therefore, limited awareness, inadequate health education, and insufficient spousal or family support can become significant barriers to optimal service utilization. These behavioral constraints are often interconnected with socio-cultural and accessibility factors, further affecting mothers' decisions to complete recommended ANC visits. Ultimately, improving the health of pregnant women requires a comprehensive and multidimensional approach that not only enhances the quality of health services and ensures equitable access across regions, but also strengthens health education, community engagement, and family empowerment. Such integrated efforts are essential to promote consistent ANC utilization and to sustainably reduce the risk of maternal complications and mortality.

#### **4. CONCLUSION**

Antenatal care (ANC) plays a strategic role in improving the health status of pregnant women through early detection of risk factors, continuous health monitoring, and the provision of appropriate interventions. Based on an analysis of Indonesia's national data for 2020–2024, ANC coverage particularly for the fourth antenatal visit (K4) has shown fluctuating trends with a downward trajectory in recent years. On the other hand, the maternal mortality rate remains relatively high and has not shown a consistent decline. These findings indicate a gap between high service coverage and suboptimal health outcomes, suggesting that the quality of ANC services has not yet fully met standards. Additionally, there are regional disparities as well as behavioral factors that influence service utilization. Therefore, improving the health status of pregnant women requires a comprehensive strengthening of ANC service quality, adherence to service standards, equitable access to healthcare, and enhanced education and family support. These efforts are expected to reduce rates of maternal complications and mortality and improve maternal health outcomes sustainably in Indonesia.

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