Determinants of incompletion of recommended antenatal visits among women in union in Bujumbura city: Modernity compromised by female dependence, unwanted pregnancy and poverty

Jean François Régis Sindayihebura[1]
Didier Nganawara[2]

[1] francois-regis.sindayihebura@ub.edu.bi
[2] ngdidier@hotmail.com

[1] https://orcid.org/0000-0001-9138-9813

[1] Department of Geographic, Environment and Population Sciences, Faculty of Humanities and Social Sciences, University of Burundi (Bujumbura, Burundi)
[2]Institute of Training and Demographic Research (IFORD) (Yaounde, Cameroon)

https://doi.org/10.51867/ajernet.7.4.120

ABSTRACT

In Bujumbura city, the rate of non-completion of the four antenatal visits recommended in Burundi is very high compared to its status as the main city and icon of modernity. This context challenges the urban health advantage that cities are supposed to offer their residents. Furthermore, it also goes against the assumptions regarding urban social disorganization (individualism resulting from the breakdown of family ties) and the women's empowerment that may result from it. Thus, the objective of this study is to analyze the determinants of this incompletion in this particular context. Based on data from the 2016-2017 Burundi Demographic Health Survey (BDHS), the analysis was performed using binomial logistic regression. The results show that a woman's propensity to make decisions about her own healthcare [OR: 0.380; CI: 0.180–0.801] reduces the risk of not attending the recommended four antenatal visits. On the other hand, having had an unwanted pregnancy [OR: 3.669; CI: 1.151–11.702] and living in a household with a low standard of living [OR: 3.889; CI: 1.334–3.952] increase this risk. Scientifically, these results invite researchers targeting the issues of antenatal visits and primary health promotion to focus their attention not only on rural area, but also on cities. In terms of economic and social development programs and projects, these findings show that interventions aimed at increasing antenatal consultation rates and adherence to healthcare in general must include women's empowerment in health-related decision-making, reduce economic barriers, strengthen family planning and primary health related education, involve men and couples, monitor women at risk of discontinuing antenatal care, reduce urban inequalities, and adopt an integrated multisectoral approach to improve the completion of antenatal visits in urban areas as well as in rural ones.
Keywords: Antenatal Visits, Determinants, Female Dependence, Household's Poverty, Unwanted Pregnancy

RESUME

À Bujumbura, le taux de non-respect des quatre consultations prénatales recommandées au Burundi est très élevé, compte tenu du statut de la ville comme capitale et symbole de modernité. Il s'agit d'un contexte qui défie l'avantage sanitaire urbain que la ville est supposée offrir aux citadins. Aussi, il est contraire aux postulats de la désorganisation sociale urbaine et à l'autonomisation féminine qui est susceptible d'en dériver. Ainsi, cette étude se donne pour objectif d'analyser les déterminants de ce non-respect dans ce contexte particulier. À partir des données de l'Enquête démographique et de santé du Burundi (EDSB) 2016-2017, une analyse par régression logistique binomiale a été réalisée. Les résultats montrent que la propension d'une femme à prendre des décisions concernant sa propre santé [OR : 0,380 ; IC : 0,180-0,801] réduit le risque de ne pas effectuer les quatre consultations prénatales recommandées. En revanche, une grossesse non désirée [OR : 3,669 ; IC : 1,151-11,702] et le fait de vivre dans un ménage à faible niveau de vie [OR : 3,889 ; IC : 1,334-3,952] augmentent ce risque. Sur le plan scientifique, ces résultats montrent que les recherches sur les sujets les visites prénatales et de la promotion de la santé primaire doivent couvrir, non seulement les milieux ruraux, mais aussi les villes. Sur le plan des programmes et des projets de développement économique et social, ces résultats montrent que les interventions visant à accroître le taux de consultations prénatales et l'adhésion aux soins de santé en général doivent inclure l'autonomisation des femmes en matière de prise de décisions relatives à la santé, réduire les barrières économiques, renforcer la planification familiale et l'éducation relative à la santé primaire, impliquer les hommes et les couples, suivre les femmes exposées au risque d'abandonner les soins prénataux, réduire les inégalités en milieu urbain et adopter une approche multisectorielle intégrée afin d'améliorer le suivi prénatal jusqu'à son terme dans les milieux urbains comme dans les milieux ruraux.

Mots-clés : Déterminants, Dépendance Féminine, Grossesses Non-Désirées, Pauvreté Des Ménages, Visites Prénatales

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

I. INTRODUCTION

1.1 Context and Statement of the Problem

The international community aspires to good health and well-being (UN, 2015). This goal is the third of the Sustainable Development Goals. The first of its targets aims to reduce maternal mortality to below 70 per 100,000 by 2030 (WHO [World Health Organization], 2025). Despite this global vision, the reduction in maternal mortality is far from being achieved worldwide. WHO data show that nearly 260,000 women died during and after pregnancy and childbirth in 2023. In addition, almost 92% of all maternal deaths occur in low- and middle-income countries. Most of these deaths were preventable (WHO, 2025).

Although the global trend shows a 40% decline in maternal deaths between 2000 and 2023, from 328 to 197 maternal deaths per 100,000 births, this rate remains highest in sub-Saharan Africa, where most countries have maternal mortality rates between 220 and 1,000 maternal deaths per 100,000 live births (WHO, 2025). The causes of these deaths are pregnancy complications (severe hemorrhages, pregnancy-related infections, complications from unsafe abortions) and underlying conditions that can be aggravated by pregnancy (high blood pressure, HIV/AIDS and malaria).

All these cases can be prevented if women receive adequate antenatal care (Carroli et al., 2001). It is for this reason that, since 2016, the WHO has recommended a minimum of eight antenatal care visits to reduce the risk of maternal and perinatal deaths (OMS, 2019; WHO, 2025). The first consultation should take place during the first 12 weeks of pregnancy, with the others spread out over the 20th, 26th, 30th, 34th, 36th, 38th, and 40th weeks (OMS, 2016).

However, the WHO found that even at the threshold of four (4) antenatal visits, only 64% of women worldwide receive them during their pregnancies (OMS, 2016). In Burundi, only 49% of women made four antenatal visits (ISTEEBU & ICF International, 2017). Even in Bujumbura, where healthcare provision is recognized as being better than in other provinces, only 52.88% of women made at least four antenatal visits. The city of Bujumbura ranks lasts among the provinces of Gitega (60.44%), Karusi (58.09%), Ruyigi (56.61%) and Muyinga (52.94%), where the majority of the population is rural (Figure 1).

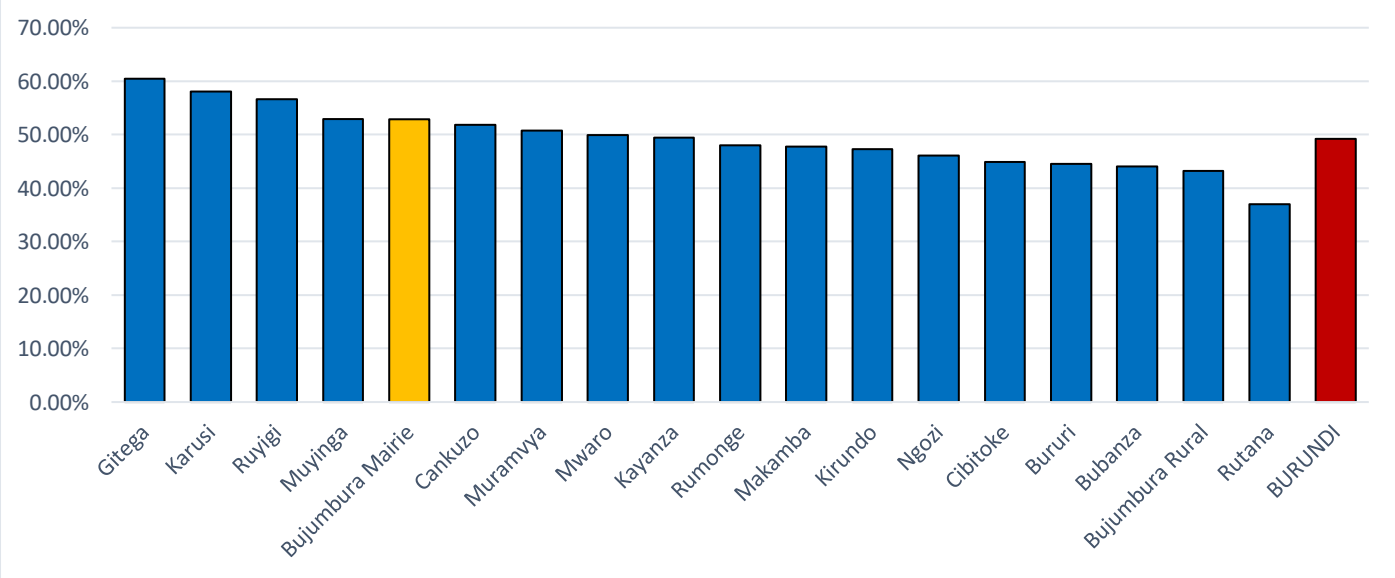


Figure 1

Proportion of Burundian women who completed at least four antenatal visits during pregnancy delivered in the five years before the BDHS (2016–2017)

Source: Authors, by analyzing the data of the DHSB (2016-2017)

Apart from the fact that Bujumbura is the country's largest city and economic capital, which should give women residents an advantage in terms of healthcare supply, several studies agree that living in an urban environment reduces the risk of women not attending at least four antenatal visits (Al-Zubayer et al., 2024; Annu, 2024; Selian et al., 2025; Vlahov et al., 2005). Given this situation in the city of Bujumbura, where urbanity does not seem to have provided women with the advantage of antenatal care, leaving them exposed to the risks of maternal and perinatal death, this study aims to examine other factors contributing to incompletion of antenatal visits among mothers who had a live birth in the five years prior to the survey.

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

1.2 Research Objective

The sole objective of this study is to examine the determinants of failure to complete the four recommended antenatal visits in the city of Bujumbura.

II. LITERATURE REVIEW

2.1 Theoretical Review

This study lies at the intersection of three complementary theories: the urban health advantage theory, the women's empowerment approach, and the theory of social disorganization.

2.1.1 Theory of Urban Health Advantage

The "urban advantage" is a contribution to the conceptualization of health, demonstrating that the urban environment can positively influence health behaviors and outcomes, particularly through the concentration of infrastructure, the accessibility of health services, and greater information flow (Santosh & Kane, 2025; Vlahov et al., 2005). This conceptual framework was applied to maternal health with data from 30 developing countries (Matthews et al., 2010). The results showed that the urban advantage in access to maternal care was neither uniform nor universal. In particular, proximity to services does not guarantee their use by poor urban populations (Sidze et al., 2022). This approach is particularly relevant to the present study. Bujumbura, the main city in Burundi, should in theory provide a favorable environment for prenatal care due to the concentration of health services there (Barankanira et al., 2023). However, the existence of a favorable urban environment does not mean that all women have the economic, social, and decision-making resources necessary to take full advantage of it (Sidze et al., 2022). Incomplete prenatal care can thus be interpreted as an expression of a differentiated urban advantage, one that is even compromised by social, economic, and family inequalities (Sidze et al., 2022; Santosh & Kane, 2025).

2.1.2 Women's Empowerment Approach

Women's empowerment is a convergence of three complementary approaches, namely, the gender approach, the feminist approach, and structural-functionalism, that the social sciences use to explain sociodemographic behaviors (Mason, 2014). While feminism advocates for women's autonomy as emancipated individuals (Nussbaum, 2000), the gender approach focuses on women's participation in decision-making regarding their own well-being and that of their household, within the couple (Osamor & Grady, 2016). With regard to antenatal consultations, both approaches hold that women, whether alone or as part of a couple, should have the opportunity to decide whether to visit a health care center to ensure a healthy outcome for their pregnancy (Osamor & Grady, 2016). This possibility is supported by structural-functionalism, which posits that macrosocial transformations such as urbanization and industrialization create new roles that can provide women with the autonomy they need to make decisions about their medical care (Parsons, 1955).

All of these three approaches therefore presuppose an urban woman in Bujumbura who is integrated into urban life and who is socially and economically autonomous in making decisions regarding her prenatal care. However, these approaches are limited by the fact that not all women are able to integrate into urban life in a sustainable way to achieve the autonomy they are expected to have. Furthermore, other sociocultural constraints may prevent women from being truly autonomous, even if they are economically independent (Osamor & Grady, 2016).

2.1.3 Theory of Social Disorganization

The theory of social disorganization posits that the modernization and urbanization of African societies lead to structural changes and the breakdown of traditional social bonds (Umar et al., 2018). Thus, the weakening of traditional structures gives rise to new behaviors that foster individualism (Santosh & Kane, 2025). As a result of these transformations, women are more likely to adopt socio-demographic and health-related behaviors more freely than their peers in rural areas (Osamor & Grady, 2016; Shibre et al., 2021). Thus, this theory would rule out the influence of cultural heritage in the urban context with regard to antenatal consultations, while granting women the freedom to participate in them. However, the context of the city of Bujumbura, where the rate of non-completion of antenatal visits appears to undermine the full validity of this theory, particularly with regard to health (Barankanira et al., 2023).

While not exhaustive, these three theories and their critiques show that the issue of incompleteness of antenatal visits sits at the crossroads of demographic and public health concerns. Thus, beyond these theories, this study also falls within the theoretical framework of institutional approaches. According to these approaches, socio-health behaviors are explained by the interaction between the supply and demand for health services. Furthermore, it is important to take into account culturalist approaches, which propose situating sociodemographic and health behaviors within the context of cultural influences.

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

2.2 Empirical Review of Determinants of Antennal Visits Incompletion

In addition to urban residence and region of residence, which are factors that cannot be mobilized for this study focusing on the city of Bujumbura, the literature attributes incompletion of antenatal visits to demographic factors such as marital status (Diarra et al., 2020; Tessema & Minyihun, 2021), age (Sethumadhavan et al., 2025; Tessema & Minyihun, 2021), number of children ever born and household size (Al-Zubayer et al., 2024). It also attributes it to socio-economic factors such as standard of living and financial problems (Abrha et al., 2020; Diarra et al., 2020; Nsita Nzaya-Nsita et al., 2023; Tessema & Minyihun, 2021), the mother's education and occupation (Al-Zubayer et al., 2024; Sethumadhavan et al., 2025; Tessema & Minyihun, 2021). Other studies link this incompletion to the problem of information, with factors including lack of exposure to the media (Abrha et al., 2020; Sethumadhavan et al., 2025) and lack of knowledge about the number of antenatal visits required and their schedule (Abrha et al., 2020; Diarra et al., 2020; Selian et al., 2025). Problems with communication within the couple (Aidah & Kizito, 2022; Al-Zubayer et al., 2024) and family planning (Tessema & Minyihun, 2021) are also mentioned.

In Burundi, there are few studies on the completion of required antenatal visits. Only two studies have addressed this issue (Masabarakiza & Nsanzabera, 2021; Ziegler et al., 2021). The first study analyses how the conflict situation undermines the chance of making the recommended four antenatal visits, which has been low in insecure regions. It shows that unwanted pregnancy and high parity increase the risk of not making four antenatal visits (Ziegler et al., 2021). The second shows that birth rank, media exposure, female education and inter-birth interval are associated with four antenatal visits (Masabarakiza & Nsanzabera, 2021). Although dealing with a different issue, the study conducted in 2023 shows that lack of knowledge, late recognition of pregnancy and difficulties in reaching health facilities (30 to 60 minutes or more) are associated with the risk of late antenatal visit, a fact that is associated with fewer antenatal visits (Butoyi et al., 2023). In the Burundian context, there are also studies that do not directly address the issue of the recommended number of antenatal visits, but rather the issue of making at least one visit (Barankanira et al., 2023; Habonimana & Batura, 2021; Iradukunda et al., 2024).

All of these studies pay little attention to the socio-demographic characteristics of the head of household (age, gender), which can have a significant influence on socio-health behaviors. Furthermore, women's participation in decision-making about their healthcare is never taken into account. Thus, in the specific context of the Bujumbura city, this study uses these factors to control for the variables interactions in order to explain the lack of completion of antenatal visits.

III. METHODOLOGY

3.1 Data Source

This study uses data from the Burundi Demographic and Health Survey (EDSB 2016-2017), from which it draws its research question (ISTEEBU & ICF International, 2017).

3.2 Target Population

The study targets women aged 15 to 49 living in households that were selected for the survey. In addition to being residents of the city of Bujumbura, the women had to have had a live birth in the five years before the survey. In order to control for the effect of women's participation in decision-making regarding their health, women who were in a union were selected. This selection resulted in a target population of 319 women.

3.3 Variables Involved in the Study

The dependent variable in the study is the number of antenatal visits made by the woman during her last pregnancy. It is coded 1 if the woman had fewer than 4 antenatal visits and 0 if she had at least 4 visits. The independent variables used are the characteristics of the woman (age, desire for pregnancy, level of education, occupation, parity achieved), those of her husband (age, gender, level of education, occupation), those of the household (size, standard of living, decision-making regarding the woman's health) and those relating to the community (assessment of the geographical accessibility of health centers, religion).

3.4 Data Quality

All the variables used have zero non-response rates. Data on women's age, based on the Myers index, and data on number of children ever born, based on the Coale & Demeny ‘A’ index and the Brass & Rachad ‘B’ index, are within acceptable quality limits (Gendreau, 1993).

3.5 Analysis Method

Given the qualitative and dichotomous nature of the dependent variable, this study uses binomial logistic regression to analyse the predictive power of the independent variables. Logistic regression makes it possible to express

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

the probability (p) of a woman in the city of Bujumbura not completing four antenatal visits (Z) based on its Logit, using the exponential function.

$$p = \frac{\exp(L)}{1 + \exp(L)} \ (\boldsymbol{i})$$

$$\mathrm{L} = \mathrm{Logit(Z)} = \beta_0 + \beta_1 \mathrm{Y}_1 + \beta_2 \mathrm{Y}_2 + \beta_3 \mathrm{Y}_3 + \cdots + \beta_n \mathrm{Y}_n + \varepsilon \ \boldsymbol{(ii)}$$

Where $\beta_1, \beta_2, \beta_3, \ldots, \beta_n$ are the variables coefficients; $\mathrm{Y}_1, \mathrm{Y}_2, \mathrm{Y}_3, \ldots, \mathrm{Y}_n$ are the independent variables and ε, the residues.

De ***(i)*** et ***(ii)*** :

$$\mathrm{p} = \frac{\beta_0+\beta_1 \mathrm{Y}_1+\beta_2 \mathrm{Y}_2+\beta_3 \mathrm{Y}_3+\cdots+\beta_n \mathrm{Y}_n+\varepsilon}{1+(\beta_0+\beta_1 \mathrm{Y}_1+\beta_2 \mathrm{Y}_2+\beta_3 \mathrm{Y}_3+\cdots+\beta_n \mathrm{Y}_n+\varepsilon)}$$

Using the β_i coefficients, the exponential function applied to the calculated coefficients gives the odds ratios (OR) or risk ratio of not completing the recommended antenatal visits (OR=exp(β_i,). The significant influence of a variable-modality on not having the four antenatal visits is confirmed if the probability associated with it is less than 0.05 (5% significance threshold) (Rizzi, 2013).

3.6 Analysis Tools

The regression is performed using Stata 15.0 software. The processing and formatting of the results tables is done using Microsoft Excel 2016.

3.7 Ethical Standards Compliance

The 2016-2017 EDSB questionnaires were submitted to the National Ethics Committee for approval. They also received approval from the ICF Institutional Review Board and Statistical Approval No. VS201505CNIS from the National Council for Statistical Information of Burundi (ISTEEBU & ICF International, 2017).

IV. FINDINGS & DISCUSSION

4.1 Findings

The implementation of logistic regression shows that the area under the ROC curve is 72.87%, which implies that the explanatory variables used make a significant contribution to predicting incomplete antenatal visits. This good prediction, together with the multicollinearity test showing no problems of strong correlation between the independent variables (average VIFs below 2 with no values reaching 10), confirms the model's validity. In addition, the probability associated with the chi-square of the complete model (at 29 degrees of freedom) shows the significance of the model ($p<0.05$). All these parameters confirm that the data presented can be used for logistic regression modelling and that the results capture the predictive factors of the phenomenon under study.

The modelling confirmed by the tests defined above showed that the determining factors for the risk of not attending four antenatal visits among women in the city of Bujumbura are the desire for the last pregnancy, the household standard of living and who decides on the woman's healthcare. In fact, women whose pregnancies were unwanted were 3.7 times [OR: 3.669; CI: 1.151 - 11.702] more likely not to attend the recommended four antenatal visits than those whose pregnancies were wanted. As for household standard of living, women living in households with a high or medium standard of living were 3.9 times [OR: 3.889; CI: 1.334–3.952] more likely not to attend the recommended four antenatal visits than those living in very wealthy households. Regarding the person who makes decisions about the woman's healthcare, the results show that women who have the freedom to decide on their own are 62% [OR: 0.380; CI: 0.180–0.801] less likely to miss the recommended four antenatal visits than those whose decisions were made jointly with their partner (Table 1).

Table 1

Effects of independent variables on the risk of incomplete recommended antenatal visits

Variables and values	Numbers	OR	p-value	95% Conf. Interval	
				Lower bound	Upper bound
Age de la femme					
Teenagers & Young	56	.910	p>.05	.378	2.190
Adult	167	1			
Aged	96	1.014	p>.05	.518	1;984
Number of children ever born					
0-3 children	197	1			
4-6 children	97	1.373	p>.05	.708	2.661
7 children or more	25	1.241	p>.05	.344	4.480
Desire of the last pregnancy					
Wanted at the time	232	1			

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

Wanted. but late	66	1.834	p>.05	.987	3.407
Not wanted at all	21	3.669	**p<.05**	1.151	11.702
Education level of the woman					
No education	33	1.748	p>.05	.642	4.755
Primary	109	1			
Fundamental	50	.666	p>.05	.296	1.498
Post-fundamental	87	1.154	p>.05	.526	2.532
Secondary or more	40	.650	p>.05	.213	1.980
Occupation of the woman					
Inactive	114	1			
Agriculture	32	1.151	p>.05	.402	3.293
Official employee	91	1.292	p>.05	.660	2.529
Trading/Informal/Other	82	1.014	p>.05	.542	2.128
Age of household head					
Young	52	1.394	p>.05	.576	3.374
Adult	216	1			
Aged	51	.991	p>.05	.478	2.056
Sex of household head					
Male	281	1			
Female	38	1.077	p>.05	.475	2.444
Education level of the husband					
No education	36	1.039	p>.05	.385	2.806
Primary	93	1			
Fundamental	54	.475	p>.05	.208	1.084
Post-fundamental	71	1.403	p>.05	.65	3.025
Secondary or more	65	.748	p>.05	.273	2.048
Occupation of the husband					
Inactive/Agriculture	47	1.113	p>.05	.49	2.526
Official employee	211	1			
Trading/Informal/Other	61	1.347	p>.05	.701	2.586
Household size					
Small size (≤5)	139	.835	p>.05	.446	1.562
Large size (≥6)	180	1			
Household's standard of living					
Very high	287	1			
Lower and High	32	3.889	**p<.05**	1.334	3.952
Who decides on the woman's health care					
Woman only	54	.380	**p<.05**	.180	.801
Both jointly	221	1			
Husband only	44	.467	p>.05	.214	1.021
Appreciation of the geographic accessibility of the health facilities					
Major problem	41	1.185	p>.05	.535	2.586
No problem	278	1			
Religion					
Catholic	122	1.019	p>.05	.581	1.787
Protestant	140	1			
Muslim or other	57	1.908	p>.05	.921	3.952
OR	*: Odds Ratio*				
CI	*: confidence interval*				

Source: Authors, by analyzing the data of the DHSB (2016-2017)

By comparing the differences in the chi-square likelihood ratios of the complete model without the variable in question to that of the model with all variables, the result allows us to assess the net contribution (C_i) of each variable significantly associated with the risk of not completing four antenatal visits. These contributions allow us to rank the three variables according to their discriminatory power. The results show that "Who decides on the woman's healthcare" comes first, followed by the desire of the last pregnancy, then the household's standard of living (Table 2).

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

Table 2

Ranking of factors contributing to the risk of incompletion of four recommended antenatal visits

Variable	Chi2 likelihood report of the complete model without the variable	Difference in the likelihood report of the complete model	Net contribution (c_i)	Rank
Who decides on the woman's healthcare	44.64	9.09	16.92%	1st
Desire of the last pregnancy	45.64	8.09	15.06%	2nd
Household's standard of living	47.2	6.53	12,15%	3rd

Source: Authors, by analysing the data of the DHSB (2016-2017)

4.2 Discussion

The aim of this study was to examine the determinants of incomplete antenatal visits (fewer than four visits) among women, in a context where everything should be in favour of urban women (availability of services and good accessibility to healthcare centres). The results of the analysis show that, in order of importance, 'Who decides on women's healthcare', the desire for the last pregnancy and the household's standard of living make significant differences between women in terms of incompletion of antenatal visits. The following paragraphs compare these results with those of other studies to finally decrypt the significance of these influences on the number of antenatal visits.

4.2.1 Influence of 'Who Decides on Women's Healthcare

The results of this study show that women who make their own decisions about their healthcare are 62% less likely to miss four antenatal visits. These findings are corroborated by three studies conducted in the Global South. Indeed, a study conducted on DHS data from eighteen (18) sub-Saharan African countries, including Burundi, showed that women who were autonomous in decision-making were more than twice as likely to use adequate prenatal consultation services (Habte et al., 2024). Similarly, an analysis of DHS data from six (6) South Asian countries shows that women living in households where health-related decision-making was the responsibility of their husband or other people were nearly 30% less likely to complete the number of antenatal visits recommended by the WHO (Al-Zubayer et al., 2024). Furthermore, the study conducted in the Rubirizi District (Uganda) shows that mothers who freely discuss prenatal care with their husbands are 3.44 times more likely to complete four antenatal visits than others (Aidah & Kizito, 2022).

The only study that seems to show that there is no significant difference between women who make their own decisions about antenatal care and those whose decisions are made by their husbands or mothers-in-law is that of Butoyi and colleagues. However, these results were obtained without controlling for other variables to obtain the net effect of women's autonomy in decision-making about prenatal care (Butoyi et al., 2023). Thus, these results do not compromise those that confirm that women's autonomy in decision-making about antenatal care increases the likelihood of making sufficient antenatal visits. Moreover, other studies confirm that, in the Burundian context, freedom of exercise for women allows them to aspire to self-determination and avoids certain health problems (Sindayihebura, Barankanira, et al., 2022; Sindayihebura et al., 2025).

In fact, although it is necessary to avoid gratuitous generalization, it can be said that Burundian men, for reasons of work and/or habit, do not follow or follow only to a limited extent their wives' antenatal schedules. As proof of this, pregnancy, newborn and young child monitoring notebooks are kept by mothers. Few men know how to keep them and/or where they are kept. Thus, waiting for a man to decide when and how to attend antenatal visits increases the risk of delays and insufficient visits at the end of the pregnancy.

4.2.2 Influence of Last Pregnancy Desire

The results of this study show that women whose last pregnancy was unwanted were nearly 4 times more likely not to complete the recommended four antenatal visits. These results are in line with those of a study based on DHS data from 12 East African countries, which found that women whose last pregnancy was unplanned were 20% less likely to complete the recommended four antenatal visits (Tessema & Minyihun, 2021). Similarly, the study conducted in Burundi (at the national level) shows that women whose pregnancy was unwanted were 25% less likely to make the recommended four antenatal visits (Ziegler et al., 2021). These results are corroborated by other studies that examine the factors contributing to late initiation of antenatal visits (Habte et al., 2024; Mare et al., 2025; Mkandawire et al., 2021; Ochako & Gichuhi, 2016). The results of all these studies show that the more unwanted the pregnancy, the higher the risk of seeking antenatal care late. As a result, it is this delay in seeking initial antenatal care that causes women to have incomplete antenatal visits after 12 weeks of pregnancy (Mare et al., 2025; Ochako & Gichuhi, 2016).

In fact, women are caught up in what could be called "the anxiety of unwanted pregnancy." Before thinking about initiating antenatal care, they experience deep regret at not having been able to avoid it (by spacing births and

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

stopping procreation), followed by a desire to hide their status as women with unwanted pregnancies (sometimes not spaced from the first), as has been observed among women in unions in Dakar (Adjamagbo et al., 2013). These results therefore show a sense of unease among mothers, even in privileged environments such as the city of Bujumbura: socio-cultural constraints do not allow women to plan births (Itangishaka et al., 2024; Sindayihebura, Nganawara, et al., 2022a; Sindayihebura et al., 2024; Singoye et al., 2024), but these ones are aware of the need for family planning, given the socio-economic constraints faced by households (Sindayihebura, Nganawara, et al., 2022b). Thus, confused, perplexed, and desperate, women forget what is essential for the pregnancy they are carrying: their health and that of the life they are carrying, which is only monitored through antenatal visits.

4.2.3 Influence of Household Standard of Living

The results of this study show that women living in wealthy households or households with lower incomes were 3.9 times more likely not to complete the recommended four antenatal visits than those living in households with very high standard of living. These results, which show that household well-being increases the likelihood of completing recommended prenatal care, are supported by studies conducted in 18 countries in East Africa (Tessema & Minyihun, 2021), six countries in South Asia (Al-Zubayer et al., 2024), Ethiopia (Abrha et al., 2020), and Mali (Diarra et al., 2020). All these studies show that the wealthier the household, the lower the risk that the woman living in it will not complete the recommended antenatal visits. In the study by Diarra and colleagues (2020), women experiencing financial problems were 9.7 times more likely not to complte four antenatal visits than those who were not experiencing any financial problems. The reasons given in Mali were that, in the context of financial constraints, households prioritize food expenditure (survival of household members) at the expense of health expenditure (Diarra et al., 2020). The authors explain that in addition to consultation fees and prescription costs, the cost of an antenatal visit also weighs heavily in terms of time and travel expenses. These conclusions are supported by Butoyi and colleagues (2020), who find that women who travel more than 30 minutes are more than twice as likely to delay initiating prenatal care. These authors find that this delay is linked to travel difficulties in the mountainous area of Mugamba (targeted by the study) where women are forced to pay for bicycles or motorcycles, which poses financial accessibility challenges (Butoyi et al., 2023).

In Bujumbura, the influence of living standards, whereby women living in the poorest households do not complete the recommended antenatal visits, may be linked to these explanations in several ways. First, the issue of prioritizing food for survival raised by Diarra and colleagues (2020) may be valid in poor households in the city of Bujumbura. Indeed, in a context of poverty and widespread increases in the prices of basic necessities, women will not pay for an express ultrasound; they will wait several weeks for a free appointment under the program of free healthcare for pregnant women and children under five in public health facilities. The number of weeks of waiting will have a corresponding effect on reducing the number of antenatal visits made at the end of pregnancy. In addition, women living in households with modest standards of living are employed in sectors that do not generate regular income (guaranteed by law). This means that their contribution to household resources comes from work that does not recognize antenatal leave and does not give them the freedom to choose to attend regular antenatal visits. Thus, women will most often choose to go to work (piecework, trade, street vending, agriculture, etc.) and will only come when the pregnancy presents complications or when the delivery is approaching (Kibesa et al., 2022). This attitude also has the effect of reducing the number of recommended antenatal visits.

In addition to these two arguments, there are the transportation difficulties highlighted by Butoyi and colleagues (2023) that arise in hostile environments. Women living on the suburbs of the city, which are mostly unplanned settlements without adequate road infrastructures, encounter transportation problems. Public transportation, which is relatively inexpensive, is non-existent. The only means of transportation available are motorcycle/car taxis, which are too expensive and less affordable for women from poor households. This situation limits the number of antenatal visits for women in these suburbs where public health facilities offering antenatal consultation services are not available.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Noting an insufficient level of antenatal visits in the city of Bujumbura, this study aimed to analyze the determinants of incompletion of antenatal visits in this otherwise privileged environment. It used data from the latest Burundi Demographic and Health Survey (2016-2017) and applied binomial logistic regression. The results show that women who make decisions about their healthcare alone are the least likely to fail to complete the recommended four antenatal visits. They also show that women whose last pregnancy was unwanted are more likely to fail to complete the four visits. Finally, they show that women living in less wealthy households are at risk of not completing the recommended four antenatal visits.

These results demonstrate that, in addition to poverty, which can prevent access to quality services or force women to choose to fight for survival instead of seeking care, women's lack of autonomy is a significant limitation.

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

Women who wait for their spouse's decision and opinion are delayed because their spouses, if aware, they are sometimes absorbed by daily life and social obligations. These results also show that the failure of family planning campaigns not only has socioeconomic effects related to the delay in the fertility transition, but also risks reversing the decline in maternal and neonatal mortality.

5.2 Recommendations

In light of these findings, several recommendations should be made to holistically improve the quality of prenatal care practices for all categories of women in the city of Bujumbura, particularly among disadvantaged groups: Empower women by promoting their effective participation in decisions regarding their health and prenatal care; Reduce economic barriers to the use of prenatal services, particularly for women from the most disadvantaged households; Strengthen family planning programs to prevent unwanted pregnancies and promote better continuity of care during pregnancy; Establish a system to monitor women at risk of dropping out of prenatal care, particularly through reminders, counseling, and the involvement of community health workers; Increase the involvement of men and couples to foster family support for regular attendance at prenatal visits; Strengthen health education on the importance of completing the full course of prenatal visits and on the consequences of discontinuing them; Reduce disparities in access to care in urban areas so that economically and socially vulnerable women can also benefit from the health advantages associated with the concentration of services in Bujumbura; Adopt an integrated, multisectoral approach combining maternal health, family planning, women's empowerment, social protection, and community mobilization.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

Abrha, M. W., Gebrekidan, B. A., Weldearegay, H. G., & Medhanyie, A. A. (2020). Attendance of fourth antenatal care visit in Ethiopia: Analysis from 2016 Ethiopian Demographic Health Survey [Preprint]. *Research Square*. https://doi.org/10.21203/rs.2.22266/v1

Adjamagbo, A., Aguessy Koné, P., & Équipe ECAF. (2013). Situations relationnelles et gestion des grossesses non prévues à Dakar. *Population, 68*(1), 67–96. https://doi.org/10.3917/popu.1301.0067

Aidah, A., & Kizito, O. (2022). Factors affecting the utilization of antenatal care 4th visit among mothers in Rubirizi District, Uganda. *International Journal of Studies in Nursing, 7*(2), 22. https://doi.org/10.20849/ijsn.v7i2.1026

Al-Zubayer, M. A., Shanto, H. H., Kundu, S., Sarder, M. A., & Ahammed, B. (2024). The level of utilization and associated factors of WHO recommended antenatal care visits in South Asian countries. *Dialogues in Health, 4*, Article 100175. https://doi.org/10.1016/j.dialog.2024.100175

Annu, J. (2024). Determinants associated with frequency of antenatal care visits in Uttar Pradesh: Results from demographic health survey. *International Journal of Health Sciences and Research, 14*(11), 197–203. https://doi.org/10.52403/ijhsr.20241122

Barankanira, E., Iradukunda, A., Ntakaburimwo, N., Ahishakiye, W., Nsavyimana, J. C., & Odjidja, E. N. (2023). Spatial distribution and predictive factors of antenatal care in Burundi: A spatial and multilevel baseline analysis for the third Burundian Demographic and Health Survey. *PLOS ONE, 18*(1), Article e0272897. https://doi.org/10.1371/journal.pone.0272897

Butoyi, J. M., Sagam, C. K., Munezero, B., Nkeshimana, A., & Coppieters, Y. (2023). Late start of antenatal care in Burundi: Effect of socio-demographic, socio-cultural, and health system-related factors [Preprint]. *medRxiv*. https://doi.org/10.1101/2023.12.12.23299879

Carroli, G., Rooney, C., & Villar, J. (2001). How effective is antenatal care in preventing maternal mortality and serious morbidity? An overview of the evidence. *Paediatric and Perinatal Epidemiology, 15*(Suppl. 1), 1–42. https://doi.org/10.1046/j.1365-3016.2001.0150s1001.x

Diarra, S., Telly, N., Sagara, I., Traoré, S., Dembélé, J. C., Guindo, B., Sidibé, R., Camara, K., Coulibaly, M. K., & Dembélé, A. (2020). Facteurs associés à la réalisation de moins de quatre consultations prénatales à Bougouni en 2020. *Mali Santé Publique, 10*(2), 93–99. https://doi.org/10.53318/msp.v10i02.1813

Gendreau, F. (1993). *La population de l'Afrique : Manuel de démographie*. CEPED/Karthala.

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

Habonimana, D., & Batura, N. (2021). Empirical analysis of socio-economic determinants of maternal health services utilisation in Burundi. *BMC Pregnancy and Childbirth, 21*, Article 684. https://doi.org/10.1186/s12884-021-04162-0

Habte, A., Tamene, A., & Melis, T. (2024). Compliance towards WHO recommendations on antenatal care for a positive pregnancy experience: Timeliness and adequacy of antenatal care visits in sub-Saharan African countries: Evidence from the most recent standard Demographic Health Survey data. *PLOS ONE, 19*(1), Article e0294981. https://doi.org/10.1371/journal.pone.0294981

Institut de Statistiques et d'Études Économiques du Burundi, & ICF International. (2017). *Troisième enquête démographique et de santé 2016–2017*. https://www.isteebu.bi/wp-content/uploads/2020/10/EDS-III.pdf

Iradukunda, L. I., Ogunbode, O. O., & Arulogun, O. S. (2024). Antenatal care utilisation among adolescent mothers in Ngozi Province, Burundi. *Journal of the West African College of Surgeons, 14*(2), 174–179. https://doi.org/10.4103/jwas.jwas_93_23

Itangishaka, P., Manirakiza, R., Rwenge Mburano, J. R., Ndayisenga, A., & Toyi, A. (2024). Facteurs associés à l'utilisation de la contraception moderne chez les femmes en union au Burundi : Tendances et changements de 1987 à 2017. *European Scientific Journal, 20*(17), 45. https://doi.org/10.19044/esj.2024.v20n17p45

Kibesa, S. J., Kitua, Y. W., & Kitua, D. W. (2022). Determinants of antenatal healthcare services utilisation: A case of Dodoma, Tanzania. *East African Health Research Journal, 6*(2), 155–161. https://doi.org/10.24248/eahrj.v6i2.701

Mare, K. U., Andargie, G. G., Moloro, A. H., Mohammed, A. A., Mohammed, O. A., Wengoro, B. F., Lahole, B. K., Hadaro, T. S., Leyto, S. M., Mamo, P. O., Hedato, A. H., Seifu, B. L., Wondmeneh, T. G., Ebrahim, O. A., & Sabo, K. G. (2025). Late initiation of antenatal care visit amid implementation of new antenatal care model in sub-Saharan African countries: A multilevel analysis of multinational population survey data. *PLOS ONE, 20*(1), Article e0316671. https://doi.org/10.1371/journal.pone.0316671

Masabarakiza, P., & Nsanzabera, C. (2021). Determinants of antenatal and postnatal care service utilization in Burundi: Analysis of the 2016–2017 Burundian Demographic and Health Survey. *International Journal of Community Medicine and Public Health, 8*(5), 2186–2196. https://doi.org/10.18203/2394-6040.ijcmph20211736

Mason, K. O. (2014). Impact du statut social des femmes sur la fécondité des pays en développement. In H. Leridon (Ed.), *Les théories de la fécondité* (pp. 447–465). INED.

Matthews, Z., Channon, A., Neal, S., Osrin, D., Madise, N., & Stones, W. (2010). Examining the "urban advantage" in maternal health care in developing countries. *PLOS Medicine, 7*(9), Article e1000327. https://doi.org/10.1371/journal.pmed.1000327

Mkandawire, P., Kangmennaang, J., Walker, C., Antabe, R., Atuoye, K., & Luginaah, I. (2021). Pregnancy intention and gestational age at first antenatal care visit in Lesotho. *African Journal of Midwifery and Women's Health, 15*(1). https://doi.org/10.12968/ajmw.2018.0034

Nussbaum, M. C. (2000). *Women and human development: The capabilities approach*. Cambridge University Press. https://doi.org/10.1017/CBO9780511841286

Nzaya-Nsita, B., Nzita Kikheka, P. D., Miakala mia Ndolo, J.-H., & Kiombo Mbela, G. (2023). Utilisation de la consultation prénatale dans les structures de soins de l'Armée du Salut à Kinshasa de 2020 à 2022. *International Journal of Progressive Sciences and Technologies, 41*(2), 48–58.

Ochako, R., & Gichuhi, W. (2016). Pregnancy wantedness, frequency and timing of antenatal care visit among women of childbearing age in Kenya. *Reproductive Health, 13*, Article 51. https://doi.org/10.1186/s12978-016-0168-2

Organisation mondiale de la Santé. (2016, November 7). *Les femmes enceintes doivent pouvoir bénéficier de soins adaptés au bon moment*. https://www.who.int/fr/news/item/07-11-2016-pregnant-women-must-be-able-to-access-the-right-care-at-the-right-time-says-who

Organisation mondiale de la Santé. (2019). *Travailler ensemble : Un guide de ressources pour l'intégration des services de vaccination tout au long de la vie*. https://iris.who.int/bitstream/handle/10665/311551/9789242514735-fre.pdf

Osamor, P., & Grady, C. (2016). Women's autonomy in health care decision-making in developing countries: A synthesis of the literature. *International Journal of Women's Health, 8*, 191–202. https://doi.org/10.2147/IJWH.S105483

Parsons, T. (1955). *The family: Its relationship to personality and to the social structure*. Free Press.

Rizzi, E. (2013). La régression logistique. In G. Masuy-Stroobant & R. Costa (Eds.), *Analyser les données en sciences sociales : De la préparation des données à l'analyse multivariée* (Vol. 5, pp. 253–278). P.I.E. Peter Lang. https://www.peterlang.com/document/1053763

Santosh, S., & Kane, S. (2025). A critical review of literature and a conceptual framework for organizing and researching urban health and community health services in low- and middle-income countries. *Health Policy and Planning, 40*(2), 259–271. https://doi.org/10.1093/heapol/czae104

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).

Selian, S. F., Effendy, I., & Nasution, R. S. (2025). Analysis of factors influencing pregnant women in the completeness of antenatal care visits at UPTD Puskesmas Care Kutambaru, Lawe Bulan District, Southeast Aceh Regency.

Sethumadhavan, P., Sathian, B., & Kabir, R. (2025). Women's sociodemographic characters and antenatal care services in Rwanda: A secondary analysis of Rwanda Demographic Health Survey 2019–2020. *Journal of Public Health and Primary Care, 6*(1), 4–13. https://doi.org/10.4103/jphpc.jphpc_19_24

Shibre, G., Zegeye, B., Yeboah, H., Bisjawit, G., Ameyaw, E. K., & Yaya, S. (2021). Women empowerment and uptake of antenatal care services: A meta-analysis of Demographic and Health Surveys from 33 sub-Saharan African countries. *Archives of Public Health, 79*, Article 87. https://doi.org/10.1186/s13690-021-00604-5

Sidze, E. M., Wekesah, F. M., Kisia, L., & Abajobir, A. (2022). Inequalities in access and utilization of maternal, newborn and child health services in sub-Saharan Africa: A special focus on urban settings. *Maternal and Child Health Journal, 26*(2), 250–279. https://doi.org/10.1007/s10995-021-03250-z

Sindayihebura, J. F. R., Barankanira, E., Manirakiza, D., Nganawara, D., Manirakiza, R., & Bouba Djourdebbé, F. (2022). Influence of gender relationships on the non-intention to use modern contraception among women aged 15 to 49 in union in Burundi. *Applied Mathematical Sciences, 16*(8), 387–396. https://doi.org/10.12988/ams.2022.916836

Sindayihebura, J. F. R., Djourdebbé, F. B., & David, J. S. (2025). Inégalités de genre et anémie des femmes en union dans les provinces de Cibitoke et Kirundo (Nord-Ouest et Nord du Burundi). *European Scientific Journal, 21*(2), 109. https://doi.org/10.19044/esj.2025.v21n2p109

Sindayihebura, J. F. R., Djourdebbé, F. B., Nganawara, D., Barankanira, E., Manirakiza, D., Ndayitwayeko, W.-M., Nsabimana, J., & Manirakiza, R. (2024). Towards the exploration of social considerations against the intention to use modern contraception among women in union in Burundi. *International Journal of Research and Innovation in Social Science, 8*(3), 1265–1281. https://doi.org/10.47772/IJRISS.2024.803093

Sindayihebura, J. F. R., Nganawara, D., & Manirakiza, R. (2022a). Community socio-cultural pressure in explanation of the non-intention to use modern contraception among women aged 15–49 in union in Burundi: Application of the multilevel analysis. *International Journal of Mathematical Analysis, 16*(4), 149–157. https://doi.org/10.12988/ijma.2022.912431

Sindayihebura, J. F. R., Nganawara, D., & Manirakiza, R. (2022b). Household poverty and contraceptive non-intention among women of childbearing age in union in Burundi: Validity of the theory of intergenerational flows of wealth. *Journal of Population and Social Studies, 31*, 80–94. https://doi.org/10.25133/JPSSv312023.005

Singoye, E., Djourdebbé, F. B., Manirakiza, R., Bassinga, H., & Toyi, A. (2024). Facteurs contextuels et individuels de la fécondité des femmes en union âgées de 15 à 49 ans au Burundi. *European Scientific Journal, 20*(35), 83. https://doi.org/10.19044/esj.2024.v20n35p83

Tessema, Z. T., & Minyihun, A. (2021). Utilization and determinants of antenatal care visits in East African countries: A multicountry analysis of Demographic and Health Surveys. *Advances in Public Health, 2021*, Article 6623009. https://doi.org/10.1155/2021/6623009

Umar, F., Johnson, S. D., & Cheshire, J. A. (2018). Testing theories of social disorganization in Nigeria. In G. J. N. Bruinsma & S. D. Johnson (Eds.), *The Oxford handbook of environmental criminology* (pp. 378–400). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190279707.013.10

United Nations. (2015). *Sustainable development goals*. https://www.un.org/sustainabledevelopment/

Vlahov, D., Galea, S., & Freudenberg, N. (2005). The urban health "advantage." *Journal of Urban Health, 82*(1), 1–4. https://doi.org/10.1093/jurban/jti001

World Health Organization. (2025, April 7). *Maternal mortality*. https://www.who.int/news-room/fact-sheets/detail/maternal-mortality

Ziegler, B. R., Kansanga, M., Sano, Y., Kangmennaang, J., Kpienbaareh, D., & Luginaah, I. (2021). Antenatal care and skilled birth in the fragile and conflict-affected situation of Burundi. *The International Journal of Health Planning and Management, 36*(4), 1081–1106. https://doi.org/10.1002/hpm.3157-produce

© 2026 Author(s). This article is licensed under the Creative Commons Attribution–NonCommercial 4.0 International License (CC BY-NC 4.0).