

# The Relationship between Routine ANC Follow-Up Program in the Final Trimester ( $\geq 36$ Weeks) and Delivery Realization at Hospital X, West Java, Indonesia

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## ABSTRACT

Latar Belakang: Program follow-up rutin ANC oleh tenaga kesehatan selama trimester akhir kehamilan diyakini dapat memengaruhi keputusan tempat persalinan, namun bukti empirisnya masih terbatas. Tujuan: Menganalisis hubungan antara frekuensi follow-up ANC trimester akhir ( $\geq 36$  minggu) dengan realisasi persalinan di Rumah Sakit X, Jawa Barat. Metode: Penelitian ini menggunakan desain pre-eksperimental dengan tipe one group posttest-only. Sampel terdiri dari 79 ibu hamil usia  $\geq 36$  minggu yang menjalani ANC di poli rawat jalan selama April–Juni 2025. Data dianalisis menggunakan uji Chi-Square dan Fisher's Exact Test. Hasil: Sebanyak 81% responden melahirkan di RS X. Hasil uji menunjukkan tidak ada hubungan signifikan antara frekuensi kunjungan ANC ( $p = 0,365$ ), frekuensi follow-up oleh perawat ( $p = 0,365$ ), maupun intensitas follow-up ANC ( $p = 0,394$ ) dengan tempat persalinan. Namun, terdapat kecenderungan bahwa ibu dengan frekuensi kunjungan dan follow-up lebih tinggi, lebih banyak bersalin di RS X. Simpulan: Walaupun tidak signifikan secara statistik, program follow-up trimester akhir menunjukkan potensi dalam meningkatkan keterikatan ibu hamil terhadap institusi pelayanan. Intervensi ini dapat mendukung kesinambungan perawatan maternal dan layak dipertimbangkan dalam perencanaan layanan ANC.

**Kata kunci:** antenatal care, follow-up, tempat persalinan, trimester akhir, kesinambungan pelayanan

## Abstract

**Background:** Structured follow-up during the third trimester is believed to influence maternal choice of delivery facility, but empirical evidence remains limited. **Objective:** To analyze the relationship between third-trimester ANC follow-up ( $\geq 36$  weeks gestation) and institutional delivery at Hospital X, West Java. **Methods:** A pre-experimental study with a one-group posttest-only design was conducted on 79 pregnant women with  $\geq 36$  weeks of gestation who attended outpatient ANC between April and June 2025. Data were analyzed using Chi-Square and Fisher's Exact Test. **Results:** A total of 81% of participants delivered at Hospital X. Statistical analysis showed no significant association between ANC visit frequency ( $p = 0.365$ ), nurse follow-up frequency ( $p = 0.365$ ), or ANC follow-up intensity ( $p = 0.394$ ) and place of delivery. However, there was a proportional tendency for women with higher visit and follow-up frequencies to deliver at the same facility where they received ANC. **Conclusion:** Although statistically insignificant, routine ANC follow-up during late pregnancy may strengthen institutional attachment and continuity of maternal care. This strategy should be considered in ANC program development to support institutional delivery utilization.

**Keywords:** antenatal care, follow-up, place of delivery, third trimester, continuity of care

## **INTRODUCTION**

Antenatal care (ANC) is an essential component of maternal health services, aimed at monitoring the health of the mother and fetus and preventing complications during pregnancy and childbirth. Quality ANC visits, particularly in the third trimester, are expected to improve maternal preparedness for childbirth and guide safe and planned birthing decisions (World Health Organization [WHO], 2016; Shiferaw et al., 2022).

At Hospital X, West Java, an average of 100 third-trimester ANC visits were recorded each month through 2025. However, the number of deliveries recorded at this hospital only ranged from 20 to 25 per month. This disparity between ANC visits and actual deliveries raises important questions regarding the continuity of obstetric care. In the context of midwifery care, this indicates potential problems with service quality, patient trust, or other external factors such as the availability of alternative birthing facilities outside the hospital.

In response to this phenomenon, the management of Hospital X has undertaken various efforts to improve the quality and continuity of services. In addition to increasing the number of obstetrician specialists by 2025, the hospital has also initiated a program *follow up* Routine follow-up visits are provided to pregnant women undergoing ANC in the obstetrics outpatient unit. Midwives and nurses in the obstetrics polyclinic conduct these follow-ups as a form of ongoing, proactive communication. Follow-up materials include not only reminders for the next scheduled visit but also education tailored to each patient's health condition and gestational age.

Such efforts are expected to increase patient engagement with hospital services, build trust, and encourage the decision to deliver at the same ANC location. Continuous communication-based interventions have been empirically proven to improve maternal adherence to birth plans and strengthen positive perceptions of healthcare services (Abuya et al., 2018; Edward et al., 2021).

However, the effectiveness of this approach in the context of Hospital X is not yet known with certainty. so that it requires evaluation through a systematic scientific approach. Several previous studies have shown that continued interaction or follow-up with patients during the third trimester can strengthen the relationship between the patient and the health facility, increase trust, and strengthen the intention to give birth at the same ANC location (Desai et al., 2021; Ayenew et al., 2022). Through follow-up, health workers can be more proactive in providing education, addressing

patient concerns, and building commitment to a planned and safe birth. Furthermore, follow-up also provides space for more personal discussions about childbirth preparation, transportation constraints, and family or cultural influences that may influence the mother's decision. In the theory of planned behavior (*Theory of Planned Behavior*), intention is a direct predictor of actual behavior, including choice of birth location. Intention itself is influenced by attitudes, subjective norms, and perceived control. Therefore, building positive intentions to give birth in a hospital requires a strategic approach, one of which is through ongoing communication approaches such as follow-up throughout pregnancy.

This phenomenon has serious implications, both clinically and managerially. When a large proportion of ANC patients choose to give birth elsewhere, hospitals risk declining service utilization rates, losing potential revenue, and eroding public trust in the obstetric services they provide. If not addressed seriously, this situation can impact the sustainability of midwifery services and the hospital's overall performance (Tessema et al., 2021).

Therefore, an in-depth study is essential to understand the factors influencing patients' decision-making regarding delivery location and to evaluate the effectiveness of follow-up initiatives as a patient retention strategy. This research is expected to provide a comprehensive overview of the causes of low hospital delivery rates and serve as a basis for formulating strategies to improve services that are more effective and responsive to patient needs.

## **METHOD**

This research uses a quantitative approach with a descriptive design. *pre-experimental, type one group posttest only design* This design was used because all participants received routine follow-up intervention during the third trimester, with no comparison group. Follow-up was conducted on every third-trimester pregnant woman who underwent ANC visits in the outpatient setting. Follow-up was provided weekly, the day before the scheduled check-up, until the patient gave birth. Afterward, whether the patient gave birth at Hospital X was recorded.

This study was conducted at the Obstetrics Outpatient Unit of Hospital X, West Java, from April to June 2025. The population in this study were all pregnant women in their third trimester who participated in the ANC program at the Obstetrics Outpatient Unit of Hospital X, West Java. Meanwhile, the research sample was all pregnant women in their third trimester.

who are entering the gestational age  $\geq 36$  weeks. The sampling technique used was total sampling, with the criteria of at least one antenatal care (ANC) visit to the Outpatient Unit of Hospital X, West Java.

during the data collection period. Pregnant women in their third trimester who were referred to another hospital for special treatment due to certain medical indications, as well as pregnant women in their third trimester who only underwent *second opinion* from other hospitals were not included in the study sample.

Data collection was conducted prospectively on pregnant women in their third trimester who underwent antenatal care (ANC) visits at the Obstetrics Outpatient Unit of Hospital X, West Java, from April to June 2025. Data were collected through two stages, namely follow-up and recording of the place of delivery.

Follow-ups were conducted weekly, one day before the scheduled prenatal check-up, via phone or instant message. During the follow-up, researchers inquired about the mother's condition, pregnancy complaints, reminded her of the scheduled check-up, and provided education as needed. All interactions were recorded in a follow-up log sheet.

After the patient gave birth, researchers recorded the location of delivery through hospital medical records or by direct confirmation with the patient. The final data was summarized and validated for analysis to determine the proportion of mothers who gave birth at Hospital X, West Java after receiving follow-up intervention.

The research instruments used in this study consisted of three main parts: an ANC follow-up log sheet, a respondent characteristics data sheet, and a delivery site recap form. The ANC follow-up log sheet was used to record all weekly interactions between the researcher and the respondents during the third trimester of pregnancy.

This instrument includes information on the timing and medium of follow-up, the content of the conversation, including the mother's condition and complaints, reminders about scheduled check-ups, and education provided based on the complaints presented. This log helps researchers evaluate the consistency of interventions and the patient's response to follow-up services.

In addition, a respondent characteristics data sheet was used to record basic respondent information, such as maternal age, parity, gestational age at program entry, frequency of follow-up, place of delivery, mode of delivery, and number of ANC visits. This instrument served for descriptive analysis and as a control variable in further analysis. Meanwhile, a recapitulation form

for place of delivery was used to record the respondent's actual location of delivery, obtained through hospital medical records or direct confirmation from the patient. This data serves as the main indicator in assessing the influence of ANC follow-up on the decision to give birth at Hospital X.

The data obtained in this study were analyzed using descriptive and inferential statistical approaches to examine the effect of antenatal care (ANC) follow-up on delivery decisions at Hospital X, West Java. Descriptive analysis was conducted to describe the characteristics of the participants, including age, parity, gestational age at the start of follow-up, and frequency of ANC visits, place of delivery, mode of delivery, and follow-up conducted during the third trimester. Data are presented in the form of frequency distributions, percentages, means, and standard deviations (Setiawan et al., 2022). Because this study used a randomized controlled study design, *pre-eksperimental tipe one group posttest-only design*, then testing was carried out to determine whether there was a significant relationship between the frequency of ANC follow-up (independent variable) and the place of delivery (dependent variable: giving birth at Hospital X)

West Java or not). The Chi-Square test was used to determine the relationship between two categorical variables in this study. The statistical test was conducted with a significance level ( $\alpha$ ) of 0.05, so the analysis results are considered statistically significant if the p-value is  $< 0.05$  (Setiadi, 2021).

**RESULTS**

This study involved 79 pregnant women in their third trimester who met the inclusion criteria and had received follow-up. Periodic visits were conducted during pregnancy leading up to delivery. Respondents' sociodemographic characteristics included parity and maternal age. Clinical characteristics of pregnancy and services included gestational age, frequency of ANC follow-ups, frequency of ANC visits, place of delivery, and mode of delivery.

Table 1 a. Sociodemographic characteristics of respondents (n = 79)

Variabel	Kategori	Frekuensi (n)	Persentase (%)
Usia Ibu	20-27 tahun (usia reproduksi dini)	15	19%
	28-30 tahun (usia reproduksi awal/ Tengah)	25	31.6%
	31-33 tahun (usia reproduksi lanjut dini)	22	27.8%
	34-41 tahun (usia reproduksi lanjut-neka tingg)	17	21.5%
Paritas	Primigravida	49	62%
	Multigravida	30	38%

The sociodemographic characteristics table shows that the majority of pregnant women are in the 28–30 age group (31.6%), which is included in the middle early reproductive age. Meanwhile, 27.8% of respondents are aged 31–33 years, 21.5% are aged 34–41 years (high-risk late reproductive age), and 19% are aged 20–27 years (early reproductive age). These data indicate that the majority of respondents are aged  $\geq 28$  years, which is a reproductive phase that is clinically considered more mature but begins to be risky, especially at age  $\geq 34$  years (ACOG, 2021). In terms of parity, the majority of respondents are primigravida (62%), while only 38% are multigravida, indicating that most participants are first-time mothers. This is important to note because primigravidas often show higher levels of anxiety and better compliance with antenatal care programs and health follow-ups, compared to mothers who have experienced childbirth (Hadrill et al., 2014; Yaya et al., 2020).

Table 1b: Clinical Characteristics of Respondents and ANC Services (n = 79)

Variabel	Kategori	Frekuensi (n)	Persentase (%)
Usia Gestasi	36 minggu (preterm akhir)	11	13.9%
	37 minggu (Aterm awal)	29	36.7%
	38 minggu (Aterm)	21	26.6%
	39-41 minggu (aterm penuh)	18	22.8%
Frekuensi Follow up ANC	1-2 kali (follow up minimal)	30	38%
	3-4 kali (follow up sedang)	27	34.2%
	5-7 kali (follow up rutin)	22	27.8%
Frekuensi ANC	< 4 kali (tidak memadai)	54	68.4%
	$\geq 4$ kali (memadai)	25	31.6%
Tempat Persalinan	di Rs X Jawa barat	64	81%
	Rumah sakit lain	15	19%
Modus Persalinan	SC	50	63.3%
	NSD	17	21.5%
	Tidak diketahui	12	15.2%

The clinical characteristics of the respondents showed that the majority of pregnant women were at 37 weeks of gestation (early term) at 36.7%. Most respondents received moderate ANC follow-up 3-4 times (34.2%), while only 27.8% received routine follow-up 5-7 times. A total of 68.4% of pregnant women received ANC visits < 4 times (inadequate), and only 31.6% received adequate (> 4 times). The majority of respondents gave birth at Hospital X (81%) with the dominant mode of delivery being cesarean section (63.3%), compared to other modes of delivery. After conducting univariate analysis to describe the distribution of each variable, bivariate analysis was then conducted to determine the relationship between the routine ANC follow-up program in the final trimester and the realization of deliveries at Hospital X, West Java. This analysis aims to test whether there is a significant relationship between the independent variables—ANC frequency,

ANC follow-up frequency, and maternal delivery location. Because all variables are categorical and the sample size is relatively small, the statistical test used is the Fisher's Exact Test.

Table 2. Bivariate Analysis Results Table between ANC Frequency & ANC Follow-Up with Place of Delivery (Fisher's Exact Test)

Variabel Independen	Kategori	Persalinan di Rs X n (%)	Persalinan di Rs lain n (%)	Total (n)	p-value (Fisher)	Keterangan
Frekuensi ANC	< 4 kali (Tidak Memadai)	42 (77.8%)	12 (22.2%)	54	0.365	Tidak signifikan
	$\geq 4$ kali (Memadai)	22 (88.0%)	3 (12.0%)	25		
Frekuensi Follow-Up ANC	1-2 kali (Follow-Up Minimal)	22 (77.3%)	6 (26.7%)	30	0.451	Tidak signifikan
	3-4 kali (Follow-Up Sedang)	23 (85.2%)	4 (14.8%)	27		
	5-7 kali (Follow-Up Rutin)	19 (86.4%)	3 (13.6%)	22		

The results of the bivariate analysis using Fisher's Exact Test showed that there was no significant relationship between the frequency of ANC visits and the frequency of final trimester ANC follow-ups with the place of delivery of pregnant women at Hospital X, West Java ( $p = 0.365$ ). However, descriptively there is a tendency that the higher the intensity of ANC visits and follow-ups received by pregnant women, the greater the proportion of them who gave birth at Hospital X. As many as 88.0% of mothers with ANC visits  $\geq 4$  times and 86.4% of mothers who received regular follow-ups (5–7 times) gave birth at Hospital X, compared to 77.8% and 73.3% in the lower visit or follow-up group. This indicates that although it has not been statistically proven, a structured follow-up and ANC visit program still shows important potential in building patient attachment to service facilities, as well as strengthening continuity of pregnancy care until delivery.

## DISCUSSION

The results of the bivariate analysis using Fisher's Exact Test showed that there was no statistically significant relationship between the frequency of antenatal care (ANC) visits and the frequency of nurse follow-up with the place of delivery of pregnant women at Hospital X, West Java. However, the distribution of the data showed a tendency that the higher the frequency of ANC visits and the intensity of follow-up, the greater the likelihood of mothers giving birth at the same hospital.

This lack of statistical significance is thought to be influenced by several factors. First, the limited sample size (n=79) and uneven distribution of categories may reduce statistical power to detect meaningful relationships. Previous studies show that small sample sizes increase the risk of type II error,

which is the failure to detect a true relationship (Sedgwick, 2020). Second, some cells in the contingency table have expected counts  $<5$ , so Fisher's exact test is necessary, but it still has limitations in revealing associations when differences between groups are not extreme (McDonald, 2022).

Third, the decision on the place of delivery is not only influenced by ANC visits or follow-ups alone, but also by external factors such as geographic access, delivery costs, insurance, family preferences, and service availability (Tunçalp et al., 2019; Bohren et al., 2021).

Although the statistical association was not significant, the emerging trend pattern still supports the urgency of strengthening follow-up programs in antenatal care. Recent studies have shown that repeated, high-quality antenatal care can improve patient retention in the healthcare system and increase the likelihood of institutional delivery (Rasooly et al., 2021; Bintabara et al., 2023). Therefore, in practice, systematic and personalized follow-up interventions remain relevant to strengthen continuity of care and increase utilization of delivery services at the same facility.

## CONCLUSION

This study aims to analyze the relationship between the routine antenatal care (ANC) follow-up program in the final trimester ( $\geq 36$  weeks) and the realization of delivery at Hospital X, West Java. The results of the bivariate analysis using Fisher's Exact Test showed that there was no statistically significant relationship between the frequency of ANC visits or the frequency of nurse follow-up with the place of delivery of pregnant women ( $p = 0.365$ ). However, there is a proportional trend indicating that pregnant women with adequate frequency of ANC visits and higher follow-up intensity are more likely to give birth at the facility where they received their prenatal care. This finding indicates that, although not statistically significant, aspects of continuity and intensity of care have the potential to be important in influencing pregnant women's choice of place of delivery.

## SUGGESTION

Hospitals need to strengthen routine follow-up programs by nurses or midwives during the final trimester of pregnancy to maintain continuity of care and build patient trust and loyalty to the facility where the study was conducted. Given the limitations of this study, which used a pre-experimental design without a comparison group, a small sample size, and failed to control for external factors, such as geographic access, economic status, and individual preferences, it is recommended that further research use a comparative or quasi-comparative design. Experiments with a control group and a larger, more balanced sample size

are needed. Future research should also consider contextual variables such as family support, financing systems, and perceived service quality to gain a more comprehensive understanding of the determinants of birthplace choice, thus producing more representative and applicable findings.

## IMPLICATIONS

These findings indicate that, although there was no statistically significant association, the intensity of ANC follow-up in the final trimester of pregnancy tended to contribute to increased deliveries at the control facility. This underscores the crucial role of nurses and midwives in maintaining continuity of care through structured and intensive communication. Consistent follow-up can strengthen pregnant women's trust in the institution, encourage the use of institutional births, and potentially reduce the risk of unplanned births. Therefore, integrating follow-up programs into routine ANC services should be considered as part of efforts to improve the quality and continuity of maternal care.

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