Scientific Research Publishing

Open Journal of Obstetrics and Gynecology, 2025, 15(12), 2020-2028
https://www.scirp.org/journal/ojog
ISSN Online: 2160-8806
ISSN Print: 2160-8792

Factors Related to the Delay and Inadequacy of Prenatal Consultations at the University Hospital of Bouaké

Dagbéssè Elysée Boko Dagoun[1,2], Lydie Estelle Djanhan[1,2], Yaya Samaké[1,2], Menin-Messou Benie Michele[1,2], Clausen Georgie M'Bro[1,2], Narcisse Kouadio Kouadio[1,2]

[1]Department of Gynecology and Obstetrics, University Hospital of Bouaké, Bouaké, Ivory Coast
[2]Mother and Child Department, Alassane Ouattara University, Bouaké, Ivory Coast
Email: sysamke@gmail.com

How to cite this paper: Dagoun, D.E.B., Djanhan, L.E., Samaké, Y., Michele, M.-M.B., M'Bro, C.G. and Kouadio, N.K. (2025) Factors Related to the Delay and Inadequacy of Prenatal Consultations at the University Hospital of Bouaké. *Open Journal of Obstetrics and Gynecology*, **15**, 2020-2028.
https://doi.org/10.4236/ojog.2025.1512169

Received: November 9, 2025
Accepted: December 9, 2025
Published: December 12, 2025

Abstract

Introduction: Late and insufficient antenatal consultations (ANCs) are risk factors for complications related to pregnancy and childbirth. **Objectives**: To identify the factors related to the delay and inadequacy of prenatal care among women who have given birth at the Bouaké University Hospital. **Methodology**: This was a prospective, comparative case-control study with a descriptive and analytical purpose carried out in the Gynecology-Obstetrics Department of the Bouaké University Hospital, conducted from January 15, 2023 to March 15, 2023 (02 months). It involved 609 women who had given birth, including 203 cases who had less than 4 antenatal consultations and 406 controls who had correctly used prenatal care. The data was captured and analyzed by Epi-Info7, Microsoft Office Word and Excel 2016. **Results**: The prevalence of delay and insufficiency in ANC was 85.78%. Several factors were associated with it, including age between 20 and 24 years (OR = 0.67) and over 40 years (OR = 0.66), non-schooling (OR = 145.40), non-employment (OR = 0.77), common-law union (OR = 5.10), residence in the village (OR = 5.10), primigestity (OR = 5.48), primiparity (OR = 7.94), first consultation late in the 2nd trimester (OR = 16), financial difficulties (OR = 27.68), means of public transport (OR = 1.52), lack of knowledge of the ANC (OR = 0.52). The financial problem in 43.84% of cases was the main reason for the delay and insufficiency of ANCs. **Conclusion**: The study reveals that low levels of education, rural residence, primiparity and cohabitation are major risk factors for inadequate antenatal care. Women experiencing financial difficulties were more likely to have insufficient antenatal care.

Keywords

ANC, Related Factors, Delay, Insufficiency

1. Introduction

Antenatal care is important for the health and well-being of women and their children. ANC is defined as a preventive activity directed at the target population of pregnant women [1]. Complications of pregnancy and its aftermath are a constant threat to the health of women of childbearing age. They are the leading cause of morbidity, disability and death among these women, especially in developing countries [2]. Mortality ranges from less than 10 per 100,000 live births in industrialized countries to more than 350 per 100,000 live births in sub-Saharan Africa [3]. In Côte d'Ivoire, maternal mortality is estimated at 385 maternal deaths per 100,000 live births according to the Demographic Health Survey in 2021 [4]. This figure is still very high compared to the global target of 140 deaths per 100,000 live births by 2030. The main causes are complications related to pregnancy and childbirth, although a significant proportion of births are now attended by skilled personnel. The prenatal consultation (ANC) should make it possible to carry out the pregnancy successfully for the mother and the child, all the more effective it is when it is early and regularly repeated [5] [6]. In order to improve the quality of prenatal care and contribute to the reduction of maternal-fetal morbidity and mortality, the Ivorian government has instituted, since 2012, free pregnancy-related procedures (ANC, childbirth, complications). This measure would have made it easier and more convenient for pregnant women to use adequate pre- and postnatal care services. However, there are still pregnant women who make their first ANC late (beyond the 14th week of pregnancy) or who are absent from some of their consultation appointments until term. Hence the interest of our study, the objective of which was to identify the factors related to the delay and inadequacy of prenatal consultations among women who have given birth at the Bouaké University Hospital.

2. Methodology

The study was carried out in the Gynaecology and Obstetrics Department of the Bouaké University Hospital. This was a descriptive comparative case-control cohort study of postpartum women during the study period conducted from January 15, 2023 to March 15, 2023 (02 months). We had recorded 203 cases according to the inclusion criteria (delivered with less than 4 ANCs; postpartum; agreeing to participate in the study) and non-inclusion, then 406 controls (having a regular and normal prenatal follow-up, i.e., having an early recourse before 16 weeks of amenorrhea to their first ANC, carried out their prenatal check-up and at least 4 ANCs). Data collection was done in the immediate postpartum period in each of the postpartum women. The information collected related to socio-demographic characteristics (age, level of education, occupation, marital status, place of residence), obstetric history (gestation, parity), ANC (period of performance, reason for or not having the prenatal check-up, means of transport, level of knowledge on the importance of using ANCs), and the reasons for giving birth with ANC insufficiency. ANC 1 was considered early if it was performed during the first tri-

mester of pregnancy and late after the third month of pregnancy. It was considered insufficient if the woman who had given birth had fewer than 4 ANCs. The data were coded and then recorded for analysis using SPSS version 25 software. Odds ratios and their 95% confidence intervals with a significant difference allowed us to assess the association between ANC and other factors. Informed consent from patients was obtained prior to enrollment in the study. Data related to private life was confidential and treated anonymously.

3. Results

Prevalence of delay in the first prenatal consultation of women who have given birth:

We interviewed 609 women who had given birth, including 203 cases and 406 controls, in our study. Of the cases, 29 or 14.28% had their first prenatal consultation within the deadline (1 to 3 months) and 174 cases were outside the deadline after 4 months i.e., a prevalence of late prenatal consultations of 85.78%.

3.1. Socio-Demographic Profile of Women Who Have Given Birth

The risk of having ANC insufficiency was found in women who had recently given birth in the 20 to 24 age group (OR = 0.67) and those over 40 years of age (OR = 0.66). The same observation was made among women who had given birth with a Qur'anic level of education (OR = 191.67) and those with no level of education (OR = 145.40). The mothers surveyed (OR = 1.46) were more vulnerable to ANC insufficiency. Common-law women who had recently given birth had a significant risk of ANC insufficiency (OR = 95.77). Those living in villages in the Gbêkê region had a risk of ANC insufficiency (OR = 5.10) (Table 1).

Table 1. Socio-demographic profile of women who have given birth.

Profile Demographic	Case		Witnesses		Order Ratio	IC (95%)
	Actual	%	Actual	%		
Age (years)						
< 20	10	9.36	22	5.42	Référence	Référence
20-24	52	25.61	90	22.17	0.67	0.33 – 1.35
25-29	38	18.72	80	19.70	0.55	0.27 - 1.14
30-34	24	11.82	84	20.69	0.33	0.15 - 0.71
35-39	45	24.17	87	21.43	0.6	0.29 - 1.22
≥ 40	25	12.32	43	10.59	0.66	0.31 - 1.48
Level of education						
Not in school	110	54.18	29	7.14	145.40	58.65 - 360.48
Qur'anic	50	24.63	10	2.46	191.67	66.58 - 551.75
Primary	15	7.38	27	6.65	21.30	7.62 - 59.50
Secondary	22	10.84	110	27.09	7.67	3.02 - 19.45
Upper	06	2.96	230	56.65	Référence	Référence
Profession						
Formal activity	45	22.17	55	13.55	1.46	0.80 - 2.68
Students	78	38.42	151	37.19	0.87	0.42 - 1.84
Housewives	80	39.41	186	45.81	0.77	0.80 - 2.68

Continued

Marital status						
Cohabitation	107	52.71	36	8.86	95.77	44.64 - 205.47
Bachelor	87	42.86	80	19.71	37.55	16.26 - 71.49
Married	09	4.43	290	71.43	Référence	Référence
Place of residence						
Village region Gbêkê	112	55.17	56	13.79	5.10	2.99 - 8.72
City Bouaké	62	30.54	276	67.98	Référence	Référence
Outside the Gbêkê region	29	14.29	74	18.23	0.57	0.34 - 0.95
Total	203	100	406	100		

3.2. Obstetric History of Women Who Have Given Birth

First-time patients in 33.5% of cases compared to 14.78% in controls, had an insufficiency of ANC with a risk of 5.48. As for first-time mothers, this risk was 7.94 (Table 2).

Table 2. Obstetric history of women who have given birth.

Obstetrical history	Case		Witnesses		Order Ratio	IC (95%)
	Actual	%	Actual	%		
Gesturity						
Primigeste (1)	68	33.50	60	14.78	5.48	3.24 - 9.26
Multigestite (4 - 5)	55	27.09	116	28.57	2.29	1.38 - 3.81
Paucigeste (2 - 3)	50	24.63	85	20.94	2.84	1.68 - 4.81
Big multigeste >5	30	14.78	145	33.71	Reference	Reference
Parity						
Primiparous (1)	98	48.28	76	18.72	7.94	4.73 - 13.33
Multiparous (4 - 5)	45	22.17	134	33.10	2.07	1.20 - 3.55
Paucipare (2 - 3)	35	17.23	42	10.34	5.13	2.77 - 9.51
Large Multiparous ≥6	25	12.32	154	37.93	Reference	Reference
Total	203	100	406	100		

3.3. Prenatal Follow-Up for Women Who Have Given Birth

Newborns who had their first ANC late or in the second trimester had a risk of around 16 to ANC insufficiency. For those in financial difficulty, this risk was 27.68. Mothers who used public transport had a 1.52 risk of ANC insufficiency. This risk was found at 0.52 in postpartum women who had no knowledge of prenatal consultation (Table 3).

Table 3. Prenatal follow-up of women who have given birth.

Prenatal follow-up	Case		Witnesses		Order Ratio	IC (95%)
	Actual	%	Actual	%		
Periods of implementation.						

Continued

1st trimester	29	14.29	328	80.79	Reference	Reference
2nd trimester	116	57.14	78	19.25	16.82	10.45 - 27.07
3rd trimester	58	28.57	00	00	Undefined	Undefined
Reasons for carrying out or not carrying out the prenatal check-up.						
No financial problem	35	17.24	346	85.22	4.45	Reference
Financial hardship	168	82.76	60	14.78	27.68	17.55 - 43.66
Means of transport						
Public taxi	171	84.24	316	77.83	1.52	0.98 - 2.37
Medical ambulance	32	15.76	90	22.17	Reference	Reference
Knowledge of the importance of using the ANC service.						
Insufficient	145	72.42	39	9.61	10.51	5.81 - 19
Sufficient	58	28.57	367	90.39	0.33	0.18 - 0.59
Total	203	100	406	100		

3.4. The Reasons for the Inadequacy of Prenatal Consultations for Women Who Have Given Birth

Financial difficulties in 43.84% of cases were the main reason for women who had given birth and had insufficient prenatal consultations (Table 4).

Table 4. Reasons for ANC deficiency.

Delivered / Reasons for a ANC insufficiency	Staff	Percentage
Financial hardship	89	43.84
No medical illness	45	22.16
Oversight	19	9.36
Absence of spouse	15	7.39
Distance from home - Bouaké University Hospital	15	7.39
Lack of trust in the caregiver	10	4.93
Time unavailability	10	4.93
Total	**203**	**100**

4. Discussion

4.1. The Limitations of Our Study

Our study revealed limitations, on the one hand the single-center conception (taking place at the Bouaké University Hospital) which could affect the generalization data and on the other hand the possibility of recall bias among our women surveyed who reported their history of prenatal care.

4.2. Prevalence of Delay at the First Prenatal Consultation among Women Who Have Given Birth

In our study, 85.78% of the women who gave birth had started their prenatal consultation late. This result was higher than that reported by Oussou [7] (61.3%) in Côte d'Ivoire. The low involvement of the pregnant woman in the decision-making process in the family, the lack of accurate and relevant information or aware-

ness on the advantages of prenatal consultation for the mother-child couple, especially the unfavorable socio-economic and cultural conditions, are all factors that could justify this high prevalence of delayed and insufficient prenatal consultation at the Bouaké University Hospital.

4.3. Socio-Demographic Profile of Women Who Have Given Birth

The 20 and 24 age group accounted for 25.61% of cases and 22.17% of controls. The risk of having ANC insufficiency was high for women who gave birth between 20 and 24 years of age, respectively (OR = 0.67; 95% CI: 0.33 - 1.35) and those aged 40 years and older (OR = 0.67; 95% CI: 0.31 - 1.48). This risk could be explained by several factors: their single status, financial difficulties. The shame for those over 34 years of age to continue their reproductive life [2]. Our results showed that 54.18% of the cases and 7.14% of the controls were without education. This result was similar to that of Traore [8], who found that 62.9% of women had no level of education. This low enrolment rate was associated with a high risk of ANC among postpartum mothers with a Qur'anic level of education (OR = 191.67; 95% CI: 66.58 - 551.75) and those not in school (OR = 145.40; 95% CI: 58.65 - 360.48). This high proportion of women who are not in school in our study can be explained by several factors, including their origin, mainly from the villages of the Bouaké region for their births at the University Hospital, and their precarious socio-economic conditions.Traoré [8] stated that an uneducated patient understands less well the importance of prenatal consultations. Lack of schooling is an obstacle to the acquisition of knowledge about the advantages of early prenatal consultation. Educational attainment provides a better understanding of health issues in general when they are the subject of awareness, which is necessary for the adoption of appropriate health behaviour. Unfavorable socio-economic conditions with low financial autonomy were associated with insufficient ANCs in our work. The frequency of unemployed or housewives was 34.48% in cases

compared to 40.64% in controls. The number of unemployed women with important domestic activities leaves little time for prenatal follow-up [8]. The risk of having ANC insufficiency was high in male and female students (OR = 1.46; 95% CI: 0.80 - 2.68). This situation could be explained by the fact that these women generally had more common-law pregnancies in our region, in particular. Female births living in common-law unions or alone accounted for 52.71% and 8.86% of cases and controls, respectively. This rate was comparable to that of Kochou [9] in Côte d'Ivoire, which found 54.9% of women in common-law unions with a high risk of having ANC insufficiency (OR = 95.77; 95% CI: 44.64 - 205.47). On the other hand, Ekou [10] in Abobo Baoulé (Abidjan) found 67% of pregnant women living in couples. There are many reasons for this common-law marital situation in our region, including a lack of family and partner support, poverty, and traditional beliefs or cultural practices surrounding pregnancy, which must be kept secret to avoid bad spells. There is a need for considerable efforts to reduce this cultural influence on antenatal care attendance. Newborn women living in the vil-

lages of the Gbêkê region accounted for 55.17% of cases compared to 13.79% of controls. Those from the city of Bouaké represented 30.54% of cases against 67.98% of controls. Ndiaye [2] in Senegal found that 68% of women living in rural areas had their ANC1 late and 33% of women living in rural areas had done so early. We found a risk of ANC insufficiency in postpartum women living in villages in the Gbêké region (OR = 5.10; 95% CI: 2.99 - 8.72). Rural populations are sometimes poorer than urban populations and the supply of health services is more diversified in urban areas than in rural areas, degraded road infrastructure complicates the transport or quick and easy transfer of women, and means of transport are expensive and not permanently available. A study in Sudan reported that women who did not use antenatal care services were those with less education and living in rural areas [11].

4.4. Obstetric History of Women Who Have Given Birth

The frequency of primiges was 33.5% in cases compared to 14.78% in controls. First-time primigicans had a higher risk of ANC insufficiency (OR = 5.48; 95% CI: 3.24 - 9.26). Our result was contrary to that of Oussou [7] who reported that multi-gestures had a greater risk of delay and insufficiency at the prenatal consultation**.** First-time mothers who are unaware of the risks associated with pregnancy may be reluctant to use antenatal care services early. First-time mothers had a higher risk of ANC insufficiency (OR = 7.94; 95% CI: 4.73 - 13.33). The frequency of primiparous cows was 48.28% in cases compared to 18.72% in controls. This result was similar to that of Oussou [7] (46.5%) and could be explained by the fact that they did not have a good knowledge of the benefits of using the antenatal consultation. Our observations concerning pregnancy and parity were contrary to that of N'dri K [12] in Kouiby, Côte d'Ivoire, who found that most of the respondents who were late in prenatal consultations had at least two pregnancies (88%) and at least two deliveries (65%).

4.5. Prenatal Follow-Up for Women Who Have Given Birth

Newborns who had their first ANC in the second trimester of pregnancy accounted for 57.14% of cases and 19.27% of controls. This result was lower than that reported by Mafuta [13] in Congo, who found 69.2% of women who had their first ANC in the second trimester of pregnancy. Our observation was contrary to that of Yéo [14] who found that 68% of pregnant women had made their first prenatal care visit early in the Djébonoua health area in Côte d'Ivoire. The risk of having an insufficiency of ANC for postpartum women who had their ANC in the 2nd trimester of pregnancy was (OR = 16.82; 95% CI: 10.45 - 27.07). Ignorance of pregnancy-related complications is a risk factor for ANC insufficiency. Raising awareness of the role of early antenatal care in preventing life-threatening diseases of the fetus and mother will contribute to a change in women's behaviour in the first antenatal consultation. The risk of having ANC insufficiency in postpartum women whose reason was financial problem was (OR = 27.68; 95% CI: 17.55 -

43.66). The reason for not performing the prenatal check-up was financial problems in 85.71% of cases and 14.78% of controls. Since the decisions of pregnant women are significantly influenced by their husbands, strategies should be developed to raise awareness among their spouses in order to increase their adherence to the NPC. Newborns who had no or insufficient knowledge of the benefits of using ANCs accounted for 67% of cases and 17.24% of controls. The risk of having ANC insufficiency was high for postpartum women who knew nothing about ANC (OR = 10.51; 95% CI: 5.81 - 19). More frequent and better consultations for all women during pregnancy will facilitate the application of preventive measures and the early detection of risks, avoid complications as much as possible and help to address health inequalities [15].

4.6. The Reasons for Insufficient Prenatal Consultation

Female births whose reason for ANC insufficiency was the financial problem represented 43.84% of cases. This result was comparable to that of Mafuta [13], which found that 67.9% of women who attended antenatal care services late in life had financial difficulties. According to Niang [11], although there are exemptions from fees for the use of health services in most countries in sub-Saharan Africa, the result is that care costs still remain an issue for users.

5. Conclusion

The delay and inadequacy of the prenatal consultation was very marked among the women who gave birth at the Bouaké University Hospital. The study reveals that low educational attainment, rural residence, primiparity and cohabitation are major risk factors for inadequate antenatal care. Financial hardship was identified as the main cause of non-compliance, with women experiencing financial hardship more likely to have insufficient antenatal care. Awareness-raising actions on the community component among families, spouses, and mothers-to-be are necessary to improve health behaviors around pregnancy.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Tiembré, I., Bénie Bi Vroh, J., Ake Tano, O., Dogou-Wawayou, B., Tagliante-Saracino, J., Odehouri-Koudou, P., *et al.* (2010) Évaluation de la qualité des consultations prénatales dans le district sanitaire de Grand Bassam (Côte d'Ivoire). *Santé Publique*, **22**, 221-228. https://doi.org/10.3917/spub.102.0221

[2] N'Diaye, P., Dia, A.T., Diediou, A., Dieye, E.H.L. and Dione, D.A. (2005) Déterminants socioculturels du retard de la 1re consultation prénatale dans un district sanitaire au Sénégal. *Santé Publique*, **17**, 531-538. https://doi.org/10.3917/spub.054.0531

[3] Kassebaum, N.J., Bertozzi-Villa, A., Coggeshall, M.S., Shackelford, K.A., Steiner, C., Heuton, K.R., *et al.* (2014) Global, Regional, and National Levels and Causes of Ma-

ternal Mortality during 1990-2013: A Systematic Analysis for the Global Burden of Disease Study 2013. *The Lancet*, **384**, 980-1004. https://doi.org/10.1016/s0140-6736(14)60696-6

[4] Institut National de la Statistique (INS) and ICF International (2012) Enquête Démographique et de Santé et à Indicateurs Multiples de Côte d'Ivoire 2011-2012. INS et ICF International, 591 p.

[5] Cisse, C.T., Ngoma, S.I., Martin, S.L., Tall-Diaw, C. and Diadhiou, F. (1997) Surveillance épidémiologique de la mortalité néonatale précoce au CHU de Dakar (Sénégal). *Cahiers d'études et de recherches francophone Santé*, **7**, 109-112.

[6] AbouZahr, C. and Wardlaw, T. (2003) Antenatal Care in Developing Countries: Promises, Achievements and Missed Opportunities—An Analysis of Trends, Levels and Differentials, 1990-2001. World Health Organization, 32 p.

[7] Oussou, K.R., *et al.* (2025) Prévalence et facteurs associés au recours tardif de la première consultation prénatale (CPN1) dans le district sanitaire de Koumassi, Côte d'Ivoire en 2022. *Revue Africaine De Médecine Et De Santé Publique*, **8**, 122-132.

[8] Traore, Y., Teguete, I., Thera, A.T., Mulbah, J.K., Mounkoro, N., Diarra, I., Diabate, F.S., Traore, M., Diakite, S. and Dolo, A. (2007) Aspect sociodémographique et pronostic des grossesses non suivies chez les patientes admises dans le service de Gynécologie-obstétrique de l'hôpital Gabriel Toure. *Mali Médical*, **22**, 39-43.

[9] Kochou, S.H.A. and Rwenge, M.J.R. (2014) Facteurs sociaux de la non-utilisation des services de soins prénatals ou de leur utilisation inadéquate en Côte d'Ivoire. *African Evaluation Journal*, **2**, Article No. 79, 12.

[10] Ekou, N.S.D. (2020) Analyse de l'accès aux soins prénataux des femmes enceintes dans un établissement de santé primaire: Cas de la formation sanitaire urbaine communautaire du village d'Abobo-Baoulé (Abidjan). *Revue Espace*, *Territoire*, *Société et Santé*, **3**, 67-80.

[11] Niang, M., Dupéré, S. and Bédard, E. (2015) Le non-recours aux soins prénatals au Burkina Faso. *Santé Publique*, **27**, 405-414. https://doi.org/10.3917/spub.153.0405

[12] Mafuta, E. and Kayembe, P.K. (2011) Déterminants de la fréquentation tardive des services de soins prénatals dans la zone de santé de l'Equateur et du katanga en République Démocratique du Congo. *Annals of African Medicine*, **4**, 845-854.

[13] N'dri, K., Luc, O.N., Abdoul, K.K., Martial, M.L. and Gomez, Z.K.A. (2023) Factors Associated with Delay at the First Prenatal Consultation in the Health District of Kouiby (Côte d'ivoire). *Revue Africaine des Sciences Sociales et de la Santé Publique*, **5**, 12-26.

[14] Yeo, S., Kouakou, B.J.P. and Coulibaly, S. (2020) Determinants socio-culturels du recours tardif à la consultation prénatale (CPN) dans l'aire sanitaire de Djébonoua en Côte d'Ivoire. *International Journal of Multidisciplinary Research and Development*, **7**, 56-65.

[15] WHO (2022) Recommandations de l'OMS concernant les soins maternels et néonataux pour une expérience positive de la période postnatale: rÉsumé analytique.