JOURNAL LA MEDIHEALTICO

VOL. 06, ISSUE 05 (1448-1457), 2025
DOI: 10.37899/journallamedihealtico.v6i5.2707

# Level of Knowledge as a Dominant Factor in Pregnant Women's Visits: a Mixed Methods Study

**Iradatul Aini[2], Firdawati[1], Husna Yetti[1]**

*[1]Department of Public Health and Community Medicine Sciences, Faculty of Medicine, Universitas Andalas, Padang, Indonesia*
*[2]Master Program of Public Health, Department of Public Health and Community Medicine, Faculty of Medicine, Universitas Andalas, Indonesia*

**Corresponding Author: Firdawati*
*E-mail: firdawati@med.unand.ac.id*

Article Info

*Article history:*
Received 16 October 2025
Received in revised form 8 December 2025
Accepted 26 December 2025

*Keywords:*
MMR
Pregnant Women
Pregnancy Visits
Knowledge
Health Center

**Abstract**

*The Maternal Mortality Rate (MMR) in Padang City has increased during the 2018-2020 period. One of the efforts to reduce MMR is to provide integrated pregnancy services. The coverage of K1, K4, and K6 pregnancy visits is an important indicator in assessing the quality of these services, but the achievements of the three in 2019-2022 in Padang City have not reached the target. This study aims to find out the factors related to the visit of pregnant women to the Health Center. The method used is a mixed method with a cross sectional and sequential explanatory design. A total of 142 pregnant women in the third trimester became respondents in quantitative research, and 11 informants in qualitative research. The research was conducted in three health centers in Padang City. The results of the quantitative analysis showed that of the 10 variables studied, the level of knowledge had a significant relationship with pregnant women's visits (p = 0.009), and was the most dominant factor based on multivariate tests. The qualitative results showed that most of the respondents obtained information from digital platforms, but the Mother And Child Health book has not been used to the fullest, the classes of pregnant women are not evenly distributed, and there is still an assumption that pregnancy is a natural process that does not need to be studied. Efforts are needed to improve health promotion and education for pregnant women to increase knowledge and awareness about the importance of pregnancy visits, so that the target of pregnancy service coverage can be achieved.*

## Introduction

Maternal death is the death of a woman that occurs during pregnancy until 42 days after giving birth, regardless of gestational age or place (Saifuddin AB, 2010; Laily et al., 2025; Rossen et al., 2025). In addition to still being one of the global problems, MMR in Indonesia is also still one of the priority problems in the health sector.

The 2020 population census shows that MMR in Indonesia is 189 deaths per 100,000 live births. The Government of Indonesia through the Ministry of Health's Strategic Plan for 2020 – 2024 targets MMR in Indonesia in 2024, which is 183 per 100,000 live births (Ministry of Health, 2022) (Directorate of Nutrition and Mother And Child Health , 2023).

West Sumatra Province, MMR based on the results of the 2020 population census is 178 per 100,000 live births (BPS Padang City, 2023). Padang City based on data from the Padang City

Health Office shows that the MMR reported in 2018 – 2022 has increased cases, especially in cases of death of pregnant women (Padang City Health Office, 2023).

Reducing MMR can be done by ensuring that every mother is able to access quality health services, such as services during pregnancy, childbirth carried out by health workers who are trained in health care facilities (Ministry of Health of the Republic of Indonesia, 2021).

Research conducted by Citrawati and Laksmi (2021) states that maternal knowledge is significantly related to antenatal care visits conducted at the Tampaksiting II Health Center (Citrawati NK, Laksmi IGAPS, 2021). In addition, research by Bashir et all (2023) states that mothers who have good knowledge will make good use of antenatal care services, so that knowledge has a significant relationship with antenatal care visits (Bashir S et al., 2023; Wuna et al., 2025; Sari et al.m, 2025).

Notoadmodjo (2014) in his book, attitude can be one of the factors that affect human health behavior. Research conducted by Sandalayuk et all (2022) shows that attitude has a significant relationship with antenatal care visits conducted at the Paguyaman Health Center. The mother's education level can also be one of the factors related to pregnant women's visits in fulfilling antenatal care. Research conducted by Fegita et all (2022) states that there is a strong relationship between a pregnant woman's education level and pregnant women's visits. Knowledge about pregnancy can be obtained by a woman through seing, feeling and/or hearing activities. Pregnant women with good knowledge tend to have a better understanding of how important it is to have regular ANC visits, both for the health of the mother herself and for the health of the baby she will give birth.

Pregnant women who are working and have dense activities usually prefer to prioritize work over their health, so often pregnant women who work find it difficult to meet ANC visits compared to mothers who do not work and have less intensive activities and more time. Wulan and Hasibuan (2020) in their research found that employment status has a significant relationship with ANC visits where p (0.002) < sig-α (0.05).

Income can be one of the factors related to regular visits made by pregnant women during their pregnancy (Kare et al., 2021; Easwaran et al., 2025). Research conducted by Lumempouw (2016) shows that income has a significant relationship with visits by pregnant women. Pregnancy of course requires a special budget such as antenatal care costs, nutritious food for the mother and fetus, maternity clothes, childbirth costs and the needs of the baby after birth (Janaki & Prabakar, 2025; Sadhir et al., 2025; Wyckoff et al., 2025).

One of the high-risk pregnancies is when a woman becomes pregnant at the age of under 16 years or over 35 years old. Pregnancy that occurs when a mother is over 35 years old can increase the likelihood of ectopic pregnancy (pregnancy that occurs when the results of conception stick outside the uterus) which can be one of the causes of pain and death in pregnant women (Correa-De-Araujo R, Yoon SS (Sarah), 2021). Yemane (2022) in his research conducted in Ethiopia found that the age of pregnant women is one of the factors related to the use of antenatal care programs.

Parity is a term used in the context of pregnancy as the number of pregnancies experienced by a woman. Research conducted by Arsanah et all (2024) shows that parity also has a significant relationship with antenatal care visits carried out at BPM Dinda health facilities, West Nusa Tenggara. Research by Idris and Sari (2023) in stating that pregnant women who have a travel time from home to an antenatal service facility of less than or equal to 15 minutes are 1.6 times more likely to have a complete ANC visit compared to pregnant women who have to spend more than 15 minutes to an antenatal service place.

Family support is the attitude, actions and acceptance of the family towards its family members. As the environment closest to pregnant women, support from the family plays an important

role in influencing the psychology and motivation of the mother in carrying out health behaviors. With good support from the family, mothers will pay more attention to the health of themselves and their fetus, namely by regularly visiting health service facilities Another study conducted by Alburuda, et al (2019) in Surabaya also showed that there was a significant relationship between family support and pregnancy visits carried out with a p-value of 0.022 < 0.05, where 96% of respondents had completed pregnancy visits.

Support from health workers also has a relationship with pregnancy visits made by a pregnant woman, as in a study by Suhadah et al (2023) showing a significant relationship between health worker support and ANC visits of pregnant women.

Based on this background, the purpose of this study is to find out how the relationship between knowledge, attitudes, education level, employment status, family income, age of pregnant women, parity, access, family support and support of health workers with visits by pregnant women at the Padang City Health Center.

## Methods

### Study Design

This research used a mixed-method sequential explanatory design, which made the initial data gathering and analysis in quantitative terms, and the following inquiry, which was qualitative in character, aimed at enhancing and interpreting the statistical results. The designed design allowed a multifaceted comprehension of the behaviour of pregnancy visits through the synthesis of the numerical analysis with contextual insights, as it united quantifiable patterns and lived experiences and stories of mothers and health workers. The study was conducted in three governmental health centres in Padang City, October 2024 -March 2025.

### Quantitative Phase

#### *Participants and Sampling*

The quantitative stage involved 142 pregnant women who were at their third trimester and were chosen by consecutive sampling. It had to be eligible in that the participant should have had Maternal and Child Health (KIA) booklet and voluntary participation requirements. The potential participants were contacted face-to-face when they underwent the antenatal care and informed consent was obtained before the data was collected.

### Instrument Development and Validation

The information was collected through a questionnaire. The instrument also underwent a validity and reliability test on 32 pregnant women who were not part of the main sample before the sampling. Values were then validated on all the items which measured knowledge (13 items), attitude (10 items), family support (11 items), and health worker support (9 items), with Cronbachs Alpha values above 0.6 which is acceptable internal consistency.

### Data Analysis

The Chi-square test was used to analysed the quantitative data at a 95-percent confidence level when the relationship between the independent variables and the completeness of the antenatal visits were evaluated. Variables that showed a p -value less than 0.25 were then included into a multivariate logistic regression model to determine the most influential factor that influences the attendance of the antenatal care.

### Qualitative Phase

#### *Informants and Data Collection*

The qualitative stage was carried to investigate and put into perspective the quantitative results further. This study involved 11 participants, who comprised of 3 heads of health centers, two

maternal and child health officers, two programme staff members and four pregnant women who were also included in the quantitative sample. The semi-structured interview guides were used to conduct in-depth interviews, thus allowing free and unrestrained responses. The discussions were recorded in audio recordings, field notes, and, where the case was relevant, in photographic evidence.

### Data Validation and Interpretation

In order to maintain the credibility of the data, the triangulation of the sources was conducted, which involved a comparison between the perspectives of the professional staff and pregnant women. The qualitative analysis was aimed at the capturing of the narratives explaining why knowledge turned out to be the winning force in terms of statistical insight and how cultural perceptions, the consumption of digital information and the use of KIA books affect pregnancy-visit behaviour.

### Ethical Considerations

The study received ethical clearance in the Faculty of Medicine, Universitas Andalas with reference number 431/UN.16.2/KEP -FK /2024. All the procedures were conducted in accordance with the principles of informed consent, the confidentiality of the identity of the participants, their voluntary participation, and the avoidance of possible harm during the data-collection process.

## Results and Discussion

### Quantitative Research

Characteristics of respondents based on age, education level, employment status, income and parity (Table 1). Based on table 1, data from 142 research respondents found that 78.2% of mothers were between 20 – 34 years old, the most respondents' level of education was secondary (high school/ma/vocational school graduates). The employment status of mothers during pregnancy is not working (79.6%) with the most family income below MSEs (63%). The parity of the respondents in this study mostly had 0 – 2 children, which was 85.2%.

The frequency of visits of pregnant women can be seen in table 2. Based on table 2, it can be seen that there are 2 categories of visits by pregnant women, namely incomplete if the visit is made < 6 times and complete if the visit is made ≥ 6 times. The results showed that of the 142 samples, most of them had completed pregnancy visits (63.4%). The level of knowledge of the respondents was mostly lacking, namely 66.2%, the attitude variable was found that 54.2% of respondents had a negative attitude towards pregnancy visits, the access variable 55.6% of respondents had easy access. The family support received by the respondents was mostly good (99.3%) and the support from health workers obtained by the respondents was also good (99.3%).

The relationship between dependent and independent variables is presented in table 3, where the relationship between knowledge and pregnancy visits is found with. The results of the multivariate test analysis showed that knowledge had the most significant relationship with maternity visits with an OR of 3,253, which means that mothers with less knowledge were 3,253 times more likely to have incomplete pregnancy visits.

### Qualitative Research

The results of qualitative research found several important points, namely; 1) The research informant gets information about pregnancy mostly from the internet; 2) The number of classes of pregnant women is not proportional to the target of pregnant women; 3) Mother And Child Health books have not been utilized optimally; 4) There is still an assumption in society that pregnancy is a natural process that does not need to be studied further

Table 1. Characteristics of Research Respondents

| Characteristics | f | % |
|---|---|---|
| Age | | |
| - < 20 years old | 3 | 2,1 |
| - 20 – 34 years old | 111 | 78,2 |
| - ≥ 35 years old | 28 | 19,7 |
| Education level | | |
| - Low (not in school/graduated from elementary/junior high/MTs) | 28 | 19,7 |
| - Secondary (graduated from SMA/MA/SMK) | 68 | 47,9 |
| - High (college graduation) | 46 | 32,4 |
| Employment Status | | |
| - Work | 29 | 20,4 |
| - Not Working | 113 | 79,6 |
| Family Income | | |
| - Low (< MSE/Rp.2,811,449) | 81 | 63 |
| - Height ( > MSE/Rp.2.811.449) | 61 | 57 |
| Parity | | |
| - 0 -2 | 121 | 85,2 |
| - > 2 | 21 | 14,8 |

Table 2. Distribution of Respondents by Variables

| Variabel | f | % |
|---|---|---|
| Pregnant Women's Visit | | |
| - Incomplete (< 6 times) | 52 | 36,6 |
| - Complete ( ≥ 6 times) | 90 | 63,4 |
| Knowledge | | |
| - Less | 94 | 66,2 |
| - Good | 48 | 33,8 |
| Attitude | | |
| - Negative | 77 | 54,2 |
| - Positive | 65 | 45,8 |
| Access | | |
| - Difficult | 63 | 44,4 |
| - Easy | 79 | 55,6 |
| Family Support | | |
| - Less | 1 | 0,7 |
| - Good | 141 | 99,3 |
| Healthcare Worker Support | | |
| - Less | 1 | 0,7 |
| - Good | 141 | 99,3 |

Table 3. Variable Relationship with Pregnant Women's Visits

| Variabel | p-value | OR (95% CI) |
|---|---|---|
| Knowledge | 0,009* | 3.069 (1,370 – 6,876) |
| Attitude | 0.06 | 2,065 (1,020 – 4,180) |
| Education Level | 0,59 | 1,088 (0,417 – 2,837)<br>1,471 (0,677 – 3,198) |
| Employment Status | 0,7 | 0,776 (0,337 – 1,786) |
| Income | 1 | 1,043 (0,523 – 2,080) |
| Age | 0,39 | 0,375 (0,030 – 4,635) |

| | | |
|---|---|---|
| | | 1,441 (0,619 – 3,354) |
| Parity | 0,69 | 0,735 (0,287 – 1,884) |
| Access | 0,1 | 0,529 (0,262 – 1,072) |
| Family Support | 1 | ~ |
| Healthcare Worker Support | 0,36 | ~ |

Table 4. Multivariate Test Results

| Modeling | Variabel | Itself | XP (B) | CI (95%) | |
|---|---|---|---|---|---|
| | | | | Lower | Upper |
| Step 1 | Knowledge | 0,003 | 3,525 | 1,527 | 8,136 |
| | Attitude | 0,249 | 0,633 | 0,291 | 1,377 |
| | Access | 0,088 | 0,525 | 0,250 | 1,101 |
| Step 2 | Knowledge | 0,005 | 3,253 | 1,433 | 7,386 |
| | Access | 0,054 | 0,488 | 0,235 | 1,013 |

**Determinants of Antenatal Care Visits with Maternal Knowledge as the Key Influencing Factor**

In this study, it is mentioned that most pregnant women had visited the antenatal care (ANC) visits, with the cumulative coverage falling short of the targeted K6 coverage. ANC is generally accepted to have a significant role in enhancing the chances of a healthy birth and reducing the risk of pregnancy complications (Ministry of Health of the Republic of Indonesia, 2020). The findings of the qualitative research, however, demonstrate the existence of a cultural notion, that pregnancy is a natural process that does not need constant observation and, therefore, makes some families view complaints during pregnancy as a sign of weakness. This kind of perception leads to unfinished ANC visits, although there is definite evidence of how frequent visits allow identifying possible risks early (Padang City Health Office, 2023).

The findings supported the hypothesis that the only significant variable was knowledge (p=0.009) with mothers with low levels of knowledge having a stronger tendency to do incomplete visits. This observation is consistent with the past studies that suggest knowledge will have a strong impact on the ANC behaviour of pregnant women (Citrawati NK & Laksmi IGAPS, 2021; Bashir S et al., 2023; Wuna et al., 2025). The majority of respondents obtained the information through the internet hence exposing them to health misinformation. The Ministry of Communication and Information data on hoax contents (2018-2023) show 12,547 hoax contents, 2,357 of which are health-related, the largest category in the list, making it questionable whether the information in the digital sources is accurate. There was also a low use of the Maternal and Child Health (MCH) Book that was supposed to be a structured and reliable tool of maternal education (Ministry of Health of the Republic of Indonesia, 2020) but ownership was at 98 per cent and utilisation at 6570 per cent (Padang City Health Office, 2023). The improvement of the use of the printed and electronic editions of the MCH book may be used as a preventive approach to avert misinformation and raise maternal awareness.

The qualitative results also showed that the introduction of pregnancy classes has not been implemented enough as compared to the population of pregnant women. Pregnancy classes are among the key promotional strategies and hence their accessibility needs to be increased by working with midwives, hospitals, independent practitioners and even through online learning models. This fact conforms to the multivariate test that reveals knowledge to be the most hegemonic variable (p 0.005), which emphasizes the need to enhance the health education programmes.

The research established that ANC visits had no meaningful association with attitude, level of education, whether employed or not, income, age, parity, access and family support or health worker support. Even though the positive attitude of mothers was associated with completing

ANC visits, it was not statistically significant (p 0.06). Conversely, Mamuroh et al. (2020) found the attitudes to have a significant correlation with ANC attendance, indicating that contextual differences might moderate the effect of attitudes on behaviour, so that the effect of attitudes alone might not lead to behaviour without sufficient knowledge. Likewise, the level of education was not found to be associated with ANC visits (p ⁻.59), which supports Choirunissa & Syaputri (2018) and suggests that a high education level does not necessarily mean maternal health literacy.

Employment status was also not related to ANC visits; a majority of the working mothers had partially visited, however, statistical analysis did not demonstrate any difference (p = 0.7). This is in line with the results in Makassar that no association between maternal employment and ANC visits was found (Darmiatai et al., 2014), whereas South Asian studies have shown a contrary outcome (Al-Zubayer MA et al., 2024). No significant correlation was found between family income (p= 1), which is in line with Junga et al. (2017), and indicates that the provision of free or low-cost ANC services can help alleviate financial barriers.

Age and parity also did not demonstrate any significant correlation with ANC visits, despite the tendency toward higher completeness among mothers of age 20 -34. This is contrary to the results obtained by Arsanah et al. (2024) who found parity to be influential especially in primigravida mothers. Facility accessibility was not associated with ANC visits (p=.1) but other researchers made this correlation (Supliyani, 2017). Family and health worker support were also not significant, even when the levels of support were high, meaning that supportive environments are not enough when mothers have no necessary knowledge (Alburuda et al., 2019; Suhadah et al., 2023; Fikadu et al., 2025).

On the whole, the present research paper finds out that knowledge is the most influential factor in ANC visit behaviour, and other variables could be indirect, or their effect on ANC visit behaviour could be mediated by knowledge. In turn, enhancing maternal education, maximising the use of MCH books, making pregnancy classes more accessible, combating misinformation, and enhancing digital literacy is an immediate measure to increase ANC visits coverage and eventually help reduce maternal mortality.

## Conclusion

The current study found that most expectant mothers who lived in Padang City Health Center area of coverage were already attended to during the antenatal care (ANC) visits; although the overall coverage was below the envisaged K6 mark. Out of ten covariates tested, knowledge was found to have the only statistically significant association with ANC visit completion ( p = 0.009) and was selected as the most influential variable using multivariate logistic regression with the odds ratio of 3.253. Although most of the respondents said that they have been supported by their family members and healthcare staff, had easy access to medical care, and were mainly in the productive age group with low-middle income levels, these factors did not demonstrate a statistically significant relationship with the completeness of ANC visits. The fact that there is scarce use of Maternal and Child Health (MCH) book, that there is limited access to prenatal education classes, and that cultural beliefs construct pregnancy as a natural process that does not require medical intervention all helped to support these statistical observations through qualitative evidence as a cause of deficient knowledge and suboptimal ANC attendance.

## References

Alburuda F, Damayanti NA. Relationship of Family Support to Antenatal Care (ANC) Inspection in Work Area of Puskesmas Gunung Anyar Surabaya. Indian J Publlic Heal Res Dev. 2019; 10(8):1–5.

Al-Zubayer MA, Shanto HH, Kundu S, Sarder MA, Ahammed B. The Level of Utilization and

Associated Factors of WHO Recommended Antenatal Care Visits in South Asian Countries. Dialogues Heal [Internet]. 2024; 4(September):1–12. Available from: https://doi.org/10.1016/j.dialog.2024.100175

Arsanah E, Sari J, Hidayati DU. The relationship between parity and age with the regularity of Antenatal Care ( ANC ) visits at BPM Dinda. J Midwifery Nurs. 2024; 6(1):170–9.

Bashir S, Ansari AH, Sultana A. Knowledge , Attitude , and Practice on Antenatal Care Among Pregnant Women and its Association With Sociodemographic Factors : A Hospital-Based Study. J Patience Experince. 2023; 10:1–11.

BPS Padang City. Padang Municipality in Figures 2023. I. Roza A, Junaidi A, Khairani LP, Setyo MA, Febrina R, Netsyah S, et al., editors. 2023.

Choirunissa R, Syaputri ND. Analysis of Factors Related to K4 Examination in Pregnant Women at the Bakung Health Center, Lampung Province in 2017. J Husada Karya Jaya Nursing Contract. 2018; 4(1):72–93.

Citrawati NK, Laksmi IGAPS. The Relationship of Pregnant Women's Knowledge About ANC to ANC Visits at the Tampaksiring II Health Center. J Nursing Sriwij. 2021; 8(2):19–26.

Correa-De-Araujo R, Yoon SS (Sarah). Clinical Outcomes in High-Risk Pregnancies Due to Advanced Maternal Age. J Women's Heal [Internet]. 2021; 30(2):160–7. Available from: https://doi.org/10.1089/jwh.2020.8860

Darmiatai, Sardiana, F JMP. Factors related to the regularity of ANC visits at the Pertiwi Health Center in Makassar City in 2019. J Health Pomegranate Pelamonia. 2019; 3(1):18–26.

Directorate of Nutrition and Mother And Child Health . Performance Accountability Report of Government Agencies (Lakip) of the Directorate of Nutrition and Maternal and Child Health for Fiscal Year 2022. Jakarta; 2023.

Easwaran, V., Orayj, K., Goruntla, N., Mekala, J. S., Bommireddy, B. R., Mopuri, B., ... & Bandaru, V. (2025). Depression, anxiety, and stress among HIV-positive pregnant women during the COVID-19 pandemic: a hospital-based cross-sectional study in India. BMC Pregnancy and Childbirth, 25(1), 134. https://doi.org/10.1186/s12884-025-07261-4

Fegita P, Himah M, Malik R. Relationship Between Education Level , Age and Knowledge of Pregnant Women with Antenatal Care Status. Sci J. 2022; 2(1):156–64.

Fikadu, K., Yihune, M., Boynito, W. G., & Hailemariam, Z. (2025). Exploring Multiple Barriers to Proper Child Feeding Practices in Rural Districts of Ethiopia. *Food Science & Nutrition*, *13*(3), e4757. https://doi.org/10.1002/fsn3.4757

Idris H. Factors associated with the completion of antenatal care in Indonesia: A cross-sectional data analysis based on the 2018 Indonesian Basic Health Survey. Belitung Nurs J [Internet]. 2023; 9(1):79–85. Available from: https://doi.org/10.33546/bnj.2380

Janaki, S., & Prabakar, S. (2025). Examining the impact of poverty on maternal health: Adverse pregnancy outcomes, contributing factors, and strategies for improvement. Multidisciplinary Science Journal, 7(5), 2025209-2025209. https://doi.org/10.31893/multiscience.2025209

Junga MR, Pondang L, Kundre R. Factors Related to the Regularity of Antenatal Care (ANC) Examination of Pregnant Women in the Third Trimester at the Ranotana Weru Health Center, Manado City. e-Journal of Nursing. 2017; 5(1):1–9.

Kare, A. P., Gujo, A. B., & Yote, N. Y. (2021). Quality of antenatal care and associated factors among pregnant women attending government hospitals in Sidama Region, Southern Ethiopia. *SAGE open medicine*, *9*, 20503121211058055. https://doi.org/10.1177/20503121211058055

Laily, D., Prasetyo, B., & Jayanti, R. D. (2025). The Correlation between Parity and Residence with Maternal Mortality Due to Miscarriage and Abortion in Papua Province in 2020. *Journal of Health Sciences*, *18*(01), 12-18. https://doi.org/10.33086/jhs.v18i01.6901

Lumempouw VJR, Kundre RM, Bataha Y. The Relationship between Socioeconomic Factors of Pregnant Women and the Regularity of Antenatal Care (ANC) Examinations at the Wanea Health Center, Manado City. e-Journal of Nursing. 2016; 4(November):1–7.

Mamuroh L, Sukmawati, Nurhakim F, Gardella RA. The Relationship Between Knowledge, Attitude, and Prenatal Visit in Pregnant Women. J Matern Care Reprod Heal. 2020; 3(2):86–92.

Ministry of Health of the Republic of Indonesia. Indonesia Health Profile 2022 [Internet]. Sibuea F, editor. Jakarta: Ministry of Health of the Republic of Indonesia; 2023. Available from: https://www.kemkes.go.id/downloads/resources/download/pusdatin/profil-%09kesehatan-indonesia/Profil-Kesehatan-2021.pdf.

Ministry of Health of the Republic of Indonesia. Third Edition of Integrated Antenatal Service Guidelines. III. Jakarta: Ministry of Health of the Republic of Indonesia; 2020.

Ministry of Health. Performance Report of the Directorate of Family Health in 2021. 2022.

Padang City Health Office. Padang City Health Profile 2023 (2022 data). Field; 2023.

Rossen, L. M., Hoyert, D. L., Horon, I., & Branum, A. M. (2025). Trends in maternal mortality rates by state, United States, 2018-2023. American journal of obstetrics and gynecology. https://doi.org/10.1016/j.ajog.2025.08.028

Sadhir, S., McGrosky, A., Ford, L. B., Nzunza, R., Wemanya, S. N., Mashaka, H., ... & Pontzer, H. (2025). Physical Activity and Pregnancy Norms Among Daasanach Semi-Nomadic Pastoralist Women in Northern Kenya. *American Journal of Human Biology*, *37*(1), e24174. https://doi.org/10.1002/ajhb.24174

Saifuddin AB. Midwifery Science Edition 4. Jakarta: Yayasan Bina Pustaka Sarwono Prawirohardjo; 2010.

Sandalayuk M, Hano YH, Pakaya R. Determinants of Antenatal Care Visits in Pregnant Women in the Working Area of the Paguyaman Pantai Health Center, Boalemo Regency in 2022. Ahmar Metastasis Heal J. 2023; 3(1):18–25.

Sari, L. P., Sunirah, S., Puspitasari, I., Shoaliha, M., & Irwanto, M. F. (2025). The Relationship Between Pregnant Women's Knowledge About Antenatal Care and Their Antenatal Visit Behavior in the Working Area Public Health Center Bekasi. Nursing Genius Journal, 2(1), 1-9.

Suhadah A, Kisca SM, Dammayanti R. Knowledge Relationship, Role of Health Workers and Husband's Support for ANC Visits to Pregnant Women at the Cikalong Health Center, Tasikmalaya Regency in 2023. Centri J Ris, Scientific,. 2023; 2(10):4250–64.

Supliyani E. Distance, Travel Time, Availability of Services and Pregnancy Examination Visits at Puskesmas. J Inf Indonesian Health. 2017; 3(1):14–22.

Wulan M, Hasibuan KN. Factors Related to Pregnant Women's Compliance in Conducting

Antenatal Care (ANC) Visits at BPM Syarifah Lubis, Padangsidempuan City. Heal Care Media. 2020; 4(1):1–5.

Wuna, S. K., Mutmaina, R., Zakiah, V., Rahmawati, D. A., & Nasrun, E. K. (2025). Determinants of pregnant women's knowledge about antenatal care and compliance with pregnancy check-ups at Poasia Health Center. World Journal of Advanced Research and Reviews, 25(1), 213-225.

Wuna, S. K., Mutmaina, R., Zakiah, V., Rahmawati, D. A., & Nasrun, E. K. (2025). Determinants of pregnant women's knowledge about antenatal care and compliance with pregnancy check-ups at Poasia Health Center. World Journal of Advanced Research and Reviews, 25(1), 213-225.

Wyckoff, J. A., Lapolla, A., Asias-Dinh, B. D., Barbour, L. A., Brown, F. M., Catalano, P. M., ... & Singh-Ospina, N. (2025). Preexisting diabetes and pregnancy: an Endocrine Society and European Society of Endocrinology joint clinical practice guideline. European journal of endocrinology, 193(1), G1-G48. https://doi.org/10.1093/ejendo/lvaf116

Yemane GD. The factors associated with antenatal care utilization in Ethiopia. Ann Med Surg [Internet]. 2022; 79(June):1–6. Available from: https://doi.org/10.1016/j.amsu.2022.104092