# Evaluation of the Quality of Prenatal Consultation in Rural Area of Mali, Case of Kadiolo Health District

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## Abstract

Every woman has the right to receive satisfactory quality prenatal care in reproductive health. Giving a life while remaining alive and without sequelae must be the slogan of any gynecologist - obstetrician and midwife, as well as any health worker. It was a descriptive cross-sectional study dealing with the evaluation of the quality of prenatal consultations at the Kadiolo referral health center (or RHC). Adevis Donabedian's model for assessing the quality of care and services served as a benchmark. According to Donabedian quality means good technical care, with good interpersonal relationships, and adequate and comfortable premises. This study took place from April 24 to December 04, 2017 and aimed to assess the current level of the quality of prenatal consultations at the Kadiolo referral health center, to study the structures in place including infrastructure and personnel, to specify the procedures and to determine their results. This work has permitted us to classify the RHC of Kadiolo at level III with 85%, which means that the references evaluated were satisfactory, with the level of 75% to 94%. In terms of structure, a pricing system was deemed affordable by the opinion of pregnant women. The analysis of the level of the human dimension revealed that the health center was level III. The pregnant women were satisfied with the reception which was good in 76% of the cases, as well as with the quality of the respect of the privacy in

96% and confidentiality in 95%. Despite the satisfaction of pregnant women, gaps remain to be filled in concerning the quality of the services received at the Kadiolo referral health center so as to reach level IV.

## 1. Introduction

The antenatal consultation (ANC) is a preventive medical procedure for detecting and treating possible intrapartum complications. It permits to make the prognosis of childbirth. The identification of possible complications, the improvement of comfort and the experience of each pregnant woman require regular monitoring of pregnancy [1] [2]. Prenatal consultations are recognized as one of the four main pillars of the fight against maternal and infant mortality; the other three pillars being family planning, essential obstetric care and safe and hygienic delivery [3] [4]. Thus, according to the recommendations of the World Health Organization (WHO) on prenatal coverage, 98% of pregnant women in developed countries follow antenatal consultations whereas this rate remained below 70% in most countries in Africa, India and the Arabic Asian countries [4]. Each year, WHO estimates that 287,000 women die from complications of pregnancy and childbirth, 2.6 million children are stillborn, and 2.9 million children die in the first few months following their birth [5] [6]. According to WHO estimates in 2015; the main health indicators in Mali remain worrying, the maternal mortality rate was 587 per 100,000 live births in 2015, infant mortality 369 per 1000 and neonatal mortality 37.8 per 1000 [6]. The figures for maternal and newborn mortality are still high. However, it is now possible to report promising changes. Indeed, the consensus is widening on the importance of qualified care. Qualified people who are more specialized, such as doctors, should be able to manage complications related to pregnancy by providing essential obstetric care, including surgical procedures [7]. The majority of maternal and newborn deaths could be avoided if, during pregnancy, women regularly observed ANC and received appropriate prenatal care, if their delivery was attended by trained medical personnel and if after the delivery they benefited from postnatal follow-up. To be effective, prenatal care must be carried out at an early stage of pregnancy and, above all, it must be continued with regularity until delivery. However, for ANC to be effective it will need to be done well according to reproductive health standards and procedures. Despite all the strategies implemented in the Sikasso region and specifically in the Kadiolo health district, obstetric referrals and evacuations are late. The ANC coverage rate is still low and maternal and perinatal mortality is still high. After a review of the literature and

situational analysis, no study has been carried out on ANC in the Kadiolo health district.

We were interested in the Kadiolo referral health center, especially for its geographic location. Indeed, it is a rural area located to 300 km from Bamako, the capital of Mali, and 100 km from Sikasso. It is a cross-border area between the Republic of Côte d'Ivoire and Burkina Faso. It is a gold mining area with more than 20 sites causing significant displacement of the population who do not perform ANC and vaccination. Located less than 10km from the Ivorian border, its competitive environment with an influx of patients from neighboring countries to seek treatment and imposes on it a strategy focused on the quality of care provided. It is for this reason that we have initiated this study to assess the quality of ANC at the Kadiolo referral health center with the objectives of determining the frequency of ANC, specifying the socio-demographic characteristics of pregnant women, analyzing the structure, describing ANC procedures and report the satisfaction of pregnant women to the maternity unit of the Kadiolo referral health center.

## 2. Material and Methods

### 2.1. Study Framework

This study was conducted in the Kadiolo health district. The health district has a referral health center, 24 functional community health centers and gold panning sites. It also has 12 rural maternity wards, 14 private practices, 3 pharmacies, 5 dispensaries, 3 clinics, 2 private sales depots, 3 medicine sales depots, a central distribution depot, 4 infirmaries. All these health structures refer to or evacuate to the Kadiolo reference health center. It has 4 doctors all with surgical skills, 6 medical assistants respectively in the fields of public health, dentistry, ophthalmology, operating room and anesthesia, 4 midwives, 3 obstetrician nurses, 2 senior health technicians, 5 health technicians, 1 pharmacist doctor, 2 senior technicians, 1 health technician all from the laboratory, 3 nursing assistants, an accountant, a cashier, 3 medicine depot managers, a secretary, a matron, 3 laborers, 3 drivers, 2 scouts, a laundry and a caretaker. Qualified staff remains insufficient and retirements are not provided. The expected number of pregnant women in the Kadiolo health district was 16,000.

### 2.2. Type and Period of Study

It was a descriptive cross-sectional study for evaluative purposes carried out at the Kadiolo referral health center from April 24 to December 04, 2017. We proceeded by a study of structures, procedures (observation of professional practice) and the satisfaction of pregnant women.

### 2.3. Study Population

It was made up of any woman of childbearing age in the Kadiolo district and any caregiver and service provider.

### 2.4. Sampling

It was a systematic recruitment sampling with a prospective collection of data on the performance of technical gestures, the evaluation of infrastructure and the request for opinions of pregnant women.

### 2.5. Minimum Sample Size

The minimum sample size was calculated from the Schwartz formula: $n = (\alpha\beta)^2 \, pq/i^2$; $\alpha\beta$ = 1.96; P = ANC coverage rate at the Kadiolo referral health center in 2018 was 45% [8]; Q = 1 − P = 0.55; an accuracy i = 0.04; $n = (\alpha\beta)^2 \, pq/i^2$ = 1.96 × 1.96 × 0.45 × 0.55/0.0016 = 142.56. The minimum size for this study was 143 samples. By taking a loss rate of 10% we had a minimum size of 158 pregnant women for this study.

### 2.6. Inclusion Criteria

Any pregnant woman admitted to ANC during the study period was included in this study.

### 2.7. Non-Inclusion Criteria

They were not included in this study:

- Any patient admitted in an emergency for complications of pregnancy or in labor.
- Any pregnant women who refused to submit to the questionnaire.

### 2.8. Variables and Data Processing

We have used the repositories of ANC standards and procedures in reproductive health in Mali [8] [9]. The quality was determined according to the standards of Avedis Donabedian for the evaluation of the structure, the technique and the satisfaction of the users from an individual survey sheet produced for this purpose [10]. A team was formed of two investigators (a male and female student) to investigate in the antenatal consultation rooms of the service. There was the prenatal midwifery consultation room and the gynecologist consultation room. These investigators were all acting as internees. This team collected data from prenatal consultation activities using the technique of observing professional practices. One investigator observed the midwife and the other observed the gynecologist.

The number of observations was defined according to the following principle: observe any services of the prenatal consultations over a period of 12 months in order to have a picture most representative of reality, which made it possible to observe a total of 200 prenatal consultations in the two prenatal consultation rooms. The data processing was carried out using Microsoft Word 2010 software. The analysis was done on SPSS version 23 software.

## 3. Classification System

To classify the reference health center, we used the classification system with

simple criteria which were summarized in Table 1. A rating (0; 1) was made for the references identified in Table 1. The rating 0 meant that the reference was ignored or the gesture was not carried out. Indeed, the reference or gesture was absent. Scoring 1 meant that the reference or gesture was present or performed. The degree or level of quality was noted from 0 to 4 for a reference or the gesture performed. That is to say, the present reference was designated by A = 4 or B = 3 or C = 2 or D = 1 by the + sign which reflected the level of quality checked in Table 1. The sum of the scores achieved applied on the evaluation scale for a given center made it possible to assess the quality level of the structure. The maximum score that can be recorded for references is 52. The following ranking system has been used (Table 1).

The rating scale will look like this:

- Level 4: 95% to 100% of maximum score (or Max. Sc.) or a total score of 49.5 to 52.
- Level 3: 75% to 94% of Maxi. Sc. or a total of 39 to 49.3.
- Level 2: 50% to 74% of Maxi. sc. or a total of 26 to 38.99.
- Level 1: less than 50% of Maxi. sc. or a total of less than 26.

The quality level of the ANCs was determined from the scores obtained when the discriminatory variables were produced. The analysis focused on 2 types of scales: A first scale where the ANCs are said:

- "Of good quality" if all the discriminatory variables are realized;
- "Of lower quality" or of "non-quality" if at least one of the discriminatory

**Table 1.** Avedis DONABEDIAN's classic frame of reference on the evaluation of the quality of care and services [10].

| References | Level of the quality | | | | Score | Observations |
|---|---|---|---|---|---|---|
| | A | B | C | D | | |
| Architectural standards | | | | | | . |
| Reception and orientation procedure | | | | | | |
| Structure/ANC equipment | | | | | | |
| Equipment of the waiting room | | | | | | |
| Gynecology consultation room | | | | | | |
| Immediate postpartum assistance service | | | | | | |
| Medicine depot/Architectural standards and medicine cost | | | | | | |
| Laboratory functionality | | | | | | |
| State of toilets | | | | | | |
| Bloc operatory | | | | | | |
| Water supply system and elimination of waste | | | | | | |
| Hospitalization ward | | | | | | |
| Lighting and communication system | | | | | | |

NB: A = 4; B = 3; C = 2; D = 1+ = indicates the quality level checked.

variables is not performed. A second scale where the ANCs will be classified into four quality levels (Q):

- High Q4: 95% - 100% of the gestures of the dimension are carried out;
- Quite high Q3: 75% - 94.99% of the gestures of the dimension are performed;
- Medium Q2: 50% - 74.99% of the gestures of the dimension are performed;
- Low Q1: less than 50% of the gestures of the dimension are performed.

This scale will be applied to dimensions that had four or more variables. This is how it will permit us to determine, for the center, the proportion of pregnant women receiving good or fairly good quality care (Q4, Q3) and to have a classification by level of the center.

The criteria for this classification were:

- Level IV: 75% to 100% of pregnant women receive good and fairly good care
- Level III: 50% to 74.99% of pregnant women receive good and fairly good care
- Level II: 25% to 44.99% of pregnant women receive good and fairly good care
- Level I: less than 25% of pregnant women receive good and fairly good care

**ETHICAL ASPECTS**: The anonymity and informed consent of the pregnant women were respected during this study.

## 4. Results

### 4.1. Coverage in Antenatal Care at the Maternity Unit of the RHC of Kadiolo

During this study, we have collected 200 antenatal consultations for 875 expected pregnancies in the commune of Kadiolo, with an ANC use rate of 23%.

### 4.2. Sociodemographic Characteristics of Pregnant Women (Table 2)

**Table 2.** Sociodemographic characteristics of pregnant women.

| Characteristics | % | n/n |
|---|---|---|
| **Age** | | |
| ≤19 years | 30 | 60/200 |
| 20 - 34 years | 60 | 120/200 |
| 35 and more | 10 | 20/200 |
| **Occupation** | | |
| Householder | 77 | 154/200 |
| Trader/laborer | 13 | 20/200 |
| Pupil/Student | 6.5 | 13/200 |
| Public servant | 2.5 | 5/200 |
| hairdresser/seamstress/dyer | 4 | 8/200 |
| **Schooling** | | |
| Non schooled | 57.5 | 115 /200 |
| Schooled | 42.5 | 85/200 |

Continued

| | | |
|---|---|---|
| **Marital status** | | |
| Married | 94.5 | 189/200 |
| Single | 5.5 | 11/200 |
| **Residence** | | |
| Commune of Kadiolo | 90 | 180/200 |
| Other communes | 10 | 20/200 |
| **Admission mode** | | |
| Evacuated/referred | 71.70 | 146/205 |
| Come by herself | 29.30 | 55/205 |

Other communes: Zegoua, Loulouni, Fourou, Misseni, Diou, Dioumaténé.

## 4.3. Observation of the Process Using the Evaluation Grid

The clinical characteristics of pregnant women have been identified. In fact, 85% of pregnant women have performed one or three prenatal consultations. The performers of the antenatal consultation were respectively 52.5% cases by midwives; 37.5% cases by obstetrician nurses and 10% cases by doctors. The duration of the ANC was greater than 15 min in 62% of the cases. Multigravidities and multiparous represented 87.5% and 58.5% of cases respectively. The medical history was dominated by sexually transmitted infections (STIs) (3%); high blood pressure (HBP) (2.5%) followed by sickle cell disease (1.5%); urinary tract infection (1.5%) and diabetes (0.5%). The three main risk factors found in the ANC book were dystocia (15%); the large multiparity 6%; hypertension (2.5%). The cesarean scar represented 13% of surgical history. The age of the pregnancy, the probable date of delivery, the date of the last period were determined respectively in 84%; 81%; 10% of cases. The reception conditions for pregnant women were met in the following proportions for the invitation to have sit (100%); greetings of pregnant women (99%); empathy of the caregiver when faced with problems of pregnant women (99%); good attitude towards pregnant women (94%). Hospital hygiene measures were applied in the following proportions: wearing gloves (100%); use of the draw sheet (100%); sterilized materials (100%); hand washing before and after (39.5%); lack of asepsis (46.5%). The impression of pregnant women on interactions with caregivers was appreciated for confidentiality (96%); respect for privacy (96%); order of arrival (98%); satisfaction of pregnant women (94%); comfortable waiting (54%); pleasant reception (97%). The risks and gestures were sought or performed in physical examination in the proportions below for the search for lameness (0%); search for edema (72%); size measurement (100%); weighing (100%); taking blood pressure (BP) (100%); help to get on the table (25%); gynecological position (100%); explanation of the consultation process (94%); conjunctival examination (100%); mouth exam (20%); cardiology consultation (0%); pulmonary consultation (%); measurement of uterine height (100%); helps to get up (75%); palpation of the abdomen

(97%); breast exam (98%); auscultation of fetal heart sounds (FHS) (90%); vaginal examination (100%); use of the speculum (13%). Of the pregnant women who received the prescription, 95% had an explanation for the prescription. The pregnant women received prophylactic treatment following sulfadoxine pyrimethamine (SP) (67.5%); iron plus folic acid (IFA) (97%); tetanus vaccination (TV) (75%); antiparasitics such as albendazole (18%). Health promotion messages were given on STI/AIDS (11%); rest (9%); food (59%); family planning (13%). Additional examinations were requested and performed in the following proportions, rhesus grouping (100%); BW (94.5%); HIV (100%; achievement of hemoglobin level 100%; Emmel test (95%); ultrasound done (81%); albumin-sugar (93%); toxoplasmic serology (96%); enumeration blood count (5%).

## 4.4. Analysis of the Quality of the Prenatal Care Procedure

The dimensions of prenatal consultation were analyzed using direct observation of the practice. It was the quality of the reception which was good in (96%); the quality of the physical examination was not good (97.5%) of the cases; the quality of advice given to pregnant women was good in (24%). In addition, the quality of hygiene during the prenatal consultation was good in 74% of the cases. The quality of physical and mental respect was good (79%). The quality of respect for the pregnant woman's privacy was good 96%. Prenatal consultations are conducted in the strictest confidence with a rate of 95%. The quality of human relations was rated good in 93%. The level of quality of the structure was appreciated. These were architectural standards that had a score of 4 rated A; the reception and orientation system, which was marked 3 and marked B; ANC structure/equipment marked 3 and rated B; waiting room equipment rated A; gynecological consultation unit noted 4; immediate postpartum assistance unit noted 3; drug depot, architectural standards and cost of drug rated 3; laboratory and functionality rated 4; state of toilets rated 3; bloc operatory rated 3; water supply and waste disposal system 4; hospitalization unit rated 2; lighting and communication system rated 4.

## 4.5. Care Structure

### 4.5.1. Description of the Premises

In the Kadiolo antenatal ward, there was a prenatal consultation room, a waiting room or hall. The maternity unit had a delivery room with two delivery tables separated by a wall, a room for observing mothers and a labor room. Inside the delivery room was a toilet for parturient women. The gynecologist's consultation room was adjacent to the delivery room. The maternity ward was opposite to the delivery room. Two external toilets were provided for prenatal service staff. The antenatal ward had a water source and a sink. An immediate postnatal assistance room existed and had two beds. The laboratory for further examinations was functional. The oxygen system was not functional. The department had an oxygen extractor. The sales depot was functional for the sale of essential drugs.

There was no resuscitation service. The maternity unit had a resuscitation corner for newborns with a functional heating table.

### 4.5.2. Medical Equipment and Materials

The antenatal service maternity had two ambulances, one of which was in fair condition. The consultation room had a consultation table, two consultation chairs, two cabinets for the supports, chairs for pregnant women. The benches were intended for waiting halls. All the rooms had a gynecological examination table, a sphygmomanometer coupled with a biauricular stethoscope, an obstetric stethoscope, a tape measure, a scale, a measuring rod, gynecological metal specula sterile on the eve of the prenatal consultation. There was no surgical light for the gynecological examination. In the antenatal consultation service there was a sterilizer, a functional baby boy. The prenatal service had a generator for obstetric emergencies.

### 4.5.3. Human Resources

The ANC room was run by a midwife and two obstetrician nurses, assisted by four trainees. There was also a gynecologist who performed prenatal consultations. The ANC room had a room girl. The prenatal consultations took place every working day of the week. Other activities such as vaccination and family planning sessions, ANCs were also done every working day per week. The cost of the ANC varied from 500 to 1000 CFA francs and included the consultation fees, the health book, the associated care. Before the start of services in the prenatal service, the floor was kept clean every morning by the room girls. Disinfectants were used for cleaning. Bench tops and examination tables were not often cleaned. During the services, the disposable syringes after intravenous or intramuscular injections, were put in the safety boxes which overflowed and dragged on the ground. In the ward, the draw sheet on the examination table was not replaced between 2 patients; hand washing before the parturient examination was performed in 39.5% of cases (79/200 prenatal consultations). Gloves were observed in 100% of cases (200/200 prenatal consultations). In prenatal care, examination gloves were often thrown directly into the trash after use. In the department, the bins were sent to the incinerator. Every day the activities began with the training staff which summarized the activities of the guard.

### 4.5.4. Structure Classification

The structure was noted using the repository (Table 3).

The overall assessment of the structure was made using this frame of reference, taking into account the scores of the different items. The Kadiolo referral health center had 44 points out of a total of 52% or 85%. It was classified at level 3.

### 4.6. Pregnant Satisfaction with Care

We have explored the opinion of pregnant women on physical and psychological respect, respect for privacy and confidentiality during prenatal consultation, at reception, the fees applied and the provision of care, the privileges granted to

pregnant women protected by the staff. The result of this assessment of pregnant women is presented in Table 4 below.

## 5. Discussion

### 5.1. Methodological Approach and Study Limits

This present study on the quality of prenatal consultation services in the Kadiolo referral center in the rural area of Mali was based on the verification of procedures

**Table 3.** Overall assessment of the care structure.

| References | Level of the quality | | | | Score | Observations |
|---|---|---|---|---|---|---|
| | A | B | C | D | | |
| Architectural standards | + | | | | 4 | Protection against dust, State of the premise good, fence made, accessible location |
| Reception and orientation system | | + | | | 3 | Layout of the assistant staff, absence of an orientation sign. |
| Structure/ANC equipment | | + | | | 3 | Good quality technical material But incomplete (No portable lamp) |
| Equipment of the waiting room | + | | | | 4 | Number of sufficient benches and of good qualities |
| Consultation unit of gynecology | + | | | | 4 | Full equipment in the doctor's consultation room and on call room |
| Immediate postpartum assistance unit | | + | | | 3 | 1 room with 2 beds (poor quality mattresses), sufficient space and ventilation (limited capacity) |
| Drug supply Architectural standards and cost of drugs | | + | | | 3 | Sufficient protection against dust, lack of air conditioning, accessible medicines |
| Functionality laboratory | + | | | | 4 | Functional for the most common biological examinations: rhesus grouping rate Hb, BW, HIV, thick drop |
| State of the toilets | | + | | | 3 | Privacy respect insufficient property |
| Operating room | | + | | | 3 | Complete technical equipment, lack of adequate resuscitation service (oxygen) |
| Supply system in water and waste disposal | + | | | | 4 | Drinking water available within the center, Existence of incinerator; Waste regularly spills for biomedical treatment |
| Hospitalization unit | | | + | | 2 | 3 Large rooms with 15 beds, one (1) M.K.C unit (Mother Kangaroo Care) with 4 beds and a dressing room for cesareans. A total of 19 hospital beds, sufficient ventilation, Lack of property and impregnated mosquito net. |
| Lighting system and communication | + | | | | 4 | Public network, landline and mobile phone for reception with WIFI internet connection. Functional generator. |

Nota bene: A = 4; B = 3; C = 2; D = 1+ = indicates the quality level checked.

**Table 4.** Perception of pregnant women at prenatal consultation.

| Opinion | % (n/n) |
|---|---|
| Physical and psychological respect | 79 (158/200) |
| Respect of privacy | 96 (192/200) |
| Respect of the confidence | 95 (190/200) |
| Reception | 76 (152/200) |
| Affordable fees of services | 95 (190/200) |
| Respect of the order of arrival | 75 (150/200) |

and direct observation of the technical acts and gestures of health personnel; participating observation was used to minimize the bias of the classical observation technique (Hawthorne effect) and the appreciation of the opinion of pregnant women. The inclusion of a sufficient size of the pregnant women associated with the prospective collection made it possible to reinforce the internal and external validity of the results obtained. It has permitted us to appreciate the level of quality of the structure, to locate on a quality scale the achievement of the technical gestures of prenatal consultation, to collect the opinion of pregnant women on the quality of gestures related to prenatal consultation. In our methodological approach, we have chosen discriminatory variables. If one of these variables was missing, it called into question the overall quality of the antenatal care act in the defined quality domain category. This made it possible to locate the RHC in Kadiolo by the level of quality and identification of the problems at a different level of quality. The nursing staff were very available and courteous, and we did not encounter any difficulties in filling the supports. Our pregnant women were all willing to be part of the study. However, we evaluated the perception of pregnant women on the ANC hence the interest of this study. Yet, the evaluation of the quality of the ANC only concerned the Kadiolo referral health center, while the community health centers were not evaluated, especially since they perform a lot of ANC. Unlike our work, the external validity biases are correcting Mali's demographic surveys by doing multicenter studies at the country level [9] [11] [12].

## 5.2. The Rate of Use of the ANC in the Commune of Kadiolo

We carried out two hundred ANC for 875 expected pregnancies for the commune of Kadiolo, with a rate in prenatal care of 23%. This care coverage of the RHC of Kadiolo was considered low compared to the prenatal care coverage of certain rural and urban areas of Mali in 2006 see Figure 1 [11]. The health district of Kadiolo is located in a rural area of Mali where pregnant women consult little or very late compared to urban areas. The same trends in prenatal care were found by DHS 6 in 2018 where Coverage in prenatal care was better in urban areas 93% than in rural areas 76%. It was in Bamako that the percentage of women who received antenatal care was highest (96%) [12]. In the rural area of Kadiolo-city, 23% of pregnant women received prenatal care.

Among the two hundred ANC performed at the RHC in Kadiolo; 85% of pregnant women had made between one and three ANCs and 15% of pregnant women had performed four or more ANCs. These results found in the rural area of Kadiolo were comparable to those of the DHS4 in 2006 where more than two in five women (41%) made at least four antenatal visits, which is in line with the recommendations of the WHO. In 28% of the cases, the women made 2-3 visits, 5% made only one visit and 25% did not make a prenatal consultation. The differences between areas of residence are significant since in Bamako, 71% of women made the four recommended visits against 61% in other cities and only
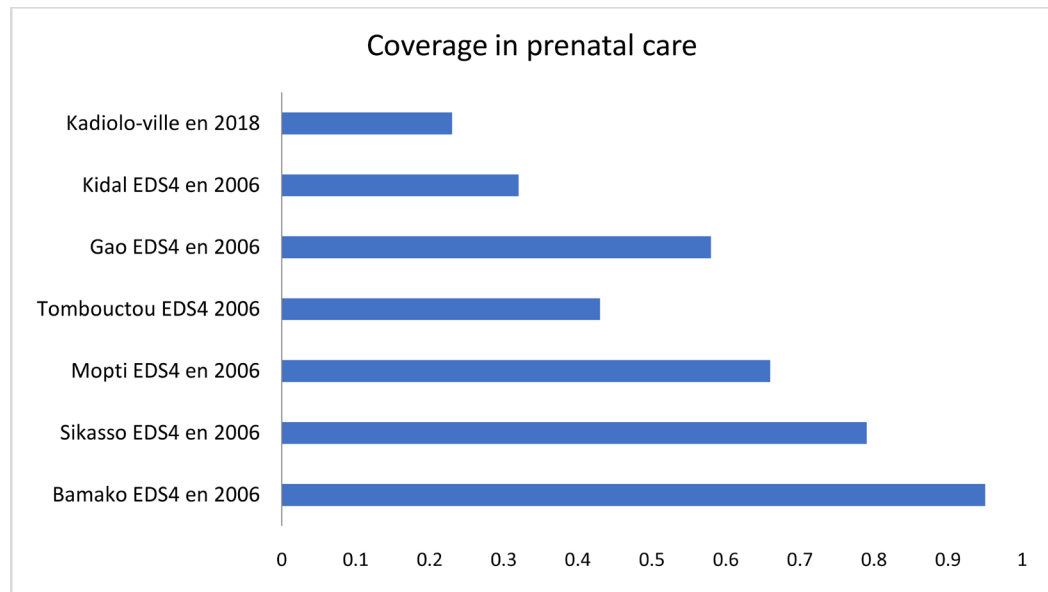
**Figure 1.** Comparison of antenatal care coverage in Kadiolo-city with some coverage in urban and rural areas of Mali.

35% in rural areas [10]. The new WHO recommendations proposed eight contacts instead of four [13]. All of our prenatal consultations (100%) of the cases were performed by trained personnel and the authors of the prenatal consultation were midwives in 52.5% of cases and obstetrician nurses in 37.5% of cases in our study. These results corroborate with data from the DHS6 carried out in Mali in 2018 where 80% of the women surveyed aged 15 - 49 years received prenatal care provided by trained health personnel. In the majority of cases (47%), it was the nurses/midwives who provided this prenatal care and to a lesser extent (6%), it was the doctors. In contrast, 19% of women received no prenatal care [12].

### 5.3. Sociodemographic Characteristics of Pregnant Women

The socio-demographic characteristics of our patients were dominated by pregnant women between 20 and 34 years old in 60% of the cases; housewives 77% of cases. These were pregnant women who were not in school in 57.5% of the cases and married in 94.5% of the cases and lived in the city of Kadiolo. These pregnant women were referred to or evacuated in 71.70%. Similar characteristics were identified by Bakary MT and collaborators who found out pregnant women between 18 and 35 years old in 88.10%; housewives in 98.5% [14]. Pregnant women were out of school in 51.10% (these data are specified in Table 2). Other authors have reported similar characteristics [14] [15] [16]. This fact is explained by early marriages and early sexuality with the occurrence of early pregnancy. Regarding the realization of ANC, 85% of pregnant women had done one to 3 ANC and 15% pregnant had done 4 ANC and more. These proportions are explained by the fact that ANCs are done late in our context. This fact reduces the number of ANCs and the quality. This result corroborates with data from DHS4

and 5. The following authors [14] [15] [16] [17] also found the same trends.

## 5.4. Observation of Procedures during Prenatal Consultations

This study revealed that the majority of ANCs were provided by midwives (52.5%) followed by obstetricians (37.5%). The same trend regarding the qualification of ANC providers was found by the field survey from December 2016 to January 2017 in the work of Seydou Z Dao entitled assessing the quality of prenatal consultation in the community health centers CHCs and at the RHC of the commune II in Bamako district in 2017 [18]. The reception was good in 96% of cases and it was also found good in 98% and 97% by Seydou Z and Maiga AS respectively [18] [19]. Physical and psychological respect was generally good in 48% of cases against 95 in the series of Maiga AS [19]. Privacy was very well respected in 96% of cases. The prenatal check-up was requested in the majority of cases it was mainly rhesus grouping, hemoglobin level, albumin - sugar, BW, Emmel test, HIV serology which were requested but ultrasound was not systematic. The completion of the para-clinical assessment was justified by [18] in the proportion of 84%. During the clinical examination certain parameters such as: cardiac and pulmonary auscultation, explanation of the consultation procedure, the use of the speculum, the search for lameness and the lack of appreciation of the pelvis in the third trimester, especially the ninth months of pregnancy were undervalued at ANCs. The same clinical parameters were underestimated by many authors [18] [19]. Regarding the quality of the services, this is level III as in the referral health center of the commune I because the physical examination often suffers from certain failures such as taking the blood pressure; the assessment of the state of the pelvis as well as the prognosis of childbirth in the notebook.

## 5.5. Structure Study

We have prioritized the quality levels which were four in number (see Table 1).

This hierarchy was made according to the references to which a score was assigned. An observation was made for each reference. The quality analysis shows that the Kadiolo referral health center was level III with the score to (44/52) = 85%. The same score of the RHC of Kadiolo was obtained by all the CHCs of the commune II regarding the quality of the structure. Thus, Maiga AS in commune I, found on the structural level, that the referral health center of the commune I of the District of Bamako was classified at the level II. In other words, the references evaluated were 85% satisfactory, with a score of 44 [19]. The analysis of the quality level of the structure at the Kadiolo referral health center meant that the center was level III, the majority of the references evaluated were of good quality. However, there were shortcomings to be corrected, among others: lack of adequate resuscitation service and oxygen circuit, absence of property and impregnated mosquito nets in hospital wards; the ANC room was well lit but did not contain a gynecological examination lamp. Similar shortcomings were pointed

out in the study of Tiembré I and collaborators who noted a lack of equipment in the centers visited [20] [21] [22].

### 5.6. Satisfaction of Pregnant Women

There was a close collaboration between midwives, obstetrician nurses and doctors to manage pregnant women with risk factors such as: hypertension, history of stillbirth, scar uterus. The pregnant women through their opinions expressed their complete satisfaction with respect for physical and mental health, privacy, confidentiality, the cost applied and the provision of care. The welcome, the communication between providers and users as well as respect for the order of arrival were the elements of dissatisfaction (see Table 4). Satisfaction pregnant women were low in our study, contrary to the results of a multicenter study which recorded a high level of satisfaction of users of prenatal services [22] [23] [24] [25] [26] [27]. Reception and communication were the elements incriminated both on the institutional level and in terms of the perception of pregnant women. Rwenge in Cameroon [28] reported in his study that 82% to 91% of pregnant women were satisfied from the point of view of the care received, the availability of providers, opening hours, the condition of waiting rooms and consultation rooms. The satisfaction of pregnant women is one of the essential results of the quality of health care and health services. Satisfaction is directly linked to the attendance and use of health services. Word of mouth communication remains very developed in Africa and in particular in Mali [26] [29] [30]. A pregnant woman who is not satisfied with the ANC, could inform a dozen or more of her peers who will be reluctant to go to a health facility or will decide not to go there until late in case of worse scenario.

## 6. Conclusion

The quality of prenatal care is an acute issue in our health structures. This study has permitted us to analyze the components of the quality of antenatal care of the structure, procedures and finally the opinion of pregnant women. The quality of antenatal care was rated as good. However, shortcomings were noted in terms of structure, procedure and results requiring effective correction. Anyway, ANC still has an important role to play in the rural context, especially since its high rate of use by women provides an opportunity for contact with health services. We must take advantage of this situation to implement efficient actions that are scientifically proven. Improving ANC coverage and correcting deficiencies is necessary to reduce maternal and perinatal mortality. We need to advise, support, inform pregnant women and their families, and ensure continuity of care to promote quality prenatal care.

## Conflicts of Interest

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

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