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Prenatal Consultations in Cameroon: Qualitative Study of Services and Pregnancy Outcomes from the 28th Week of Amenorrhea in Douala

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Abstract

Introduction: The quality of antenatal consultations (ANC) is defined as the respect and delivery to each pregnant woman of acts which will make it possible to detect certain major risks for which actions are possible, to prevent or detect and manage certain conditions responsible for maternal-fetal morbidity and mortality. **Objective:** Our objective was to study the effect of the quality of ANC on pregnancy outcomes in Douala. **Materials and methods:** This was a cross-sectional study with analytical purpose carried out from January 15 to April 15, 2020 in the gynecology-obstetrics department of Laquintinie hospital in Douala. Our target was women who gave birth in this department during our study period and who followed their ANC there or not. These mothers were interviewed using a pre-established questionnaire; their pregnancy monitoring booklet were used and all the data were collected in a structured and pre-tested survey form. A rating (0; 1) was made; we assigned a score of 1 to any procedure followed and 0 to any procedure not followed. The sum of the scores applied to the evaluation scale made it possible to assess the level of quality of prenatal consultations. The data were entered on EPI-INFO version 3.5.4 and the analyzes carried out using Excel 2013 software. The significance threshold was established for a value of $p < 0.05$. **Results:** In our study, ANCs were mainly performed by an obstetrician-gynecologist; the rate of births hav-

ing completed at least 4 to 8 ANC was 46.80%. Generally speaking, no childbirth had benefited from good quality ANC. A delay in ANC in the 2nd trimester as well as a parity > 4 was 5 times more exposed to poor quality ANC; this risk was multiplied by 7 for women over 40 years of age. Poor quality ANC was 3 times associated with prematurity, low birth weight 5 times and neonatal infections 11 times; In contrast, a number of ANC ≥ 8 and those performed by an obstetrician-gynecologist were protective against poor quality ANC. **Conclusion:** The poor quality of ANC remains a reality in our practice. It exposes significantly to prematurity, low birth weight as well as neonatal infections.

Keywords

Quality, Prenatal Consultations, Outcome, Neonatal Morbidity and Mortality

1. Introduction

The antenatal consultation (ANC) is a pregnancy follow-up visit carried out by qualified personnel (the obstetrician-gynecologist, the general practitioner or the midwife). Prenatal services or prenatal care are the set of interventions making it possible to detect certain major risks for which actions are possible, to prevent or detect and manage certain conditions responsible for maternal-fetal morbidity and mortality [1]. Around 830 women die every day from preventable causes linked to pregnancy, childbirth and technical support [2]; and according to estimates from the World Health Organization (WHO) in 2015, 303,000 women died from pregnancy-related causes, 2.6 million from stillbirth [3] [4]. This is due to non-optimal use of ANC limiting the continuum of prenatal care [5], and representing one of the three pillars in the fight against maternal and infant mortality, the other two being family planning and obstetric care including delivery in optimal conditions of hygiene and safety [2]. Therefore, good monitoring is necessary to identify possible risks and improve the prognosis of the pregnancy [1]; thus in 2016 the WHO established 39 recommendations whose development is based on five types of interventions: preventive measures, nutritional interventions, intervention to address common physiological symptoms, maternal and fetal assessment and intervention of health systems to improve the use and quality of prenatal care [5].

The recommended number of ANC increased from four (refocused ANC) to eight according to the WHO, the first being planned before the twelfth week of amenorrhea (WA) and the rest at twenty, twenty-six, thirty, thirty-four, thirty-six, thirty-eight and at forty weeks [3]. However, this number differs from one country to another: varies between eleven and thirteen in the United States of America, eight to fifteen in European countries (Germany, England, France and Italy) [6] [7]. According to the WHO in 2018, 64% of women worldwide receive prenatal care at least four times during pregnancy [3]. Prenatal care is provided in industrialized coun-

tries due to operational health coverage and an efficient technical platform facilitating access to health care and care for pregnant women. Insufficient prenatal care is one of the reasons for high perinatal mortality in developing countries [8], as well as pregnancy complications. Nearly half of pregnant women in South Asia, *i.e.* 54%, and a third, *i.e.* 31%, in West Asia did not benefit from any prenatal benefits at the end of the 1990s, a fifth in East Asia as well as in Latin America and the Caribbean [9] [10]. Also in sub-Saharan Africa, 1/3 of women had not had any ANC and other studies have observed that the ANC rate decreases considerably with parity [11] [12]. However, the prevalence of ANC among West African women is around 80% in urban areas despite the poor quality of care; this is like Guinea Conakry where activities are implemented without evaluating their efficiency [13].

In Cameroon in 2010, a study carried out at the central hospital of Yaoundé by Ongolo-Zogo P. *et al.* published in 2012 on the optimization of the use of prenatal consultation services showed that 85% of pregnant women had a single ANC on average and 60% had at least four [14]. In 2017, a study carried out in the Maroua II district showed that around 67% of those giving birth had undergone at most three ANC and only 33% had benefited from at least four [15]. However, according to the National Health Development Plan (NHDP) 2016 - 2020, ANC coverage declined from 84.7% to 82.8% for ANC1 and the proportion of women who underwent ANC4 decreased by 3.4% (from 62.2% to 58.8%) between 2011 and 2014 [16] [17]. However, none study had until now explored the specific aspects of the quality of this obstetrical service in our environment; hence the present study at the Laquintinie hospital in Douala.

2. Materials and Methods

2.1. Type and Location of Study

We conducted an analytical cross-sectional study at Laquintinie hospital; site chosen for its strong patient base and cosmopolitan character.

2.2. Period and Duration of Study

Our study took place from January 15 to April 15, 2020, a duration of 3 months.

2.3. Target Population for Our Study

Our target population was any woman who gave birth at LDH during our study period.

Inclusion criteria

Any childbirth who met all of the following criteria was included in our study;

-Having given birth and postpartum in the gyneco-obstetrics department of the LDH.

-Hospitalized postpartum.

-Having followed their ANC at the LDH or not.

-At least 15 years old.

Exclusion and non-inclusion criteria

-Those who do not have a complete pregnancy monitoring record.

-Deliveries resulting from a multiple pregnancy.

-Having refused to participate in the study.

2.4. Sampling

We carried out exhaustive probabilistic sampling; all those who gave birth had the same chance of participating in the study.

2.5. Data Collection Techniques and Tools

Administrative procedures and ethical modalities

A research protocol was submitted to the ethics committee of the University of Douala with ethical clearance obtained from the institutional and ethical council of the University of Douala under number 2111 CEI-Udo/02/2020/T; we also requested and obtained research authorization from the Director of the LDH. These prerequisites obtained; we proceeded to test the questionnaire on 3 women who gave birth at the LDH maternity ward then followed the recruitment.

Strict confidentiality of all information was ensured. The data collected was only used for the purpose of the study and in strict compliance with medical confidentiality.

Data collection procedure

The data was collected and recorded using a questionnaire on a pre-established and pre-tested technical sheet.

After revealing the identity of the investigator, a preliminary interview with the woman giving birth was established to explain the objective of the study and the different stages in order to obtain the signature of the informed consent form. Informed consent was obtained for each enrolled delivery.

We recruited our hospitalized births, more specifically in the postpartum room. They answered the questions on the pre-established and pre-tested survey sheet, and we supplemented the information with data contained in medical files and pregnancy follow-up booklets.

2.6. Data Collection Materials

To carry out our study we used for our collection:

-Academic equipment: pens, erasers, pencils, pencil sharpeners, highlighting, reams of format, books, articles, dissertations and theses;

-Computer equipment: computer, mobile phone, USB keys and modem;

-Medical equipment: white coat, treatment gloves, sterile gloves, pinard fetoscope, blood pressure monitor, tape measure;

-Collection material: survey sheets, intra-hospital documentation (pregnancy monitoring logs, results of laboratory and imaging assessments).

2.7. Variables

Sociodemographic and reproductive characteristics of women giving birth

a) Socio-demographic characteristics concerned:

-Age, occupation, level of study, nationality, marital status, religion, region of origin.

b) Reproductive characteristics of those who have given birth

-Gestational age, gestation, parity, location of prenatal consultations, qualification of the consultant, number of prenatal consultations.

Assessment of the quality of prenatal consultations

a) Promotional component

-Education on health and diet measures, rest and activity;

-The use of potentially harmful products;

-Advice on early and exclusive breastfeeding;

-Promotion of the benefits of the presence of a competent provider during childbirth;

-Encourage women to receive postpartum care for themselves and their newborns.

b) Screening and treatment of risky pathologies;

Blood group (ABO, Rhesus), Glycosuria and albuminuria, Hbs antigen, VDRL/TPHA, Thick blood film, Hookworm KOAP, HIV serology, Hemoglobin electrophoresis, Anti-HCV Ab, Blood counts, Stool examination, Toxoplasmosis, Cervico-vaginal sampling, Rubella, Chlamydia, Fasting blood sugar, Ultrasound examination of the 1st, 2nd and 3rd trimester, Hypertension and obesity.

c) Preventive aspect

-Against malaria: administration of intermittent preventive treatment, distribution of mosquito nets;

-Tetanus vaccine (VAT);

-Iron and folic acid supplementation;

-Prevention of mother-to-child transmission if pregnant carrier of the Human Immunodeficiency Virus;

-National/regional interventions as appropriate:

- Supplementary intake of vitamin A;
- Supplementary iodine intake;
- Presumptive treatment for hookworm.

d) Preparation for childbirth

-The choice of service provider;

-The choice of health facility;

-Danger and warning signs;

-Identification of blood donors, companions, support people during childbirth and items necessary for childbirth (mother and newborn);

-Education of women on the signs of labor and danger signs;

-Clarify transport conditions even in an emergency;

-The financial resources necessary for childbirth and the management of emergency situations;

-Taking leave of the pregnant woman;

-Driving the pregnant woman to the door and thanking you at the end of the visit;

-Prenatal follow-up consultation: scheduling appointments for follow-up.

Characteristics of the outcome of childbirth

a) Maternal outcomes

-Mode of delivery.

-Infection.

-Gestational diabetes.

-Anemia.

-Preeclampsia/eclampsia.

-Postpartum hemorrhage.

b) Neonatal outcomes

-Stillborn alive.

-Neonatal infections.

-Congenital anomalies.

-Prematurity.

-Low birth weight.

2.8. ANC Quality Score

A rating (0; 1) was made for the criteria identified above. We assigned a score of 1 to any procedure followed and 0 to any procedure not followed. The sum of the scores applied to the evaluation scale made it possible to assess the level of quality of prenatal consultations. The evaluation scale is as follows:

Level IV: Greater than 95% corresponding to the good quality of prenatal consultations;

Level III: 75% to 95% corresponding to prenatal consultations of average quality.

Level II: Between 50% and 75% corresponding to prenatal consultations of insufficient quality.

Level I: less than 50% corresponding to poor quality prenatal consultations [18].

2.9. Data Analysis

The data collected were entered and analyzed using Epi-info version 3.5.4 software. A value of $p < 0.05$ was considered statistically significant for all analyses. Quantitative variables were grouped into mean, median and standard deviation; qualitative variables are expressed in the form of frequencies. Comparison of proportions was made with the Chi-square test and Fischer's exact test. The association between the quality of prenatal consultations and pregnancy outcomes was measured using the Odds Ratio expressed with its 95% confidence interval.

3. Results

At the end of our study, we enrolled 109 women out of 123 who gave birth at the maternity ward of the Laquintinie hospital in Douala (**Figure 1**).

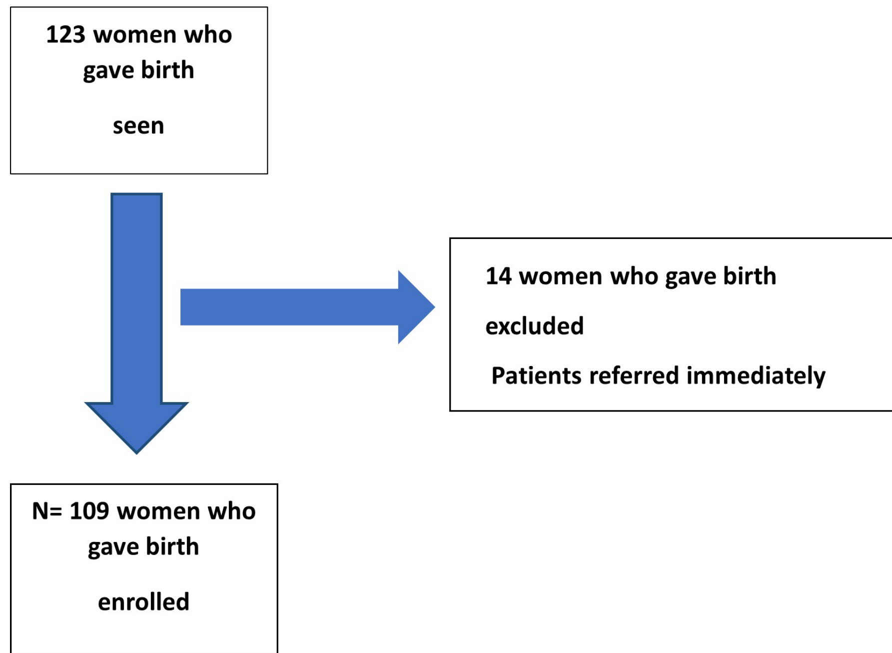


Figure 1. Flowchart of women who gave birth enrolled.

3.1. Sociodemographic and Reproductive Characteristics of Those Who Have Given Birth

3.1.1. Sociodemographic Characteristics

Age

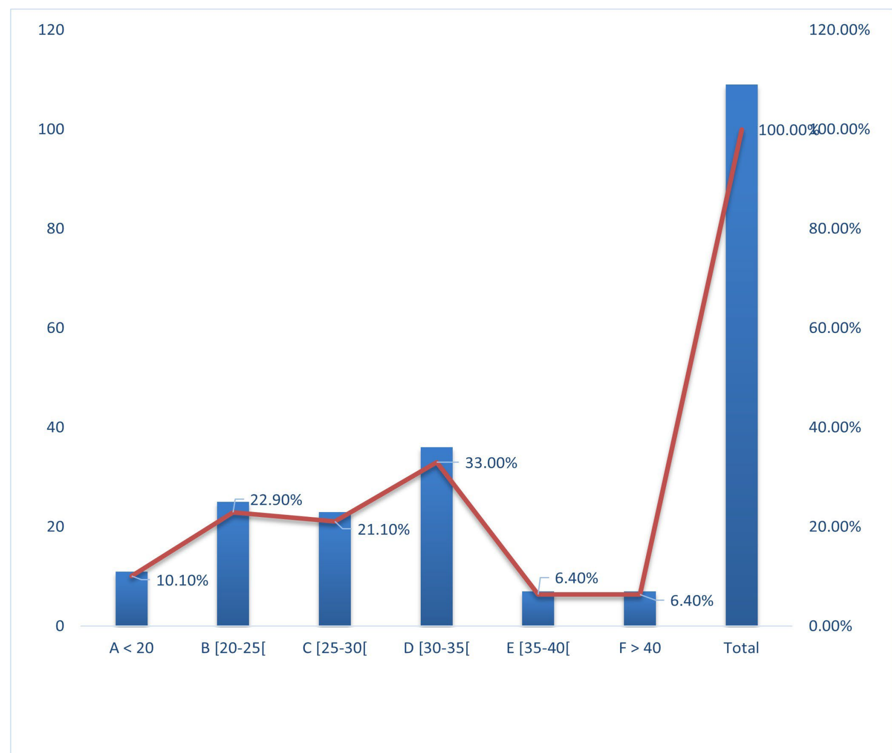


Figure 2. Distribution of births according to age groups.

The average age of our study population was 29.2 ± 6.4 years and the modal class was 30 to 35 years (Figure 2).

3.1.2. Reproductive Characteristics

Gestation

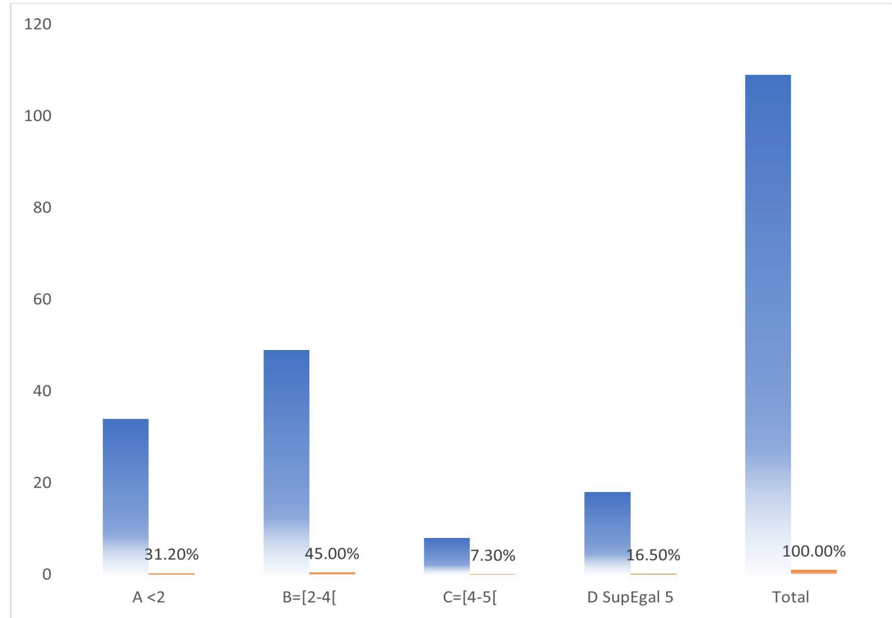


Figure 3. Distribution of births according to gestation.

In our study, 31.20% of births were in their first gestational experience (Figure 3).

Parity

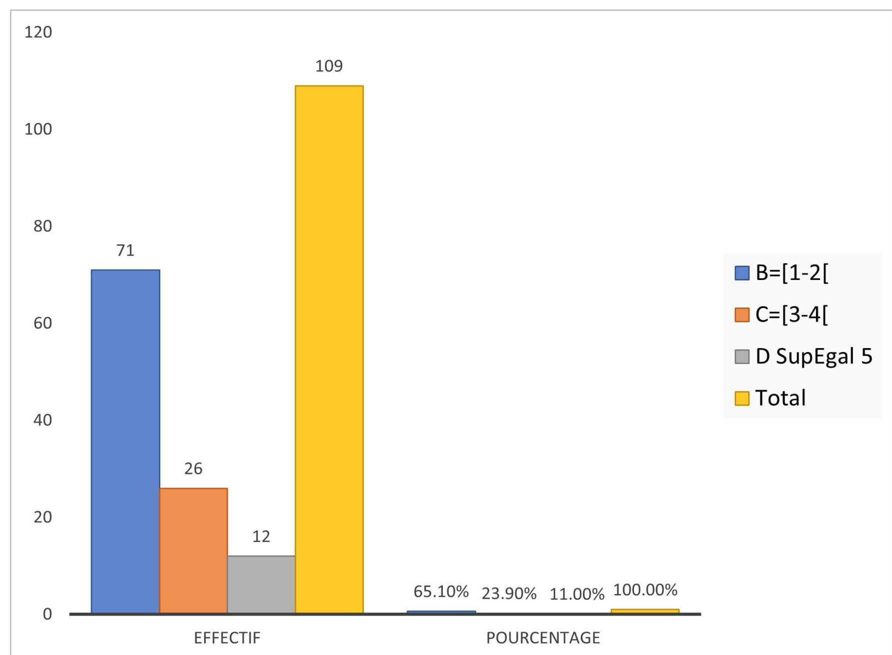


Figure 4. Distribution of births according to parity.

In our study, 65.10% of those who gave birth were at most in their second birth (Figure 4).

Gestational age

Table 1. Distribution of births according to gestational age.

Gestational age	Number	Percentage
[28 - 36]	32	29.40%
[37 - 41]	70	64.20%
>41	7	6.40%
Total	109	100.00%

The majority of those giving birth had a term between 37 and 41 weeks and almost 30% were premature babies (Table 1).

3.1.3. Location of Consultations

Out of 109 births included, 28 (*i.e.* 25.70%) carried out their ANC in a public reference hospital (Table 2).

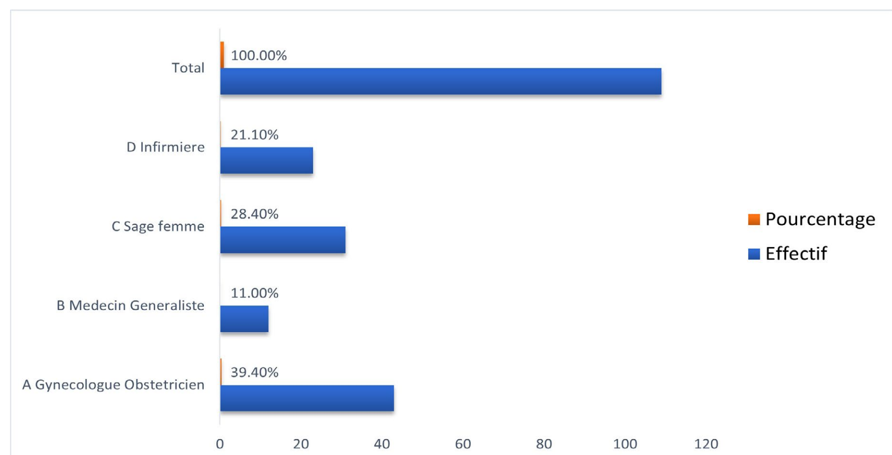
Table 2. Distribution of births according to ANC locations.

ANC location	Number	Percentage
Public referral hospital	28	25.70%
Clinic	29	26.60%
Health center	17	15.60%
District Hospital	27	24.80%
Other CPN location*	8	7.30%
Total	109	100.00%

*: CMA, Catholic Hospital.

3.1.4. Qualification of the Consultant

ANC was done by an obstetrician-gynecologist in 39.40% of cases (Figure 5).



A: obstetrician gynecologist, B: General practitioner, C: Mid-wife, D: Nurse.

Figure 5. Distribution of births according to the qualification of the consultant.

3.1.5 Number of ANCs

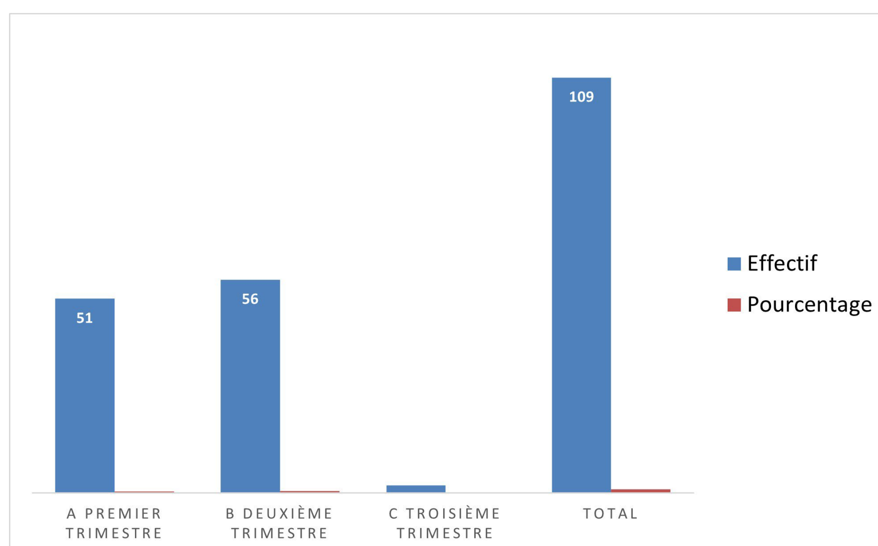
Only 12.80% of those giving birth had completed at least 8 ANCs (Table 3).

Table 3. Distribution of births according to the number of ANC.

Number of ANC	Number	Percentage
<4	44	40.40%
[4 - 8]	51	46.80%
>8	14	12.80%
Total	109	100.00%

3.1.6. Gestational Period at the Start of ANC

A little more than half of those giving birth, *i.e.* 51.40%, had started ANC in the 2nd trimester of pregnancy (Figure 6).



A: First trimester, B: Second trimester, C: Third trimester.

Figure 6. Distribution of births according to gestational age at the start of ANC.

3.2. Evaluation of the Content and Programming of Prenatal and Post-Pregnancy Consultations

Evaluation of the content and programming of prenatal consultations

In our study, 52% of those giving birth had benefited from poor quality ANC (Figure 7).

In our study, out of 109 women who gave birth, none had benefited from good ANC (Figure 8).

In our study, a little more than half of the births (51.40%) had benefited from poor quality ANC (Figure 9).

3.3. Outcome of Pregnancy

Pre-eclampsia/eclampsia and infections were the main complications during pregnancies with poor ANC quality (Figure 10).

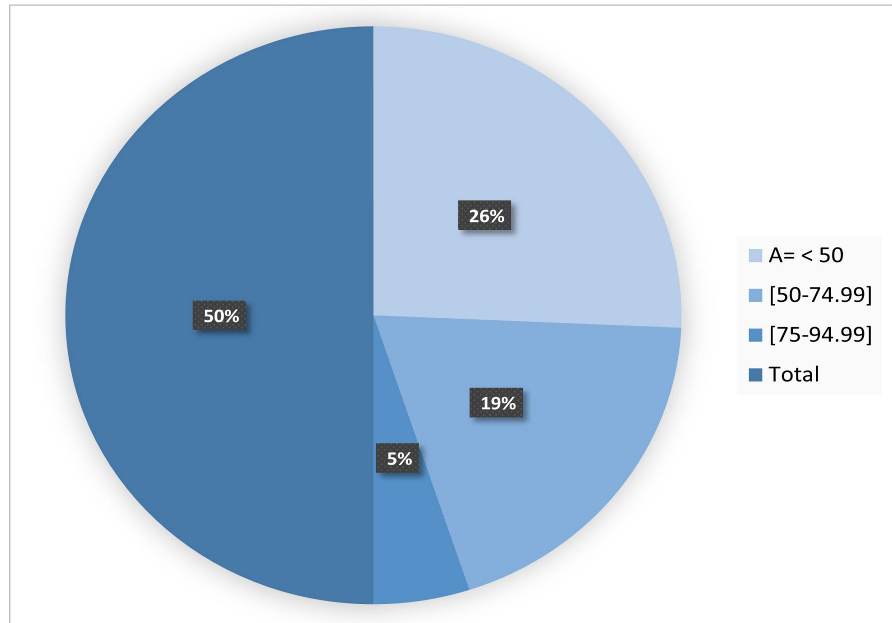


Figure 7. Distribution of all ANCs made based on ANC quality score.

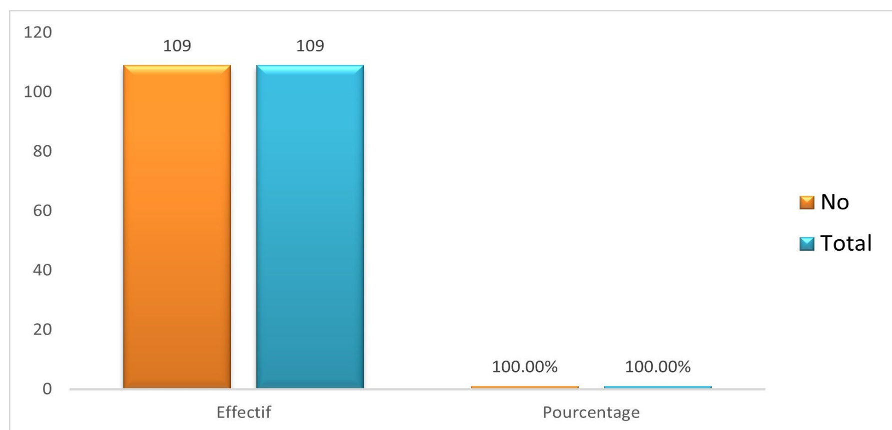


Figure 8. Distribution of good ANCs based on ANC quality score.

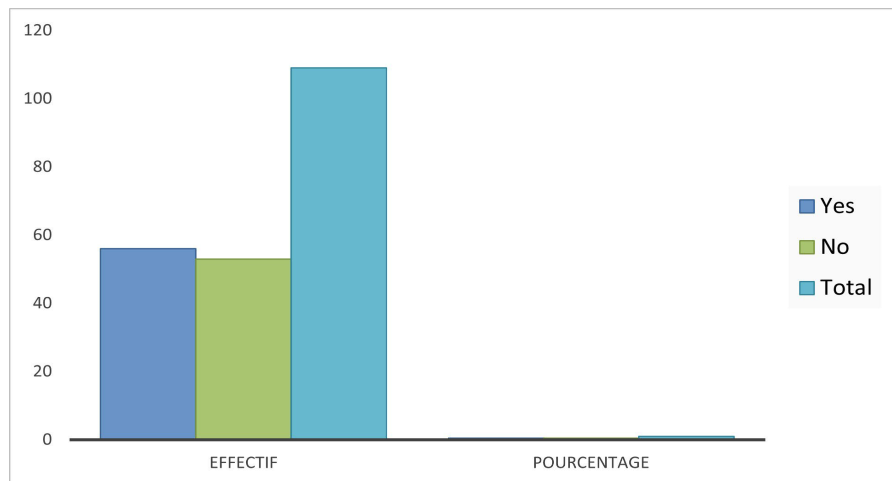


Figure 9. Distribution of bad CPNs based on CPN quality score.

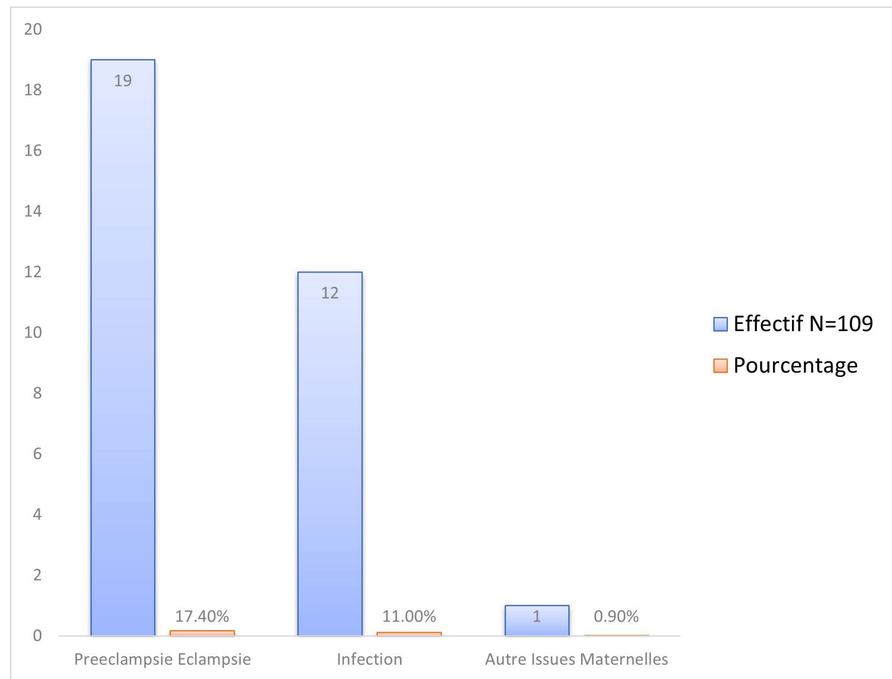


Figure 10. Distribution of births according to maternal outcome.

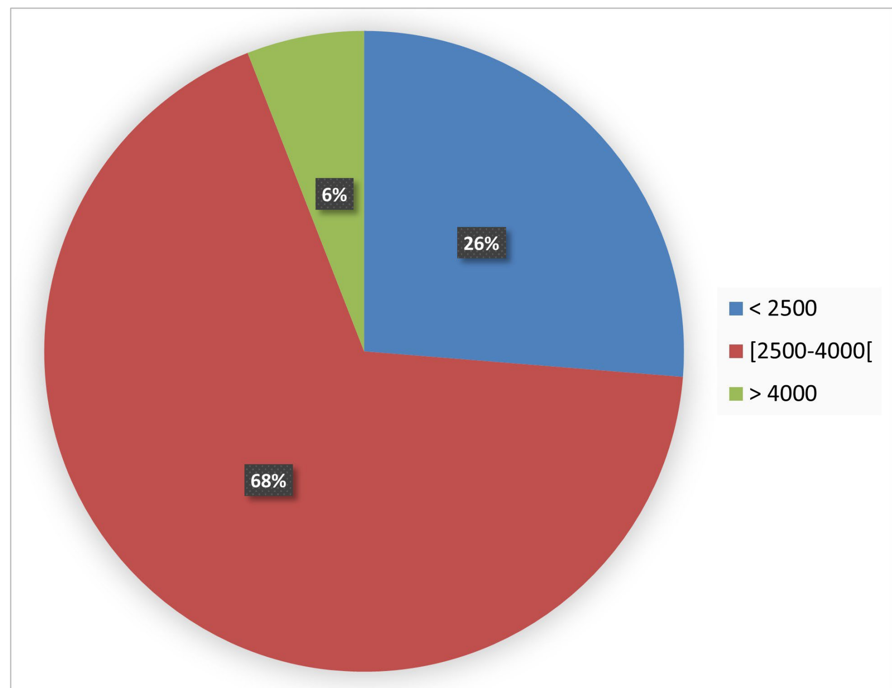


Figure 11. Distribution of newborns according to birth weight.

Low birth weight represented 25.70% of births (Figure 11)

Table 4. Distribution of newborns according to fetal outcomes.

Fetal outcomes	N = 109	Percentage
Prematurity	30	27.50%

Continued

IUGR	27	24.80%
Neonatal Resuscitation	27	24.80%
Neonatal Infection	11	10.10%
Macrosomia	7	6.40%
Other Fetal Outcome	2	1.80%

In our study, prematurity of newborns represented 27.50%; IUGR represented 24.80% of cases as well as neonatal resuscitation; and neonatal infection 10.10% (Table 4).

3.4. Relationship between ANC Quality and Pregnancy Outcome

In our study, age > 40 appeared to be a significant association factor with poor quality ANC (Table 5).

Table 5. Relationship between the age of those giving birth and the poor quality of ANC.

	POOR ANC				
	Yes	**No**	**Total**	**OR (CI 95%)**	**P-value**
AGE	**n = 56 (%)**	**n = 53 (%)**	**N = 109 (%)**		
<20	5 (62.5)	3 (37.5)	8 (7.3)	1.63 (0.36 - 8.65)	0.390
[20 - 25]	11 (52.4)	10 (47.6)	21 (19.3)	1.05 (0.4 - 2.8)	0.560
[25 - 30]	11 (39.3)	17 (60.7)	28 (25.7)	0.52 (0.21 - 1.25)	0.100
[30 - 35]	15 (50)	15 (50)	30 (27.5)	0.93 (0.4 - 2.18)	0.510
[35 - 40]	22 (50)	22 (50)	44 (40.4)	0.91 (0.42 - 1.98)	0.480
>40	7 (87.5)	1 (12.5)	8 (7.3)	**7.43 (1.08 - 171.64)**	**0.040**

Table 6. Relationship between gestation, parity and poor-quality ANC.

	POOR ANC				
	Yes	**No**	**Total**	**OR (CI 95%)**	**P-value**
Variables	**n = 56 (%)**	**n = 53 (%)**	**N = 109 (%)**		
Gestation <2	14 (41.2)	20 (58.8)	34 (31.2)	0.55 (0.24 - 1.26)	0.110
Gestation between [2 - 4]	18 (48.6)	19 (51.4)	37 (33.9)	0.85 (0.38 - 1.89)	0.420
Gestation >4	24 (63.2)	14 (36.8)	38 (34.9)	2.09 (0.93 - 4.76)	0.050
Parity between [1 - 2]	31 (43.7)	40 (56.3)	71 (65.1)	0.4 (0.18 - 0.92)	0.020
Parity between [3 - 4]	15 (57.7)	11 (42.3)	26 (23.9)	1.4 (0.57 - 3.48)	0.300
Parity >4	10 (83.3)	2 (16.7)	12 (11)	**5.54 (1.25 - 38.36)**	**0.020**

In our study, a parity > 4 appeared significantly associated with poor quality ANC (Table 6).

Table 7. Relationship between the number of ANC and poor-quality ANC.

	PPOR ANC				
	Yes	No	Total	OR (CI 95%)	P-value
Variables	n = 56 (%)	n = 53 (%)	N = 109 (%)		
Number of ANC <4	22 (100)	0 (0)	22 (20.2)	/	0,000
Number of ANC [4 - 7]	34 (46.6)	39 (53.4)	73 (67)	0.55 (0.24 - 1.26)	0.110
Number of ANC ≥8	0 (0)	14 (100)	14 (12.8)	**0 (0 - 0.18)**	**0.000**

In our study, a number of ANCs ≥ 8 was a protective factor for poor quality ANCs (Table 7).

Table 8. Relationship between term period of pregnancy and poor ANC.

	POOR ANC				
	Yes	No	Total	OR (CI 95%)	P-value
Variables	n = 56 (%)	n = 53 (%)	N = 109 (%)		
Premature	23 (71.9)	9 (28.1)	32 (29.4)	**3.41 (1.4 - 8.6)**	**0.010**
Term	21 (43.8)	27 (56.3)	48 (44)	0.58 (0.27 - 1.25)	0.110
Post-term	12 (54.5)	10 (45.5)	22 (20.2)	1.17 (0.45 - 3.08)	0.460

In our study, prematurity appeared to be significantly associated with poor quality of ANC (Table 8).

Table 9. Relationship between consultant qualification and poor-quality ANC.

	POORN ANC				
	Yes	No	Total	OR (CI 95%)	P-value
Variables	n = 56 (%)	n = 53 (%)	N = 109 (%)		
Gynecologist-Obstetrician	16 (37.2)	27 (62.8)	43 (39.4)	**0.39 (0.17 - 0.86)**	**0.010**
General practitioner	6 (50)	6 (50)	12 (11)	0.94 (0.27 - 3.29)	0.580
Midwife	20 (64.5)	11 (35.5)	31 (28.4)	2.12 (0.89 - 5.13)	0.060
Nurse	14 (60.9)	9 (39.1)	23 (21.1)	1.63 (0.63 - 4.3)	0.210

It appears in the light of this table that being consulted by an obstetrician-gynecologist was protective against poor quality ANC (Table 9).

Table 10. Relationship between age at start of ANC and poor quality of ANC.

	POOR ANC				
	Yes	No	Total	OR (CI 95%)	P-value
Age at start of ANC	n = 56 (%)	n = 53 (%)	N = 109 (%)		
First trimester	11 (25.6)	32 (74.4)	43 (39.4)	0.16 (0.07 - 0.38)	0.000
Second trimester	39 (70.9)	16 (29.1)	55 (50.5)	**5.31 (2.32 - 12.12)**	**0.000**
Third trimester	2 (100)	0 (0)	2 (1.8)	/	0.260

In our study, starting ANC in the 2nd trimester of pregnancy was significantly associated with poor ANC quality (Table 10).

Table 11. Relationship between gestational morbidity and poor quality of ANC.

	POOR ANC				
	Yes	No	Total	OR (CI 95%)	P-value
Variables	n = 56 (%)	n = 53 (%)	N = 109 (%)		
Preeclampsia Yes	13 (68.4)	6 (31.6)	19 (17.4)	2.37 (0.83 - 7.25)	0.080
Preeclapsia No	43 (47.8)	47 (52.2)	90 (82.6)	0.42 (0.14 - 1.21)	0.080
Infection Yes	7 (58.3)	5 (41.7)	12 (11)	1.37 (0.4 - 5.01)	0.420
Infection No	49 (50.5)	48 (49.5)	97 (89)	0.73 (0.2 - 2.53)	0.420

There was no statistically significant association between gestational morbidity and poor quality of ANC (Table 11).

3.5. Relationship between the Quality of ANC and Neonatal Outcome

Table 12. Relationship between the quality of ANC and neonatal outcome.

	POOR ANC				
	Yes	No	Total	OR (CI 95%)	P-value
Variables	n = 56 (%)	n = 53 (%)	N = 109 (%)		
Prematurity Yes	21 (70)	9 (30)	30 (27.5)	**2.93 (1.19 - 7.44)**	**0.010**
Prematurity No	35 (44.3)	44 (55.7)	79 (72.5)	0.34 (0.13 - 0.84)	0.010
Small Weight yes	21 (77.8)	6 (22.2)	27 (24.8)	**4.7 (1.74 - 13.76)**	**0.000**
Small Weight No	35 (42.7)	47 (57.3)	82 (75.2)	0.21 (0.07 - 0.58)	0.000
Macrosomia Yes	3 (42.9)	4 (57.1)	7 (6.4)	0.69 (0.12 - 3.53)	0.470
Macrosomia No	53 (52)	49 (48)	102 (93.6)	1.44 (0.28 - 8.05)	0.470
NNI Yes	10 (90.9)	1 (9.1)	11 (10.1)	**11.3 (1.76 - 251.8)**	**0.010**
NNI No	46 (46.9)	52 (53.1)	98 (89.9)	0.09 (0 - 0.57)	0.010

Poor quality of ANC exposed people to prematurity 2.93 times more; 4.7 times more in low birth weight and 11.3 times more in newborns with neonatal infections (Table 12).

4. Comments and Discussion

Pregnancy is not an illness; it evolves and ends physiologically in the majority of cases, while bringing joy to families. Unfortunately, it can also bring sadness either following the death of the child, the mother or both at the same time.

The antenatal consultation (ANC) is a preventive activity aimed at the target population of pregnant women; it offers an opportunity to reduce the rate of maternal and neonatal deaths. It aims to detect and prevent maternal and fetal com-

plications, and to treat them at the appropriate time.

It is also a framework for healthcare professionals to approach women and their families, inform them about the advantages of medical delivery and build their loyalty to healthcare structures.

Periodic evaluations are necessary to identify the inadequacies of ANCs in order to contribute to their improvement. The present study carried out in the maternity ward of Laquintinie hospital was part of this framework.

The specific objective was to study the outcome of pregnancy according to the quality of prenatal consultations.

4.1. Sociodemographic and Reproductive Characteristics of Women Giving Birth

The average age of women who gave birth in the maternity ward of the Laquintinie hospital in Douala was 29.2 ± 6.4 with a majority of 30 to 35 years old, far from the group of adolescents who are often the breeding ground for abortions and obstructed births due to an immature pelvis; our finding is the opposite of that of Fomba so the modal range was 20 to 29 years old [19]. They were mainly pauci gesture and pauci pares in our series (**Figure 3** and **Figure 4**).

4.2. Characteristics of Providers

The quality of care depends on the material infrastructure, human resources, knowledge, skills and capacity to manage both normal pregnancies and complications that require rapid, life-saving interventions [14].

Following the recommendations of the literature consulted for this purpose, prenatal monitoring must be provided by qualified personnel: general practitioner, obstetrician-gynecologist or a midwife [20];

In our series, our results showed a strong involvement of doctors, particularly gynecologists, in prenatal monitoring (39.40%) in contrast to Coulibaly who reported a high percentage of ANC performed by midwives (84.4%) [21]; this high variance is explained, in our opinion, by the community health framework of his study.

4.3. Evaluation of the Content and Programming of Prenatal Consultations

The outcome of a pregnancy is significantly correlated with the number of prenatal visits carried out as well as the start of it.

According to the WHO, more frequent and better-quality consultations for all women during pregnancy will facilitate the application of preventive measures and early detection of risks, avoid complications as much as possible and help remedy health inequalities. Thus, a model of focused prenatal care that emphasizes quality has been recommended since 2016, according to which the number of prenatal consultations increases from four to eight [20] [22].

In our study, 46.80% of births had benefited from at least 4 to 8 ANC and 40.40% had performed less than 4 ANC, Referring to the authors who have ad-

dressed this aspect, notably Kowe in the same geographical area, our findings are dichotomous due, in our opinion, to the rural setting of his study; a framework which is specified by various constraints, notably low health coverage, access to care, financial barriers but also the weight of traditional cultures [15].

Unlike Brown (15 to 25%) in Kenya, 46.80% of our sample had initiated the first ANC in the 1st trimester [23].

The ANC offers a package of services including tetanus vaccination, prevention of anemia, protection against malaria, prevention of Sexually Transmitted Infections and AIDS viruses (STI/HIV/AIDS) and mother-to-child transmission of HIV, prevention of malnutrition, the information necessary to prevent sometimes fatal complications that can occur during childbirth but also for planning future births. In developed countries, 99% of women receive quality antenatal care while in developing countries this proportion is 1% [20] [24]-[26].

Overall, the procedures were of poor quality in both the 2nd and 3rd ANC with respective scores of 70.9% and 100%. The qualities observed in our study seem to be mediocre to those of Jacques Saizonou and colleagues in a district hospital in Benin in 2014 who found quality scores of 62.96% between the 2 - 4th ANC [1].

4.4. Poor Quality Gestational Morbidity and CPN Status

According to the literature, 15% of pregnant women develop complications during pregnancy, during childbirth and post-partum [5]; our findings confirm this in an order of superimposable percentage for preeclampsia/eclampsia and neonatal infections with 17.40% and 11% respectively. But unlike other authors, we did not find a statistically significant link between gestational morbidity and poor quality of ANC.

4.5. Relationship between ANC Quality, Associated Factors and Pregnancy Outcome

The numerical insufficiency of ANC < 4 as well as the delay in this obstetric offer were consistent with the data in the literature; *i.e.* source of poor-quality ANC with unfavorable outcome [15]; our findings did not escape it.

The poor quality of ANC put people at risk of prematurity almost 3 times; almost 5 times in low birth weight and 11.3 times in newborns with neonatal infections.

In our series, parity > 4 as well as age > 40 appeared as exposures to poor quality ANC; thus, corroborating the findings of F.Z. El Hamdani *et al.* [27]. This trend towards a reduction in the number of ANC can be explained by the fact that pregnant women over 40 and multiparous often do not find it relevant and believe they have mastered its outlines.

4.6. Relationship between the Quality of ANC and Neonatal Outcome

Prematurity, low birth weight and neonatal infections were significantly correlated with poor quality prenatal consultations as known and reported in the liter-

ature on this aspect including some authors from the same geographical area such as Kowe [15].

5. Limitations and Interest of the Study

Our study was subject to contact constraints with those who had given birth due to the outbreak of the COVID 19 pandemic.

To the credit of the reduced size of our sample, there is the occurrence of the Covid 19 pandemic during the study period as well as the poor completion of the prenatal monitoring records. Biases in the qualification of prenatal consultations may appear due to the unique use of the prenatal monitoring record [28].

The latter was performed in various structures in the city; therefore, as part of this research, we did not study the reception of providers, interpersonal communication, the satisfaction of those giving birth, the motivation of ANC providers, the privacy and confidentiality of ANCs as well as the infrastructure dedicated to these ANCs.

Despite the limitations linked to the size of our sample, this study allowed us to reveal that no childbirth had completed good quality prenatal consultations.

There is therefore an interest in participating in raising awareness of the merits of well-performed ANC for the health of mothers and children.

6. Conclusions

Improving the quality of care in health care settings is increasingly seen as an important goal in the quest to end preventable mortality and morbidity among mothers and newborns.

Based on all the performance scores in our study, we can conclude that prenatal consultations were mainly of poor quality in our environment.

Specifically, no childbirth had achieved good quality ANC. Preeclampsia/eclampsia and infections represented the main complications associated with poor quality ANC with 17.40% and 11%, respectively. Those giving birth with a parity > 4 associated with an age > 40 years, as well as the delay in starting ANC in the 2nd trimester of pregnancy appeared to be at risk of poor-quality ANC; the latter had appeared as a source of prematurity, low birth weight and neonatal infections.

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Conflict of Interest

The authors declare that they have no conflict of interest.

Contribution of the Authors

Essome supervised the study and wrote the manuscript, Biheb collected the data,

Tocki provided the English translation as well as the formatting of the manuscript, Moustapha; Boten; Mangala; Tchounzou; Ngalame; Ngaha; Ndolo; Ofakem; Mounchikpou; Mwandje; Ekono; Nana; Wafo; read and corrected the manuscript, Mbu supervised the study.

All authors read and validated the final version of the study.

References

[1] Saizonou, J., Agueh, D.V., Aguemon, B., Mongbo Adé, V., Assavedo, S. and Makoutodé, M. (2014) Évaluation de la qualité des services de consultation prénatale recentrée à l'hôpital de district de Suru-Léré au Bénin. *Santé Publique*, **26**, 249-257. https://doi.org/10.3917/spub.138.0249

[2] Maleya, A., Kakudji, Y.K., Mwazaz, R.M., Nsambi, J.B., Ngwej, H.I., Mukuku, O., *et al.* (2019) Issues materno-fœtales des grossesses non suivies à Lubumbashi, République Démocratique du Congo. *Pan African Medical Journal*, **33**, Article 66. https://doi.org/10.11604/pamj.2019.33.66.18528

[3] World Health Organization (2018) Recommandations de l'OMS concernant les soins prénatals pour que la grossesse soit une exprience positive: Échographie.

[4] World Health Organization (2016) Recommandations de l'OMS concernant les soins prénatals pour que la grossesse soit une expérience positive.

[5] Aboudaram, I., Benedittini, D., Bouchon, M., Desmarest, A. and Garcia, Y., Médecins du mondes, *et al.* (2015) Sante sexuelle et reproductive: Cadre de reference, 114-127.

[6] Breton, B., Peres, A. and Barranger, E. (2013) Grossesses non suivies: Historique, issues materno-fœtales et devenir. *Gynécologie Obstétrique & Fertilité*, **41**, 173-178. https://doi.org/10.1016/j.gyobfe.2013.01.010

[7] 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

[8] World Health Organization (2005) The World Health Report 2005—Make Every Mother and Child Count.

[9] Rakotoseheno, H., Rakotonirina, E.J., Randriatsarafara, F.M., Rakotonantoanina, J., Randrianarimanana, V.D., Rakotomanga, J.D.M., *et al.* (2008) Consultations prénatales et mortalité périnatale à Madagascar. *Journal de Gynécologie Obstétrique et Biologie de la Reproduction*, **37**, 505-509. https://doi.org/10.1016/j.jgyn.2008.04.006

[10] Dugas, M. (2011) Donner aux populations vulnérables de l'Afrique subsaharienne un accès aux soins obstétricaux: Stratégie avancée de consultations prénatales. *Médecine tropicale*, **71**, 526-528.

[11] El Hamdani, F.Z., Vimard, P., Baali, A., Zouini, M. and Cherkaoui, M. (2013) Prenatal Care in the City of Marrakech. *Médecine et Santé Tropicales*, **23**, 162-167. https://doi.org/10.1684/mst.2013.0185

[12] Mustafa, M.H. and Mukhtar, A.M. (2015) Factors Associated with Antenatal and Delivery Care in Sudan: Analysis of the 2010 Sudan Household Survey. *BMC Health Services Research*, **15**, Article No. 452. https://doi.org/10.1186/s12913-015-1128-1

[13] Baldé, I.S., Diallo, F.B., Diallo, M.H., Sylla, I., Bah, E.M., Mamy, M.N., *et al.* (2016) Évaluation de la qualité de la dernière consultation prénatale dans une maternité périphérique à Conakry, Guinée. *Revue de médecine périnatale*, **8**, 39-45. https://doi.org/10.1007/s12611-016-0354-z

[14] CDBPS-H 4-7 (2012) Ongolo-Zogo Optimiser l'utilisation des services de consulta-

tion prénatale au Cameroun.

[15] Kowe, I.G. (2017) Impact du nombre de consultations prénatales sur le devenir des grossesses: Cas du District de Santé de Maroua II. The Journal of Medicine and Health Sciences June.

[16] EDS (2016) Plan National de Développement Sanitaire EDS 2016-2020.

[17] Agence Nationale d'Accréditation et d'Évaluation en Santé de France (2000) Guide d'accompagnement de l'outil d'auto-évaluation de la qualité en EHPA. Application Angélique.

[18] Kourouma, M. (1989) Contribution à l'amélioration de la qualité de la consultation prénatale: Le cas d'un centre de santé rural, Thiadiaye, département de M'Bour région de Thiès, (Sénégal). Centre Africain d'Etudes Superieures en Gestion, 19-22.

[19] Fomba, D.D. (2009) Relation entre la consultation prénatale, devenir de grossesse et de l'accouchement: Étude portant sur 1296 cas. Thèse, Faculty of Medicine of Bamako, 10-32.

[20] OMS (2017) Standards pour l'amélioration de la qualité des soins maternels et néonatals dans les établissements de santé. Organisation mondiale de la Santé.

[21] Coulibaly, O.T. (2012) Evaluation de la qualité des consultations prénatales au centre de santé de référence de la Commune I du district de Bamako. Universite des Sciences, des Techniques et des Technologies de Bamako, 19-26

[22] Rwenge, M. (2013) La Qualité des Soins Prénatals selon la Perspective des Clientes au Cameroun. (Districts de santé de Nkongsamba, Bafang et Mfou). *African Population Studies*, **22**, 23-46. https://doi.org/10.11564/22-2-328

[23] Brown, C.A., Sohani, S.B., Khan, K., Lilford, R. and Mukhwana, W. (2008) Antenatal Care and Perinatal Outcomes in Kwale District, Kenya. *BMC Pregnancy and Childbirth*, **8**, Article No. 2. https://doi.org/10.1186/1471-2393-8-2

[24] OMS (2016) Recommandations de l'OMS concernant les soins prénatals pour que la grossesse soit une expérience positive. Organisation mondiale de la Santé.

[25] Organisation mondiale de la santé (2017) Recommandations de l'OMS concernant les soins prénatals pour que la grossesse soit une expérience positive. Organisation mondiale de la santé.

[26] von Both, C., Fleβa, S., Makuwani, A., Mpembeni, R. and Jahn, A. (2006) How Much Time Do Health Services Spend on Antenatal Care? Implications for the Introduction of the Focused Antenatal Care Model in Tanzania. *BMC Pregnancy and Childbirth*, **6**, Article No. 22. https://doi.org/10.1186/1471-2393-6-22

[27] El Hamdani, F.Z., Vimard, P., Baali, A., Zouini, M. and Cherkaoui, M. (2013) Prenatal Care in the City of Marrakech. *Médecine et Santé Tropicales*, **23**, 162-167. https://doi.org/10.1684/mst.2013.0185

[28] 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