

## Frequency and Socio-Demographic, Cultural, Economic and Obstetrical Determinants the Late Use of Antenatal Consultations in the City Province of Kinshasa, Democratic Republic of Congo

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### Abstract

**Objective:** the study was planned to determine the frequency of late recourse to antenatal consultations (ANC) in the City Province of Kinshasa, and to identify the socio-demographic, cultural, economic and obstetric determinants; to help improve maternal and child health. **Method:** This is an analytical cross-sectional study conducted in October 2018 in the health zone of Matete and that of N'sele. 456 mothers took part by answering a questionnaire made available to them with supporting explanation. Data were statistically analyzed using jamovi 1.6.23 software. Descriptive analyzes and logistical regression made it possible to achieve the purpose of the study. **Results:** 74.1% of mothers had initiated ANC late. The main determinants were: residence in the N'sele's Health Zone [OR = 3.61 (2.04 – 6.39);  $p < 0.001$ ]; low level of education [OR = 10.07 (2.68 – 37.87);  $p < 0.001$ ] or secondary level [OR = 4.61 (1.78 – 11.98);  $p \leq 0.002$ ]; marriage [OR = 1.93 (1.04 – 3.59);  $p \leq 0.037$ ] as well as dietary restrictions during pregnancy [OR = 2.20 (1.11 – 4.36);  $p \leq 0.024$ ]. **Conclusion:** the frequency of late recourse to antenatal consultations is very high in the City Province of Kinshasa. Strategies to encourage women to initiate early antenatal visits should focus on improving socio-demographic, cultural, economic and obstetrical conditions without forgetting the political and health aspects. The cultural consideration will have to hold the attention of the decision-makers or investigators to the projects related to this problem.

**Keywords:** Frequency, determinants, late appeal, antenatal consultations, Kinshasa.

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## INTRODUCTION

Antenatal consultations, initiated in sufficient time and in sufficient number, constitute the starting point for better management of pregnancy [1] and contribute effectively to the well-being of the mother-child couple [2–7]. The care administered during these consultations helps promote health, screen, diagnose, prevent pregnancy complications and treat fetal and maternal health problems [7, 8]. Which can then save lives, if based on evidence [7].

Currently, several studies show that, despite the availability of antenatal care services, there is an inadequacy in the use of these services by pregnant women [9]. Developed countries seem to have fewer constraints to access it, unlike poor countries, this research indicates.

In low-income and middle-income countries, particularly in Africa such as the Democratic Republic of Congo, less than half of the target population for this purpose adheres to the schedule of antenatal visits [9–11]. We observe a large proportion of pregnant women going there beyond the first trimester [2, 8, 12, 13] contrary to the standards laid down by the World Health Organization (WHO).

Furthermore, current studies also show that late recourse to antenatal consultations is a function of various socio-demographic, cultural, economic and obstetrical factors in addition to political and health factors (which are less developed in the present research). We note from this first category: maternal age, marital status, wealth index, employment, level of education, place of residence, entourage, gesture, parity, religion, the education of the partner, the nature of the

pregnancy then the obstetric history [4, 9–11, 14–27]. These factors, which have influenced the use of antenatal care for decades, vary essentially from one region to another according to the realities of the environment.

Consequently, the lack of improvement of these conditions leading to the misuse of ANC services does not go unaddressed. Perinatal morbidity and mortality as well as maternal mortality are evident in the absence or non-regular follow-up of the antenatal calendar [10, 28–30]. Laborious maternal health care, of which ANC are a part, therefore remains a challenge of an unequal world [31–33].

In view of the above, it is useful to be able to analyze the various factors at the local level, in order to circumscribe the problem of the use of antenatal services in our context.

Thus, this study was planned with the aim of determining the frequency of late recourse to antenatal consultations in the City Province of Kinshasa, and to identify the socio-demographic, cultural, economic and obstetric determinants; with a view to contributing to the improvement of maternal and child well-being, one of the elements of the third objective of sustainable development.

## MATERIAL AND METHOD

### Design

We conducted a cross-sectional analytical study conducted in October 2018.

### Population and Sample

It concerned the mothers found in the various maternities of the Health Zone of Matete and that of N'sele. 456 mothers, including 37% in Matete and 63% in N'sele considering the size of the population in each area, were selected after quality control of questionnaires collected from participants.

### Sampling

Cluster sampling made it possible to select the health structures, within which the mothers were interviewed using a pre-tested and validated questionnaire following the face-to-face structured interview technique. This choice was justified by the low level of literacy of most of the participants on the one hand, but also by the desire to shed light on the study on the other.

### Study Variables

Information related to socio-demographic, cultural, economic and obstetrical characteristics was collected. These were precisely: age, level of education, religion, marital status, type of marriage, gainful activity, household size, place of residence, gestality, parity, the number of living children then the history of abortion, caesarean section, the nature of pregnancy, the

moment of the announcement of pregnancy, child with malformation and low birth weight constituting the dependent variables. The information relating to the gestational age during the first antenatal visit made it possible to deduce the precocity of this visit and, was thus considered as late ANC, any first visit carried out beyond the first trimester of pregnancy.

### Statistical Analyzes of Data

The data collected was entered in Microsoft Office Excel 2013 and then exported to jamovi 1.3.21 software for statistical analysis. The determination of the frequency of late ANC was determined after descriptive analysis. However, the identification of the sought determinants is made possible thanks to the multivariate analyzes based on the binomial logistic regression model. We then calculated the Odds Ratio with its confidence interval with a risk of error of 0.05. The variables considered for the model were those deemed significant after bivariate analyzes where the exact Fisher test was used at the 5% level. The quantitative variables were dichotomized by considering their medians, the Shapiro- Wilk test being positive.

## RESULTS

**Table 1: Use of ANC**

Statistics	ANC 1	Last ANC
Median	4.00	8.00
Fashion	4.00	9.00
IQR	3.00	1.00
Minimum	1	2
Maximum	9	10

Table 1 shows that the median gestational age (IQR) at the first ANC was 4 (3) with also a predominance at the 4th month. On the other hand, the median age (IQR) at the last antenatal visit was 8 (1) months with engorgement in the 9th month of pregnancy.

**Table 2: Timing of ANC 1**

ANC 1	Effective	%
≥ 4 months	338	74.1
≤ 3 months	118	25.9
<b>Total</b>	<b>456</b>	<b>100</b>

In relation to the frequency of late recourse to antenatal consultations, Table 2 indicates that 74.1% of ANCs take place beyond the first trimester.

Condensed in Table 3, the results of the bivariate analyzes show that the time of recourse to ANC was a function of: maternal age, level of education of the mother and that of the spouse, maternal age at the time of dropping out of school, marital status, spouse's occupation, residence, nature of the pregnancy, dietary restrictions, gestational age at the time of the

announcement of pregnancy to the entourage as well as the history of pregnancy an abortion.

**Table 3: Socio-demographic, cultural, economic and obstetrical characteristics associated with gestational age at first ANC**

Variables	Gestational age at first ANC				Chi-square	p-value
	≥ 4 months (n = 338)		≤ 3 months (n = 118)			
	Effective	(%)	Effective	(%)		
<b>Residence</b>						
Matete	87	(51.5)	82	(48.5)	71.78	0.000
N'sele	251	(87.5)	36	(12.5)		
<b>Maternal age</b>						
≤ 19 years old	206	(78.6)	56	(21.4)	6,511	0.011
≥ 20 years old	132	(68.0)	62	(32.0)		
<b>Educational level</b>						
Down	33	(84.6)	6	(15.4)	38.85	0.000
Medium	297	(76.7)	90	(23.3)		
Higher and university	8	(26.7)	22	(73.3)		
<b>Instruction</b>						
Down	51	(72.9)	19	(27.1)	24.6	0.000
Medium	232	(80.8)	55	(19.2)		
Higher and university	55	(55.6)	44	(44.4)		
<b>School leaving age</b>						
≤ 18 years old	213	(80.7)	51	(19.3)	14.06	0.000
≥ 19 years old	125	(65.1)	67	(34.9)		
<b>Marital status</b>						
Single	61	(64.9)	33	(35.1)	5,258	0.022
Bride	277	(76.5)	85	(23.5)		
<b>Spouse occupation</b>						
Unemployed	91	(83.5)	18	(16.5)	6,547	0.011
A remunerative activity	247	(71.2)	100	(28.8)		
<b>Nature of pregnancy</b>						
Planned	189	(68.7)	86	(31.3)	10.52	0.001
Unplanned	149	(82.3)	32	(17.7)		
<b>Food restrictions</b>						
Yes	106	(88.3)	14	(11.7)	17.15	0.000
Nope	232	(69.0)	104	(31.0)		
<b>Pregnancy announcement</b>						
1 month	143	(67.1)	70	(32.9)	10.17	0.000
≥ 2 months	195	(80.2)	48	(19.8)		
<b>Previous abortion</b>						
Yes	129	(81.1)	30	(18.9)	6,253	0.012
Nope	209	(70.4)	88	(29.6)		

Finally, the logistic regression in Table 4 reveals that the determinants of late recourse to antenatal consultations were: residence in the HZ of N'sele [OR = 3.61 (2.04 – 6.39);  $p < 0.001$ ]; low level of education [OR = 10.07 (2.68 – 37.87);  $p < 0.001$ ] or

secondary level [OR = 4.61 (1.78 – 11.98);  $p \leq 0.002$ ]; marriage [OR = 1.93 (1.04 – 3.59);  $p \leq 0.037$ ] as well as dietary restrictions during pregnancy [OR = 2.20 (1.11 – 4.36);  $p \leq 0.024$ ].

**Table 4: Socio-demographic, cultural, economic and obstetrical determinants of late use of antenatal consultations**

Predictor	Odds ratio	95% Confidence Interval		p-value
		Lower	Upper	
intercept	0.0918	0.0257	0.328	< .001
<b>Residence</b>				
N'sele – Matete	3.6146	2.0441	6.391	< .001
<b>Maternal age</b>				
≥ 20 years old – Under 20 years old	1.0821	0.6245	1.875	0.778
<b>Education level of spouse</b>				

Predictor	Odds ratio	95% Confidence Interval		p-value
		Lower	Upper	
Medium – Low	1.0724	0.5281	2.178	0.847
Higher and University – Low	0.7367	0.3237	1.677	0.466
<b>Educational level</b>				
Low – Higher and University	10.0652	2.6755	37.865	< .001
Medium – Higher and University	4.6055	1.7709	11.977	0.002
<b>Marital status</b>				
Married – Single	1.9325	1.0416	3.586	0.037
<b>Occupation of spouse</b>				
Unemployed – an activity	1.8132	0.9644	3.409	0.065
<b>Nature of pregnancy</b>				
Unplanned – planned	1.6593	0.9634	2.858	0.068
<b>Food restrictions</b>				
Yes – No	2.1971	1.1079	4.357	0.024
<b>Announcement of pregnancy</b>				
≥ 2 months – 1 month	1.6106	0.9744	2.662	0.063
<b>Previous abortion</b>				
Yes - No	1.3214	0.7618	2.292	0.321
<i>Note. Estimates represent the log odds of "ANC I ≥ 4 months vs. "ANC I ≤ 3 months"</i>				

## DISCUSSION

The study was limited to determining the frequency of late recourse to antenatal consultations and to identifying the socio-demographic, cultural, economic and obstetric determinants. She did not address other aspects related to these consultations.

### Frequency of Late Use of ANC

It emerges from this study that the frequency of late recourse to antenatal consultations was 74.1%. This means that nearly  $\frac{3}{4}$  of mothers had initiated these visits beyond the first three months of gestation. However, the median gestational age at first ANC was four months with a predominance at the beginning of the second trimester. At least 50% of these mothers had consulted for the first time between the third and sixth month.

This prevalence is higher than that found in Ethiopia [6, 8], Bangladesh [34], Afghanistan [35]. But it remains weak compared to the results found by Grum [12], Woldeamanuel [36] and Mazowa [13]. All these variations would be due to the realities of each environment and the health policy of each country.

### Determinants of late use of ANC

At the end of the binomial logistic regression, four factors were deemed to be decisive for the late use of antenatal care. It is:

**First:** *Residence in the N'sele health zone* in relation to Matete. Indeed, the HZ of N'sele is one of the urban-rural health zones of the Provincial Health Division of Kinshasa. It is therefore considered as an extra-urban environment. 87.5% of its inhabitants were affected by this delay to the ANC.

The regional disparity in terms of antenatal visits has been proven by several researchers. These

studies indicate that the antenatal calendar is less respected in remote areas than in centers [37–40]. Living conditions in urban areas would favor better access to maternal care services, including antenatal care.

**Second:** *Low-educated* mothers were ten times more likely to initiate antenatal visits late than university graduates. Mid-level (secondary) mothers were five times as likely to attend as low-level mothers.

Recent publications on antenatal consultations show that the less educated the pregnant woman is, the less knowledge she has of health services, the less chance she has of taking initiatives early on to protect herself and take good care of the fetus she is pregnant with. carrier and respect the standards related to the various health programs [36–39, 41–47].

**Third:** *Women living in a couple* were twice as likely to start antenatal consultations from the fourth month of pregnancy. These results are in agreement with certain studies which have shown that marriage would give a greater chance of initiating antenatal visits late [8].

In our context, these results would also mean that unmarried women seek antenatal care early for fear of complications that may arise during pregnancy. This idea would also be supported by the fact that most pregnancies occur accidentally following a relationship with, in certain situations, paying partners. The initiative to consult the services finds its motivation in the search to get rid of the load.

A study on the same phenomenon showed that nulliparous women were more likely to use antenatal care correctly [48]. Moreover, married women, who in this study already had at least one child, already having

the assurance of having someone capable of taking care of them, would feel at ease and could say that they were not in a hurry because they will eventually go.

**Fourth:** The risk of late recourse to ANC was twice as high in pregnant women with *dietary restrictions*. In Kinshasa, as in several African regions, there are food restrictions for pregnant women according to cultural beliefs. The latter will firmly believe in their cultural realities and would consider using antenatal services only as a last resort.

The majority of studies examining the determinants of late recourse to antenatal consultations do not seem to address this variable, which is not insignificant, knowing the role of culture and its diversity in our region.

In addition to these four determinants retained in our series at the end of the multivariate analyses, the maternal age, the level of education of the spouse, the age at the time of dropping out of school, the occupation of the spouse, the nature of the pregnancy, the gestational age at the moment of the announcement of pregnancy to the entourage as well as the history of an abortion were also associated with late ANC before adjustment. These variables must also be taken into account because they have been shown to be decisive in similar studies [34–36, 42, 49, 50].

### Study Limitations and Implications

The main limitation of the study was the selection of two health zones out of the thirty-five in the Province. This may limit the extrapolation of the results to the entire province of Kinshasa and the DRC. However, the recourse to a random selection and the use of an adapted questionnaire, made it possible to obtain the results which are just as important for the identification of the socio-demographic, cultural, economic and obstetric determinants of late recourse to antenatal consultations.

The interest of the study lies in the implications and applications that could result from it in terms of information related to pregnant women in order to ensure a good knowledge of the barriers to compliance with the antenatal calendar.

## CONCLUSION

The study showed that the frequency of late recourse to antenatal consultations is very high in the City Province of Kinshasa. Nearly  $\frac{3}{4}$  of pregnant women consulted the service intended for monitoring pregnancy after three months.

It also highlighted the influence of the place of residence on the moment of the first antenatal consultation. This reality should challenge the political and health authorities on the need to adapt the operational action plan to the admissibility of the field.

Strategies to encourage women to initiate early antenatal visits should also focus on improving socio-demographic, cultural, economic and obstetrical conditions, without forgetting the political and health aspects.

The cultural consideration should hold the attention of decision makers or investigators to projects related to this problem. Larger studies are desirable in order to obtain a mass of valid information for the whole extent of the national territory.

### What we already know about this topic

Antenatal consultations are the only means of appropriate monitoring of pregnancy. They help promote health, screen, diagnose, prevent pregnancy complications and treat fetal and maternal health problems. However, compliance with the antenatal calendar depends on several factors.

### What this study adds

The frequency of late recourse to antenatal consultations is very high in the City Province of Kinshasa. Strategies to encourage women to initiate early antenatal visits should focus on improving socio-demographic, cultural, economic and obstetrical conditions without forgetting the political and health aspects. The cultural consideration should hold the attention of decision makers or investigators to projects related to this problem.

## DECLARATIONS

### Ethical Approval and Consent to Participate

We initially received approval from the ethics committee of the Higher Institute of Medical Techniques of Kinshasa which is one of the research ethics committee (IRB) in this city. Thereby, each participant had consented verbally before taking part in the survey and anonymity and confidentiality were strict observances. This "verbal consent" was approved by this IRB due to the low level of education of the study participants.

It is also noted that the work described did not involve any experimentation on patients, subjects or animals. All methods used were so performed in accordance with the Declarations of Helsinki.

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### Contributions and Liability of Authors

All authors participated in the drafting of the manuscript, read and approved the final version.

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