



# The Influence of Women's Autonomy on the Decision to Seek Antenatal Care K4 and K6

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## ABSTRACT

This study analyses the influence of women's autonomy on the decision to attend antenatal care at K4 and K6 levels in Indonesia, using data from the 2017 Indonesia Demographic and Health Survey (IDHS). A binary logistic regression model was used to explore the influence of women's autonomy—measured through decision-making power within the household and control over resources—on the utilisation of maternal health services. Control variables include age, education, women's employment status, husband's employment status and education, place of residence (urban/rural), and geographical region (Java-Bali vs. non-Java-Bali). The results indicate that women's autonomy significantly increases the likelihood of attending antenatal visits according to the K4 and K6 standards. These findings are consistent across various model specifications, both with and without additional control variables.

## INTRODUCTION

In 2016, the World Health Organisation (WHO) recommended eight antenatal visits to improve the detection and management of pregnancy risks (Imo, 2022). This revision was based on evidence that more frequent visits can reduce the risk of complications and improve health outcomes for mothers and babies (Imo, 2022; Kebede et al., 2021). In the same year, the Indonesian Ministry of Health adopted similar principles by recommending six antenatal visits. These adjustments aim to align international guidelines with the Indonesian context, taking into account the country's health infrastructure and resource availability (Anis et al., 2022; Idris & Sari, 2023; Laksono et al., 2020).

The primary goal of antenatal care is to prepare pregnant women physically and mentally for the process of pregnancy and childbirth, while ensuring that their surroundings support protection against infection risks (Ministry of Health, 2020). Doctors and midwives provide high-quality services by conducting early detection of potential risks, accurate diagnosis, appropriate

management, and referral to advanced healthcare facilities if necessary. Antenatal care can significantly reduce various maternal and infant health issues ( ) during pregnancy and childbirth. This contributes to reducing the maternal mortality rate (MMR) by enabling early detection of risks, effective management of complications, and timely referral to adequate healthcare facilities (Ahmed et al., 2010; Cameron et al., 2019; Feng et al., 2023; Firoz et al., 2018; Hamal et al., 2020; Umeora et al., 2008; Zuckerwise & Lipkind, 2017).

Indonesia continues to face significant challenges in reducing maternal mortality rates (MMR), which currently average 189 deaths per 100,000 live births—far from the Sustainable Development Goal (SDG) target of 70 per 100,000 by 2030. The National Medium-Term Development Plan (RPJMN) sets a target of 183 per 100,000 by 2024. Although the national average is approaching the RPJMN target, data shows significant disparities between provinces. Papua and West Papua have the highest rates at 234 per 100,000, while Jakarta and Bali report the lowest rates at 63 per 100,000 (BPS, 2020). These disparities reflect inequalities in access to and quality of healthcare services across the country. Early and regular antenatal visits have proven crucial for detecting and managing complications such as pre-eclampsia or infections, which can endanger the lives of mothers and fetuses (Oyerinde, 2013; Kebede, 2022). The coverage of four antenatal visits (K4) in Indonesia increased from 70.4% in 2013 to 74.1% in 2018, indicating increased awareness of the importance of these services (Ministry of Health, 2020). However, despite these improvements, K4 coverage has not yet reached the universal target, indicating the need for further efforts to address the barriers faced by pregnant women.

Gender equality, which is closely linked to human development and family well-being, also plays a critical role in improving health services. Although Indonesia's Gender Inequality Index (GII) shows steady improvement—with an average decline of 0.010 points per year since 2018—challenges remain, particularly in economic and political participation (BPS, 2024; World Economic Forum, 2023). Indonesia recorded an overall gender equality score of 69.8%, slightly above the global average of 68.4%. The Philippines ranked highest in Southeast Asia with a score of 0.783 and 16th globally, reflecting relatively strong gender equality, particularly in political and economic participation. In comparison, Indonesia, with a score of 0.698, ranks 87th globally. Although some Southeast Asian countries have made significant progress, most still face major challenges in achieving gender equality.

Although many studies in developing countries have analysed the role of health service provision and access in explaining low health service utilisation, relatively few have examined the influence of factors such as women's autonomy on health service utilisation (Woldemicael, 2010). Lack of decision-making power and limited access to economic resources often hinder women's ability to seek medical care. These limitations can also lead to delays in accessing and receiving care, even in areas where health services are physically available (Awasthi et al., 2011; Imo, 2022). Women's autonomy has a significant impact on their access to health services, including reproductive and maternal health services such as antenatal care, safe delivery, and contraceptive use (Imo, 2022; Kebede et al., 2021; Woldemicael, 2010). When women have limited autonomy—such as restrictions on mobility or lack of authority to make important decisions—they tend to make less use of reproductive health services. This situation often contributes to various social problems, including increased rates of pregnancy complications and maternal mortality (Mahar Jain, 2003).

This study aims to analyse the influence of women's autonomy on antenatal care visits at K4 and K6 levels. The analysis takes into account various determining factors, such as women's education level—which determines their ability to understand the importance of antenatal care—economic status, which affects financial ability to access health services, and access to information that helps women understand the schedule and benefits of antenatal visits. Additionally, this study considers the role of family support, including the involvement of husbands and other family members in supporting women's decisions to undergo antenatal care, as well as other demographic characteristics such as age, occupation, and place of

residence (urban or rural), which may influence accessibility to antenatal services. Previous studies have shown that educational attainment, social status, household wealth, and women's decision-making capacity ( ) are significantly associated with maternal health-seeking behaviour and maternal survival (Awasthi et al., 2011; Kebede et al., 2021; Mohamoud et al., 2019).

Most existing studies focus on the provision and accessibility of health services to explain low health service utilisation in developing countries, while few have examined how women's autonomy influences their decisions to use these services. This study contributes to the literature by analysing the influence of women's autonomy on decisions to undergo antenatal care in accordance with the newly recommended six-visit standard (K6) by the Ministry of Health and WHO. In this study, women's autonomy is measured through decision-making power in health matters, freedom of mobility, and control over economic resources. Additionally, this research expands the scope of previous studies, which primarily focused on the four-visit antenatal care model (K4), thereby providing a more comprehensive understanding of the factors influencing compliance with antenatal care standards.

## LITERATURE REVIEW

### Theoretical Framework of Health Behaviour

Individual decisions to utilise health services, including antenatal care, are influenced by cost-benefit evaluations. Michael Grossman, in his theory developed in 1972, conceptualised health not only as an end result or physical condition but as a form of capital that can be invested. Grossman defined health as a component of human capital that has economic value, as it can increase individual productivity and reduce future medical costs. Health is considered a valuable asset that can be maintained, improved, or deteriorated over time. Grossman's model explains that individuals can improve or maintain their health through various forms of investment. These investments include adopting healthy dietary habits, exercising regularly, undergoing routine health check-ups, and avoiding risky behaviours such as smoking, excessive alcohol consumption, or irregular sleep patterns.

The concept of supply and demand in healthcare serves as a basic framework for analysing how limited resources are allocated to meet the needs of a growing population. Demand for healthcare services is influenced by various factors, including public awareness of the importance of health, accessibility of healthcare facilities, and individuals' financial capabilities. People who are more knowledgeable about the importance of prevention and early treatment tend to have higher demand for quality healthcare services. Efficiency in allocating healthcare resources is crucial to ensuring that public demand can be met without overburdening the healthcare system. Unfortunately, many health intervention programmes focus too much on increasing supply—such as building new facilities—without addressing social factors that hinder demand, such as stigma, lack of education, or cultural barriers to accessing care (Ahmed et al., 2010).

Abraham Maslow, in his theory of the hierarchy of needs, identified health as an integral component of basic needs and safety. Health is at the second level of the hierarchy, which includes the need for safety and security. Within this framework, the need for physical health and protection from disease or external threats becomes a priority after physiological needs—such as food, water, and shelter—are met (Krath et al., 2021; Patel et al., 2023). Health is understood as a fundamental element that supports an individual's ability to pursue well-being in other areas of life. Individuals who do not have good health may find it difficult to focus on higher-level needs, such as building social relationships, pursuing a career, or developing themselves. Recent studies increasingly support the relevance of Maslow's hierarchy in the context of health. Individuals who feel physically safe and maintain stable health are better able to pursue higher-level needs, such as self-esteem and self-actualisation. Therefore, meeting

health needs is not only essential for individual well-being but also serves as a foundation for building productive and prosperous societies (Krath et al., 2021; Patel et al., 2023).

### **Pregnancy and Antenatal Care**

Antenatal care is a critical step in ensuring the health of mothers and fetuses. Healthcare providers monitor foetal development, identify potential risks, and determine appropriate medical interventions, such as further care or referral to specialists. Nutritional issues in pregnant women are often identified, and their management includes nutritional counselling, supplementation, or special interventions to prevent complications such as anaemia, low birth weight, or stunting. Routine antenatal check-ups contribute to improved maternal and infant health and support efforts to reduce stunting rates (Ministry of Health, 2020). High-risk pregnancies—such as those involving hypertension, gestational diabetes, or a history of complications—require special attention, including detailed birth planning, more frequent visits, and access to adequate health facilities. Timely referrals and intensive care can significantly reduce the risk of serious complications (Kebede et al., 2021; Awasthi et al., 2011). Advanced healthcare facilities provide interventions such as emergency caesarean sections, blood transfusions, preeclampsia management, and specialist team support. For low-risk pregnancies, childbirth can proceed without additional interventions. However, conditions such as gestational diabetes, hypertension, or infectious diseases require special management to protect the health of the mother and child. Easy access to health facilities supports routine check-ups, early detection of risks, and safe birth planning. A well-functioning health system enables timely interventions, nutrition education, and referrals to comprehensive care facilities, thereby improving the well-being of mothers and children (Awasthi et al., 2011; Kebede et al., 2021; Mohamoud et al., 2019).

### **Women's Domestic Autonomy**

Women's autonomy is a multidimensional concept that encompasses their ability to control resources, adopt independent ideologies, and overcome external constraints through social interaction (Hakim et al., 2003; Presser & Sen, 2000). This autonomy reflects women's ability to make decisions and control important aspects of their lives independently, both in the private and social domains (Imo, 2022). Indicators of women's autonomy include freedom of movement—such as the ability to visit relatives without permission—and decision-making power over household purchases and daily needs (Imo, 2022; Woldemichael, 2010). These indicators reflect women's control over resources and strategic decisions, which contribute to their individual well-being and increase their contribution to their families and communities. Women with higher levels of autonomy are generally better able to access health services and ensure the health of their children.

Several factors influence women's autonomy, including age, economic status, level of education, and media exposure, all of which contribute to women's empowerment through increased mobility, control over resources, and decision-making abilities (Imo, 2022; Kebede et al., 2021). Autonomy enables women to live more independently, such as leaving the house without permission or making decisions about contraception and health services (Woldemichael, 2010). Women's autonomy is essential for realising their full potential, participating actively in society, and improving their own well-being and that of their families (Akram, 2018). Women with greater autonomy are more likely to access education, employment, and health services, and play an important role in household decision-making. High levels of autonomy have a positive impact on economic, health, and educational outcomes for women and future generations (Jejeebhoy & Sathar, 2001). Independent women contribute through active participation in the economic sector, increased household income, and decision-making at the community level. Efforts to promote women's autonomy provide benefits at the individual and community levels, promoting equality and shared prosperity.

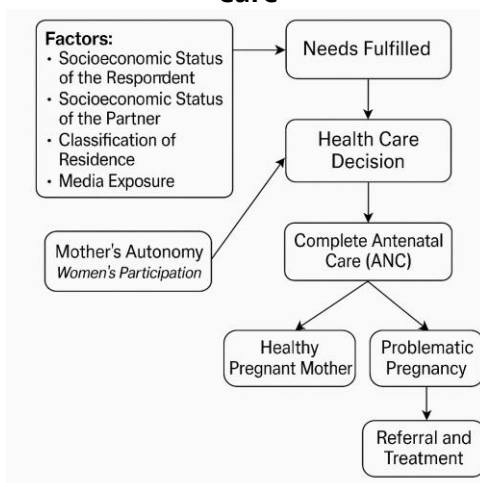
### **Linking Women's Autonomy with Antenatal Care Acceptance**

Women's autonomy enables them to make independent decisions and meet their personal needs through control over financial resources and freedom of mobility (Kebede et al., 2021; Woldemichael, 2010). Indicators of autonomy include decision-making ability, financial control, and freedom of movement (Nisar et al., 2022; Seymour & Peterman, 2018). Women with higher levels of autonomy tend to have better access to health services, high-quality medical care, and better health outcomes, including increased life expectancy (Imo, 2022; Kebede et al., 2021). Women's empowerment is positively associated with the utilisation of maternal health services, highlighting the critical role of autonomy in improving access to and utilisation of health services in developing countries (Ahmed et al., 2010; Imo, 2022). Regular and high-quality antenatal visits are essential for ensuring positive health outcomes for mothers and children (Ahmed et al., 2010; Kebede et al., 2021). Routine check-ups increase the likelihood of early detection of pregnancy complications, enabling timely medical intervention and reducing the risk of maternal mortality (Tekelab et al., 2019; Firoz et al., 2018). In addition to early detection, antenatal visits provide health education to pregnant women on nutrition, physical activity, and healthy behaviours during pregnancy (de Jersey et al., 2013; Girard & Olude, 2012).

Health inequalities are influenced by socioeconomic status, quality of care, education, genetics, behaviour, and environmental factors (Awasthi et al., 2011a). Education, wealth, and women's decision-making power are closely associated with maternal health-seeking behaviour (Awasthi et al., 2011; Kebede et al., 2021; Mohamoud et al., 2019). Women who participate in household decision-making are more likely to actively utilise antenatal services (Idris & Sari, 2023). Women's autonomy is often measured by their ability to express their opinions in decision-making processes (Tayal et al., 2024). Factors influencing antenatal visits include education, access to health services, and socio-economic conditions. Integrated efforts in education and access to services are needed to increase K6 coverage (Haryana et al., 2024). Socioeconomic variables such as age, employment status, education of the mother and husband, and access to information significantly influence both women's autonomy and health service utilisation (Ahmed et al., 2010; Hamal et al., 2020).

Young women tend to have limited knowledge about pregnancy, while older women may face physical barriers or higher risks of complications (Rizkianti et al., 2020). Education improves access to healthcare services, awareness of preventive care, and women's autonomy, although its effects are often moderated by prevailing social norms (Vasser et al., 2024). Working women generally have greater economic independence, decision-making power, and are more actively involved in antenatal services (Zakar & Iqbal, 2024). Husbands with higher levels of education tend to support maternal and child health, although their influence on women's autonomy varies depending on the cultural context (Haque et al., 2012). Husbands with stable jobs contribute to financial stability and support the achievement of K4 and K6 antenatal care coverage (Rizkianti et al., 2020). Media exposure increases women's autonomy by improving their knowledge of maternal health services (Sserwanja et al., 2022). Wealthier households generally have better access to health services, while poor households often face financial barriers (DHS, 2016). On the other hand, previous pregnancy experience can increase women's autonomy; however, high parity can be a barrier due to resource prioritisation for existing children (Kamiya, 2011). Women who have experienced miscarriage tend to be more proactive in seeking health services (Chol et al., 2019). Urban areas generally have better access to health services than rural areas, with significant disparities between the Java-Bali and non-Java-Bali regions (Laksono et al., 2020).

**Figure 1. Conceptual Framework of Women's Autonomy and Comprehensive Antenatal Care**



This conceptual framework illustrates the relationship between socioeconomic factors, maternal autonomy, and decision-making in the utilisation of maternal health services, particularly antenatal care. Socioeconomic factors such as education, income, residential classification, and media exposure influence women's decisions to seek health services. Women with higher education and stable income are more likely to understand the importance of antenatal care and have the financial ability to access these services. Women from economically better-off households tend to have better access to health facilities compared to those from low-income families (Kebede et al., 2021).

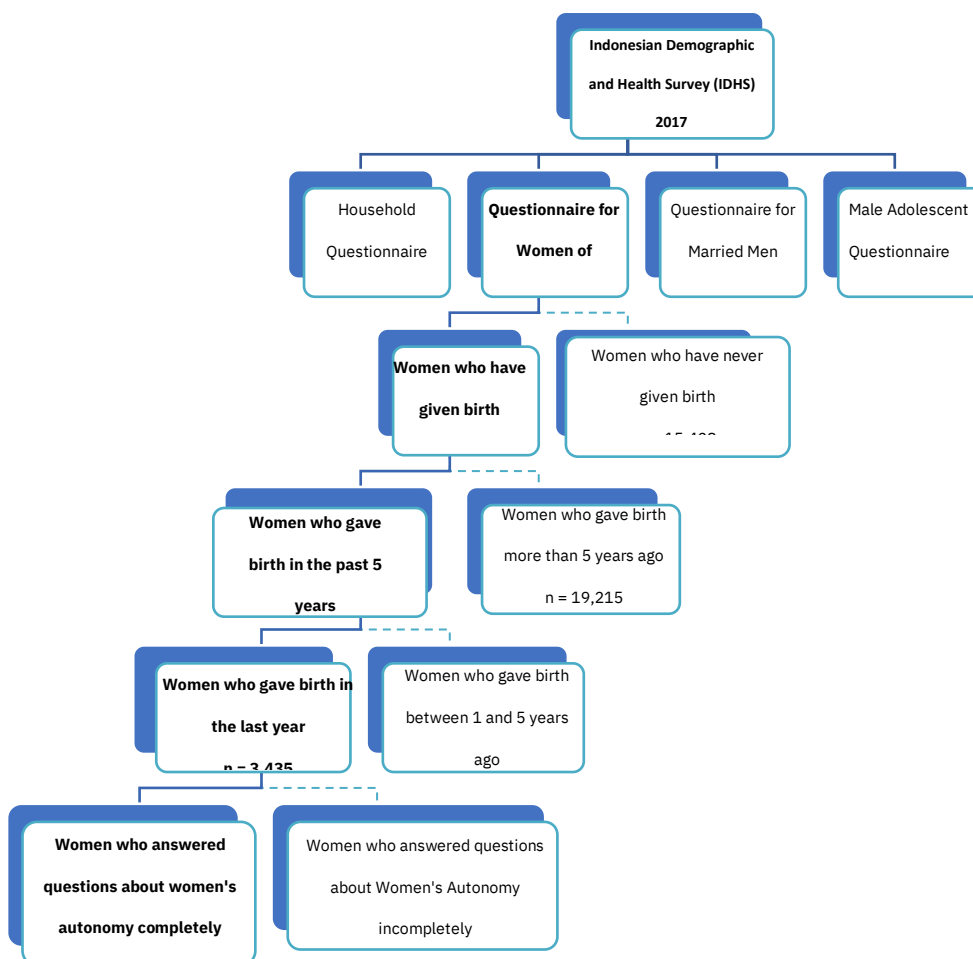
**METHOD**

**Data Sources and Analysis Unit**

This study uses data from the 2017 Indonesia Demographic and Health Survey (IDHS), a national survey that collects demographic and health indicators at the individual and household levels (Rizkianti et al., 2020). The IDHS was conducted by the National Family Planning Coordinating Board (BKKBN) in collaboration with the Central Statistics Agency (BPS) and the Ministry of Health, and the data is publicly available at [www.dhsprogram.com](http://www.dhsprogram.com) (BKKBN, 2018). The 2017 IDHS used a two-stage stratified sampling design. In the first stage, census blocks were selected using a probability proportional to size (PPS) method based on the number of households recorded in the 2010 Population Census (SP2010). In the second stage, 25 households were systematically selected from each selected census block. Among these households, 8 households were selected for the sample of ever-married men. This sampling design was applied to ensure the representativeness of the data at the national and provincial levels.

IDHS data includes four main questionnaires: household (RT), women of reproductive age (WUS), men who have ever been married (PK), and adolescent boys (RP). The sample includes 1,970 census blocks, targeting approximately 49,250 households, 59,100 women of reproductive age (15–49 years), 24,625 male adolescents (15–24 years), and 14,193 men who have ever been married (15–54 years). This study uses the SDKI17-WUS labelled dataset, which contains information on the location, socioeconomic status of respondents and their partners, pregnancy history, and women's autonomy. The unit of analysis in this study is women of reproductive age (15–49 years) who gave birth in the year prior to the survey. This subgroup was selected to minimise memory bias related to the timing of health visits and interviews (Idris & Sari, 2023; Rizkianti et al., 2020; Woldemicael, 2010).

**Figure 2. Sampling Procedure**



Source: IDHS 2017, processed data

**Operational Definition of Variables**

The dependent variable in this study is the number of antenatal care (ANC) visits, specifically at least four visits (K4) and six visits (K6), in accordance with the recommendations of the Indonesian Ministry of Health. The Ministry of Health recommends six antenatal visits during pregnancy, in line with updated WHO guidelines, which previously set four visits as the standard. This revision aims to improve the quality and coverage of maternal health services to detect and prevent pregnancy complications more effectively (Ministry of Health, 2020).

The main independent variable is women's autonomy, measured using six indicators related to decision-making in the household. Women's autonomy is evaluated using Principal Component Analysis (PCA) based on a series of questions from the Indonesia Demographic and Health Survey (IDHS). The autonomy variable is constructed by summing positive responses to six questions related to the dimensions of autonomy (Ahmed et al., 2010). Decisions made solely by the husband/partner or others indicate low autonomy, while decisions made by the respondent herself or jointly with her partner indicate high autonomy.

Barriers such as needing permission to leave the house, lack of money, or distance to health facilities are considered constraints if they hinder access to health services, and are not considered problems if they do not affect access. This classification refers to Woldemichael (2010), who defines women's autonomy as the ability of individuals to act independently. High autonomy includes the ability to leave the house without permission, make personal decisions about contraception, and access health services. Women whose opinions are taken into account

in decision-making processes are considered to have high autonomy, while those who are excluded from participation reflect low autonomy. Control variables in this study include demographic factors, socioeconomic status, access to information, history of miscarriage, and place of residence.

### Analytical Model

This study uses three levels of analysis: univariate, bivariate, and multivariate. Univariate analysis is used to describe sample characteristics and variable distributions. Bivariate analysis explores the relationship between two variables using cross-tabulation techniques. To assess the influence of women's autonomy on the likelihood of attending at least four (K4) and six (K6) antenatal visits, multivariate analysis was conducted using a binary logistic regression model. This model estimated Odds Ratios (OR) to measure the strength and direction of the relationship between women's autonomy and antenatal service utilisation. Separate models were specified for K4 and K6 to capture potential differences in determinants. In addition to crude ORs, the models also produced Adjusted Odds Ratios (aORs), which account for control variables such as socioeconomic and demographic factors, enabling more accurate and robust estimates of the influence of women's autonomy on antenatal care-seeking behaviour.

$$\text{logit}(p) = \ln \left( \frac{p}{1-p} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

Thus, the influence of women's autonomy on the decision to undergo K4 and K6 antenatal care visits can be mathematically expressed as follows:

$$\begin{aligned} \text{Output} = & \alpha + \beta_1 \text{Women's autonomy}_i + \beta_2 \text{Location}_i + \beta_3 \text{Age}_i + \beta_4 \text{Respondents' secondary education}_i \\ & + \beta_5 \text{Respondents' Higher Education}_i + \beta_6 \text{Respondent's Employment Status}_i \\ & + \beta_7 \text{Internet Media}_i + \beta_8 \text{Television Media}_i + \beta_9 \text{Newspaper Media}_i \\ & + \beta_{10} \text{Secondary Education Husband}_i + \beta_{11} \text{Higher Education Husband}_i \\ & + \beta_{12} \text{Husband's Employment Status}_i + \beta_{13} \text{Wealth index (Poor)}_i \\ & + \beta_{14} \text{Wealth Index (Middle)}_i + \beta_{15} \text{Wealth Index (rich)}_i + \beta_{16} \text{Wealth Index (Very Rich)}_i \\ & + \beta_{17} \text{Parity}_i + \beta_{18} \text{Miscarriage experience}_i + \epsilon_{it} \end{aligned}$$

## RESULTS

A total of 1,132 women (91%) met the K4 antenatal care standard, while 118 women (9%) did not meet the standard. For the K6 standard, 982 women (79%) met the requirements, while 268 women (21%) did not meet the requirements. The data show a decrease in the proportion of pregnant women who meet the recommended standards as the number of required visits increases. Most women in this study demonstrated a high level of autonomy in various aspects of household decision-making. Approximately 92% of women had full control over their income, and 97% were able to independently decide on household expenditures. However, for other aspects such as deciding on visits to health facilities or family members, the proportion of women with high autonomy was slightly lower—91% and 88%, respectively.

Distribution by place of residence shows that women living in urban areas are more likely to adhere to antenatal care guidelines than those living in rural areas. A total of 93% of urban women completed their K4 visits, compared to 88% of rural women. A similar trend was observed for K6 visits, with 82% of urban women meeting the standard, while only 73% of rural women did so. Women with secondary and higher education levels demonstrated significantly higher compliance with K4 and K6 standards compared to those with lower education levels. For example, 87% of women with higher education completed the K6 visit, compared to only 54% of women with lower education ( ). This indicates that education influences women's understanding of the importance of antenatal care and their ability to access healthcare services.

**Table 1. Descriptive Statistics of the Study**

Variable	Obs	Mean	Std.	Min	Max
<b>K4 Examination</b>	1250	0.906	0.293	0	1
<b>K6 Examination</b>	1250	.786	0.411	0	1
<b>Women's autonomy</b>	1,250	5,462	1,038	0	6
<b>Village – City</b>	1,250	0.576	0.494	0	1
<b>Java Bali - Non Java Bali</b>	1,250	.318	0.466	0	1
<b>Age</b>	1250	29,909	5,824	15	47
<b>Respondent's Education</b>					
Low	1250	.131	0.338	0	1
Medium	1250	.45	.498	0	1
Height	1250	.419	0.494	0	1
<b>Education of the Respondent's Husband</b>					
Low	1	.169	0	0	1
Medium	1250	0.526	0	0	1
Height	1250	.305	.461	0	1
<b>Parity</b>	1250	0.639	0.48	0	1
<b>Respondent's Employment Status</b>	125	.802	0.399	0	1
<b>Husband's Employment Status</b>	1	.962	0	0	1
<b>Information dissemination</b>					
Internet Media	125	.477	0	0	1
Television	1,250	.962	0.19	0	1
Newspapers	1,250	.565	0.496	0	1
<b>Wealth Index</b>					
Very Poor	1,250	.146	0.353	0	1
Poor	1250	.174	.38	0	1
Medium	1250	.186	.39	0	1
Rich	1250	.226	.419	0	1
Very Rich	1,250	.267	0.443	0	1
<b>Miscarriage experience</b>	1,250	.162	.368	0	1

Source: IDHS 2017, processed data

The bivariate analysis in this study indicates that women residing in urban areas are more likely to undergo K4 and K6 antenatal care visits compared to those in rural areas, although a decline in compliance with K6 standards is observed in both locations. Educational attainment is positively associated with compliance, with women who have secondary and higher education being more likely to adhere to antenatal care standards than those with lower education. Working women also show higher compliance with K4 and K6 visits compared to non-working women. The husband's employment status influences compliance, as women whose husbands are employed tend to be more adherent than those whose husbands are unemployed. The husband's education also plays a significant role, with higher education levels associated with increased antenatal care compliance among women. The wealth index reveals that higher economic status is associated with greater compliance with both K4 and K6 standards. Women with higher parity tend to have higher compliance rates than those with fewer children. Access to information sources—particularly television—enhances women's adherence to K4 and K6 antenatal care. Moreover, women in the Java-Bali region exhibit higher levels of compliance compared to those in non-Java-Bali areas.

**Table 2. Impact of Women's Autonomy on K4 Antenatal Care in Odds Ratios**

	(1)	(2)	(3)	(4)
<b>Women's Autonomy</b>	1,270*** (0.094)	1,226** (0.098)	1,209** (0.101)	1,217** (0.100)
<b>Age</b>		1,051** (0.022)	1,041* (0.022)	1,044** (0.021)
<b>Respondent's Education</b>				
Secondary		1,620* (0.456)	1,046 (0.298)	1,107 (0.318)
Height		1,741 (0.625)	0.824 (0.306)	0.960 (0.362)
<b>Education of Respondent's Husband</b>				
Secondary		1.27 (0.330)	0 (0.236)	0 (0.243)
Height		3.296*** (1.351)	1.736 (0.716)	1.839 (0.778)
<b>Parity</b>		0.440*** (0.116)	0.517** (0.141)	0.558** (0.152)
<b>Respondent's Employment Status</b>		1.09 (0.270)	1,011 (0.261)	1,090 (0.280)
<b>Husband's Employment Status</b>		2,687** (1,099)	2,073* (0.887)	1,843 (0.760)
<b>Information Dissemination</b>				
Internet			1,838** (0.555)	1,739* (0.542)
Television			1,148 (0.452)	1,164 (0.455)
The Quran			1,308 (0.295)	1,470* (0.344)
<b>Wealth Index</b>				
Poor			1,540 (0.421)	1,462 (0.413)
Middle			1,823** (0.558)	1,758* (0.545)
Rich			3,306*** (1.114)	2,880*** (1.001)
Very rich			5,204*** (2,429)	4,639*** (2,260)
<b>Miscarriage experience</b>			0.857 (0.243)	0.901 (0.257)
<b>Urban</b>				0.659* (0.143)
<b>Province</b>				3,062*** (0.987)
Number of Observations	1,250	1,250	1250	1250
r2_p	0.011	0.073	0.127	0.148

**Table 3. Impact of Women's Autonomy on K6 Antenatal Care in Odds Ratios**

	(1)	(2)	(3)	(4)
<b>Women's autonomy</b>	1,167**	1,144**	1,134*	1,136**
	(0.071)	(0.071)	(0.074)	(0.073)
<b>Age</b>		1.037**	1.030*	1.031*
		(0.016)	(0.017)	(0.017)
<b>Respondent's Education</b>				
Secondary		1,525*	1,040	1,087
		(0.336)	(0.236)	(0.254)
Height		1.063	0.540**	0.631
		(0.273)	(0.149)	(0.178)
<b>Education of the Respondent's Husband</b>				
Secondary		1,390	1,029	1,060
		(0.281)	(0.207)	(0.221)
High		2,486***	1,335	1,426
		(0.663)	(0.368)	(0.407)
<b>Parity</b>		0.488***	0.554***	0.594***
		(0.094)	(0.111)	(0.119)
<b>Respondent's Employment Status</b>				
		1.301	1,220	1,313
		(0.230)	(0.224)	(0.245)
<b>Husband's employment status</b>		2,394***	1,917*	1,754*
		(0.757)	(0.668)	(0.598)
<b>Information dissemination</b>				
Internet			1,940***	1,802***
			(0.384)	(0.367)
Television			1,102	1,109
			(0.391)	(0.399)
Newspaper			1,064	1,204
			(0.172)	(0.198)
<b>Wealth Index</b>				
Poor			1.628**	1,513*
			(0.377)	(0.363)
Middle			1,742**	1,602*
			(0.424)	(0.411)
Rich			2,618***	2,216***
			(0.666)	(0.604)
Very rich			5,019***	4,239***
			(1,613)	(1,495)
<b>Miscarriage experience</b>				
			0.895	0.945
			(0.185)	(0.200)
<b>City and Village</b>				
				0.772
				(0.133)
<b>Province</b>				
				2,577***
				(0.532)
Number of Observations	1,252	1,250	1250	1250
r2_p	0.005	0.044	0.103	0

*The Odds Ratio* indicates a positive effect of women's autonomy on the likelihood of pregnancy testing. A 1-unit increase in women's autonomy increases the likelihood of testing by 27% for K4 and 16.8% for K6. This effect suggests that the higher the women's autonomy, the greater the likelihood of them undergoing pregnancy testing. However, the addition of control variables such as education, income, number of family members, and location reduces the Odds Ratio value, indicating that part of the influence of autonomy is explained by these variables. Nevertheless, women's autonomy remains significant and important in supporting the utilisation of maternal health services.

Logit regression analysis shows that age, respondents' secondary education, husbands' higher education, parity, and husbands' employment status influence the likelihood of examinations. An increase in respondents' age increases the likelihood by 5.1% for K4 and 3.7% for K6. Respondents' secondary education increases the likelihood by 62% for K4 and 52.5% for K6. The husband's higher education increases the likelihood by 3.3 times for K4 and 2.5 times for K6. Parity has a negative effect, with each increase in parity reducing the likelihood by 56% for K4 and 51% for K6. Employed husbands increase the likelihood by 2.7 times for K4 and 2.4 times for K6.

Household characteristic variables indicate that access to information via the internet increases the probability by 83.8% for K4 and 94.0% for K6. The wealth index shows that wealthy households have a probability of 3.3 times for K4 and 2.6 times for K6, while very wealthy households have a probability of 5.2 times for K4 and 5.0 times for K6 compared to very poor households.

These results indicate that digital information access and household wealth significantly contribute to pregnancy check-ups. Location shows that women in Java-Bali have a 3 times higher chance in K4 and 2.5 times higher chance in K6 to undergo check-ups compared to women in Non-Java-Bali.

The Urban-Rural variable is not significant, indicating that urban or rural location does not sufficiently influence the likelihood of pregnancy check-ups. These results highlight the important role of access to information, economic factors, and geographical location in supporting pregnancy check-ups.

### **Heterogeneity**

The researchers conducted a sub-sample test by dividing the data based on place of residence (urban and rural) and respondents' employment status to evaluate the heterogeneity of the independent variables' influence on the dependent variable. The test results showed that women's autonomy has a significant influence on K4 examinations in urban areas, with increased women's autonomy increasing the likelihood of K4 examinations by 33.2%. However, in rural areas, the influence of women's autonomy on K4 examinations is not significant, possibly due to barriers to accessing health facilities, low education levels, or social norms.

Women's autonomy has no significant influence in urban or rural areas in K6 examinations. More complex K6 examinations may require greater support from households or local health systems, thereby reducing the direct influence of women's autonomy. Analysis involving socioeconomic variables such as income level, education, and employment status shows that in urban areas, women with higher socioeconomic status are more able to utilise their autonomy for health decisions, as seen at , whereas in rural areas, structural barriers limit the influence of women's autonomy despite their decision-making capacity. These findings highlight the heterogeneity of women's autonomy based on place of residence, with stronger effects in urban areas for K4 examinations.

**Table 4. Analysis of Heterogeneity of the Effect of Women's Autonomy on Pregnancy Check-ups Based on Place of Residence in odds ratio**

	(K4)	(K4)	(K6)	(K6)
Women's Autonomy	1,332** (0.173)	1,124 (0.125)	1,165 (0.110)	1,122 (0.106)
Socio-economic variables	Yes	Yes	Yes	Yes
Household Characteristics	Yes	Yes	Yes	Yes
Location	City	Village	City	Village
Observation	705	530	720	530
Pseudo R <sup>2</sup>	0.1860	0.1846	0.1598	0.092

The analysis results indicate that women's autonomy has a significant effect on K4 and K6 examinations among women with informal employment status, but not among women with formal employment status. This suggests that women's autonomy plays a greater role in encouraging pregnancy examinations among informal workers, where they have greater control over health-related decision-making. In K6, the influence of women's autonomy is weaker than in K4, but remains relevant in the informal group. Analyses involving socioeconomic variables, household characteristics, and location as control variables show that this relationship remains significant even when other factors are considered.

**Table 5. Analysis of Heterogeneity of the Effect of Women's Autonomy on Pregnancy Check-ups Based on Place of Residence in odds ratio**

	(K4)	(K4)	(K6)	(K6)
<b>Women's Autonomy</b>	1,332** (0.173)	1,124 (0.125)	1,165 (0.110)	1,122 (0.106)
<b>Socio-economic variables</b>	Yes	Yes	Yes	Yes
<b>Household Characteristics</b>	Yes	Yes	Yes	Yes
<b>Location</b>	City	Village	City	Village
Observation	705	530	720	530
Pseudo R <sup>2</sup>	0.1860	0.1846	0.1598	0.0921

## DISCUSSION

This study shows that women's autonomy has a significant influence on women's compliance with pregnancy check-ups according to the K4 (four visits) and K6 (six visits) standards in Indonesia.

Using 2017 SDKI data and a binary logistic regression model, the author proves that the higher the level of women's autonomy, the greater the likelihood that they will undergo pregnancy check-ups recommended by the Ministry of Health and WHO. Theoretically, this approach is very strong because it integrates Grossman's human capital theory and Maslow's hierarchy of needs. Both theories emphasise the importance of health as a basic asset for individuals to achieve higher levels of well-being. In this context, women's autonomy in the household becomes an asset that enables women to make appropriate health decisions. The results of the study highlight that women with control over household expenditure, high mobility, and the ability to make independent health decisions are more likely to meet the K4 and K6 standards. However, the impact is more significant on K4 visits than K6 visits, indicating that follow-up visits require more support, both from the family and the health care system. Other socio-demographic factors such as the education of women and their spouses, the employment status of husbands, access to information (especially the internet and television), and household economic status were also found to play an important role in increasing visit

rates. Another interesting finding is that women's autonomy has a more significant impact in urban areas than in rural areas, as well as among women working in the informal sector. This indicates that social structures and physical access to health facilities remain barriers in rural areas.

This study also contributes new insights into the link between gender equality and maternal health services. When women have a greater role in decision-making, they are better able to advocate for their health needs and those of their children. However, the authors also acknowledge several limitations, including potential bias in the data and limitations of variables such as geographical access and unavailable instrumental variables. The policy implications of this study are clear, empowering women at the household level needs to be strengthened as a strategy to improve maternal health services and reduce maternal mortality rates (MMR). Intervention programmes should not only focus on providing facilities but also address social factors such as women's autonomy, education, and access to information.

## CONCLUSION

This study highlights the importance of women's autonomy in improving the utilisation of antenatal care services at the K4 and K6 standards. Women's autonomy, which includes the ability to make household decisions, significantly influences women's chances of undergoing complete antenatal care. Women with high autonomy have greater control over family resources, choose health facilities, and make decisions without relying on the approval of others. The results indicate that women with high autonomy have a greater likelihood of undergoing K4 and K6 examinations, although the likelihood decreases for K6. Increased women's autonomy supports maternal health. Socio-economic factors such as respondents' secondary education, husbands' higher education, wealth index, and access to information via the internet also play important roles. Education and household wealth influence financial capacity and access to information, while the husband's employment status indicates a significant role as the primary income provider.

The limitations of this study include several aspects, one of the main limitations being the potential bias of respondents, particularly the tendency to provide answers considered socially acceptable. Such bias can affect data validity, especially for sensitive variables such as women's autonomy. Since these variables are measured through *self-assessment* by respondents, the results may be influenced by subjective personal perceptions, potentially leading to bias. *There is also bias in variables* related to geographical access to health services, for which data is not available, and potential *endogeneity* in the female autonomy variable. Methods such as 2SLS or *Instrumental Variables (IV)* are recommended to address *endogeneity* issues, but these cannot be applied in this study due to data limitations. These limitations highlight the need for further studies with more comprehensive variables to enhance the validity of the results.

## LIMITATIONS

The limitations of this study include several aspects, one of the main limitations being the potential bias of respondents, particularly the tendency to provide socially acceptable answers. This type of bias can affect the validity of the data, especially for sensitive variables such as women's autonomy. Because these variables were measured through self-assessment by respondents, the results could be influenced by subjective personal perceptions, thereby potentially introducing bias. This study did not fully explore other contextual factors that could influence the decision to undergo a pregnancy test.

This condition results in the potential for omitted variable bias. Several variables recommended for inclusion in the model based on previous studies are geographical access to health services by each individual. However, the researchers were unable to include these

variables in the model due to data limitations. The researchers are aware of the possibility of endogeneity in the female autonomy variable.

This occurs because the determination of women's autonomy can be influenced by other factors, such as the characteristics of the respondents' parents, so that the variable is not exogenous. To address this issue, several studies suggest using methods such as Two-Stage Least Squares (2SLS) or Instrumental Variables (IV) as solutions to improve estimation results and reduce potential endogeneity. Previous studies have used the Instrumental Variable method with the distance of respondents' schools as the instrument variable. These studies found that school distance is a good instrument because it does not directly affect the dependent variable, namely pregnancy check-ups, but through the independent variable, namely women's autonomy. School distance can affect women's autonomy because respondents who attend schools nearby have greater potential to increase their level of autonomy through the education they receive. The 2SLS or Instrumental Variable method can be used to address the endogeneity problem and strengthen the validity of the research results. However, these variables were not found in the questionnaire, so the study could not use this method.

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