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Problematic of dietary prohibitions on maternal-fetal prognosis in Kisangani city, DR Congo

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Abstract
Maternal-fetal death is a public health problem, the under-reporting of stillbirths and maternal and neonatal deaths hides the true magnitude of the public health problem. In Kisangani, the day of the birth of a baby presents a great fear for the family and the community because it can be a danger for the health of the mother and her child. This study is organized to fight against stillbirths and maternal mortality, its objective is to promote dietary prohibitions to finally ensure the health of the mother and child in Kisangani City.Our investigation is a descriptive retrospective study, we obtained the following results: 54.9% of women are between 20 and 25 years old, 72.6% of women are married, 50.9% of women are at primary level , 84.1% of women have a body mass index between 18.5 - 24.9; 50.9% of women are primiparous, 22.6% of newborns have a birth weight of less than 2500 gr, 31.4% of women are unaware of the benefits of dietary restrictions, the drink (alcohol) is the most important food banned (40.7%) and 71.7% of women practice forbidden food. It is noted that poverty, inaccessibility to the food of some households, makes it difficult to practice good dietary restrictions during pregnancy.

Keywords: Maternal, dietary, restrictions, Kisangani, inaccessibility

Introduction

In the world, WHO reports that every year 303,000 women die during pregnancy or childbirth, 2.7 million babies die during the first 28 days of life, and there are 2.6 million children dying - despite the underreporting of stillbirths and maternal and neonatal deaths that hide the true magnitude of the public health problem. The day of the birth of a baby can be the most dangerous for the health of the mother and her child [1].

Most stillbirths and neonatal deaths can be prevented by quality care during pregnancy, delivery, and most importantly, proper nutrition of the pregnant woman. In practice, all stillborn children and half of newborns who die without any birth or death certificate being issued. They are never registered or notified; their deaths are not subject to any investigation in the health system. By the way, our country, the Democratic Republic of Congo knows neither the number of the deaths, nor their cause and, is incapable to take the effective ones to avoid the death of other children and other pregnant women [2].

Pregnancy is a period in which women are subjected to several prohibitions and prescriptions related to all cultures: the set of beliefs, myths and medical standards, passed down from generation to generation. These predetermine behaviors that correspond to multiple social and cultural logics aimed at preserving the health of the mother and child [3].

According to many surveys, the pregnant woman must eat well "because she eats for two". It must indeed fill the food cravings declared by the fetus in his belly. His desires are considered as the desires of the fetus; the pregnant woman has the duty to express them and her family has the obligation to satisfy them to avoid any complication. However, some foods are prohibited or discouraged [4, 5].

The pregnant woman must observe certain dietary advice to have a normal pregnancy, a happy birth and a child in the best conditions. Her diet should provide the nutrients she needs and enough calories to have a normal weight during pregnancy. Too much food can cause problems not only for the pregnant woman but also for the baby because a pregnant woman who is overweight is exposed to complications of the blood circulation such as hyperglycemia, hypertension and toxemia; her delivery will be difficult [6].

Generally, the pregnant woman who is underweight is anemic. She is often tired and can give birth to a premature baby as in the case of the majority of women in sub-Saharan Africa. It is advised that a pregnant woman should control her weight. The ideal diet of a pregnant woman must have a large amount of protein, a supplement of vitamins [7].

The diet of the pregnant woman can positively influence the good progress of the pregnancy, development of the fetus and in the long term the health of the mother and the child. During the first half of pregnancy, the quality of food intake is

essential, however the second half, the amount becomes greater to ensure the harmonious growth of the fetus. In short, good eating habits must begin before conception of pregnancy and throughout pregnancy [8].

In the fourth month, increase energy intake to ensure optimal weight gain of the pregnant woman and normal physical development of the fetus. Energy requirements increase from about 250 to 300 kcal per day, reaching an average of 2500 kcal per day. So it is also a question at this time also to follow the precepts of a healthy food and to distribute his daily energy ration in the following way: 30 to 35% of lipids (approximately 80 to 90 g / day), 10% of proteins (About 60 to 70 g / day) and 55 to 60% of carbohydrates (about 360 to 380 g / day) and also 50 to 70% of protein of animal origin [9, 10]. And the need for vitamins and minerals is essential for the health of pregnant women and children, especially folic acid, vitamin D, iron, iodine, beverage and salt [9, 11].

In general, the food prohibition often relates to animal foods. On the other hand, proteins are important in the second trimester of pregnancy because at this point the fetal tissues are developing rapidly. The pregnant woman must avoid foods too rich in carbohydrates and must preferably eat slow carbohydrates (bread, rice, potato,...). Muscle contraction is strengthened by a diet rich in calcium and the formation of the skeleton and teeth through the consumption of milk and cheese in 90% of cases. And a lack of protein during pregnancy can lead to a decrease in the development of the fetal brain, resulting in a lack of learning abilities [7].

The consequences of dietary restrictions in pregnant women can lead to hypertension, premature delivery and low birth weight. For each biomedical complication, there are circumstances indicating a causal link between diet (inadequate protein intake <50 g for hypertension and insufficient calcium intake, pregnancy weight and insufficient weight gain for intrauterine growth restriction, body mass index <18.5, insufficient energy intake, insufficient zinc intake for preterm delivery [11, 12].

The consequences for the fetus are related to the various disorders caused by fetal alcohol, it is estimated that all disorders caused by fetal alcohol affects 8000 births per year. It is by far the leading cause of mental handicap of non-genetic origin, a cause yet avoidable, with a human cost for the people themselves and their entourage [13].

In 1987, WHO, UNICEF and UNFPA launched the Safe Motherhood Initiative. This initiative aims to improve the living knowledge of pregnant women and to directly contribute to the reduction of maternal and perinatal mortality and morbidity. Although quality care during pregnancy and childbirth can prevent many of these deaths, only 64% of women worldwide have received antenatal care (antenatal care) at least four times during pregnancy [14].

Across all the hospitals and maternity hospitals in Kisangani City, stillbirths and neonatal deaths are still underreported, which hides the quality of care of our institutions and the extent of this problem. Conducting mortality audits and reviews is an essential strategy to reduce the number of preventable deaths among mothers and their children. They help health system administrators understand the causes of death, the factors that contribute to it, and enable them to take corrective action to improve the quality of care [15].

The communication policy for health-promoting behavioral change can be used to reduce stillbirths and maternal mortality in Kisangani City [16]. It is in the context of the fight against stillbirths and maternal mortality that this study is organized, its objective is to raise awareness of the population to promote food prohibitions and finally to ensure the health of the mother and child in the city of Kisangani.

2. Study Area and Method

2.1. Study area

The study of the problematic of dietary prohibitions of pregnant women is organized at the Saint Camille Health Center located in the commune of Kabondo / city of Kisangani. This health center organizes antenatal consultation sessions and behavior change talks for pregnant women in favor of a safer motherhood; it also has a maternity hospital where the survey of women who had just given birth was conducted. The information collected from our questionnaire was enriched by the documentary technique: the use of prenatal and maternity records, as well as the individual records of the women who gave birth at the Saint Camille Health Center maternity ward. This period was from 01 January to 01 June 2019.

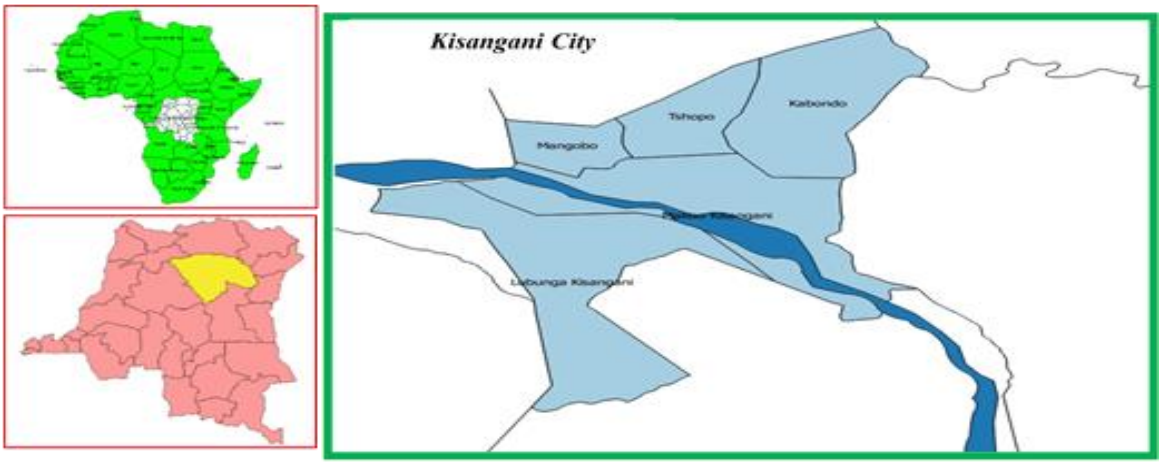

Fig 1: Location of Saint Camille Health Center in Kisangani City, DR Congo.

2.2 Methodology
To make up our sample, we used the technique of random sampling of convenience, that is to say a sample which consists of the units available during the period of our research. On the basis of prenatal consultation and maternity records, as well as individual files of women who gave birth at the Saint Camille health center, we identified 308 pregnancy cases, of which 226 were selected on the basis of our selection criteria. : the criterion of inclusion, as well as any case of pregnancy that followed at least 3 sessions of prenatal consultations (PNC) at the health center Saint Camille and had given birth to it, that of non-inclusion is any case of pregnancy having attended at least three sessions of PNC or having given birth in another health center.

2.3 Type of survey
Our study is descriptive transversal

2.4 Parameters of survey
Our study exploited the following variables:
- Age
- Civil statute
- Level of studies
- Body Mass Index (BMI)
- Parity
- Weight of the newborn
- Knowledge of the consequences of dietary prohibitions
- Prohibited food by tribe
- Practice of food bans

2.5. Analysis and data processing
The following statistical formulas were used:

Percentage calculation (P)
$P = n / N \times 100$
With n = number of observed cases
N = total number of cases
Average arithmetic calculation: $X = \Sigma n / N$

Legend*:*
n = observed frequency
N = sum of frequencies or total frequency
P = percentage
X = arithmetic mean

3. Results
Of the antenatal consultation, maternity and individual records of maternity health center Saint Camille, 308 cases of pregnancy were recorded in the period of our study, of which 226 cases of pregnancy were retained for our study after the selection criteria.

Table 1: Distribution of pregnancy cases by selection criteria

Pregnancy case	Effective	%
Selected cases	226	73.3
Unselected cases	82	26.7
Total	308	100.0

Table 2 gives the distribution of pregnant women by age. The ages of all cases range from 15 to 45 years old, 20 to 25 years olds have a higher enrollment of 54.0% and 40 to 45 cases have a low enrollment of 0.4%.

Table 2: Distribution of pregnancy cases by age

Age	Effective	%
15 - 20	22	9,7
20 - 25	122	54,0
25 - 30	65	28,8
30 – 35	12	5,3
35 - 40	4	1,8
40 - 45	1	0,4
Total	226	100,0

Figure 2 shows that there are 27.4% of case visits of single women and 72.6% of married women.

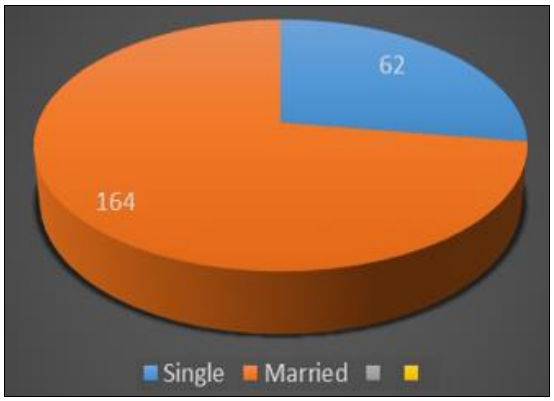

Fig 2: Distribution of pregnancy cases by civil status

The data in Table 3 show that the majority of pregnant women have a primary school level (50.9%); followed by women at the secondary level (35.0%); higher-level women (8.8%) and university-level women (0.4%).

Table 3: Distribution of pregnancy cases by level of education

Level of study	Effective	%
Primary	115	50,9
Secondary	79	35,0
Higher	20	8,8
University	12	5,3
Total	226	100,0

Table 4 gives the body mass index (BMI) of pregnant women is given in the sizes below and 10.6% have BMI less than 18.5; the majority of cases (84.1%) are in BMI between 18.5 and 24.9; 4.4% is between BMI equal to 4.4% located between 25 to 29.9% and 0.3% of cases between the BMI equal to 30 to 39.9.

Table 4: Distribution of Pregnancy Cases by Mass Index Body (BMI)

BMI (kg/m^2)	Effective	%
<18,5	24	10,6
18,5 à 24,9	190	84,1
25 à 29,9	10	4,4
30 à 39,9	2	0,3
≥ 40	0	0,0
Total	226	100,0

Figure 3 shows the distribution by number of births of all pregnancies consulted and delivered at Saint Camille Health Center during our study period; according to their parity the primipares represent 50,9% and the multipares are at 49,1%.

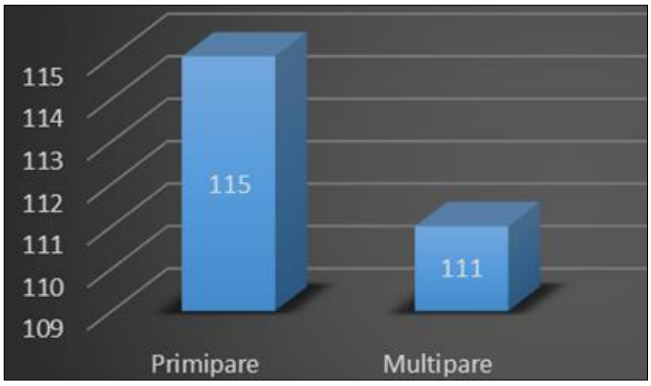

Fig 3: Distribution of pregnancy cases by gender

Table 4 shows the data for *all* newborns by weight, the majority of newborn weights (42.9%) are between 3000 and 3500 g; followed by 22.6% of cases below 2500 gr; 17.2% of cases between 3500 to 4000 gr; 12.4% of cases between 2500 to 3000 and finally 4.9% of cases greater than 4000 gr.

Table 4: Distribution of pregnancy cases by newborn weight

Weight (gr)	Effective	%
< 2500	51	22,6
2500 à 3000	28	12,4
3000 à 3500	97	42,9
3500 à 4000	39	17,2
≥ 4000	11	4,9
Total	226	100,0

Figure 4 shows the distribution of pregnant women according to the knowledge of the consequences of dietary prohibitions: 68.6% of pregnant women do not know the consequences of dietary prohibitions and 31.4% of pregnant women are aware of the consequences of the prohibitions to their health.

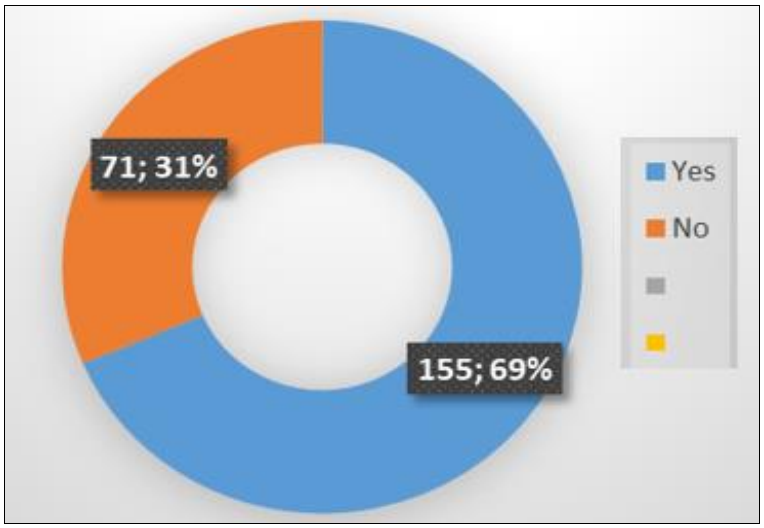

Fig 4: Distribution of pregnancy cases by the knowledge of consequences of dietary prohibitions

Table 5 summarizes the various dietary restrictions; gives the reasons for these dietary prohibitions by tribe.

Table 5: Distribution of tribes of pregnant women by the prohibitions food

Tribes	Effective	%	Prohibitions food	Reasons
Topoké	62	27.4	- Fish « kafeke » - Eggs - Avocado fruit - Buffalo meat	- Bronchitis to the newborn - the newborn will be bald - Glue to the head of the newborn - Haemorrhage during childbirth
Lokelé	96	42.5	- Tortoise - Fish « Mongusu » - Eggs	- the head of the fetus will be fragile to childbirth - the mother will be tired when childbirth - Newborn will be bald
Tétéla	18	8.0	- Pigs - Monkeys - Pineapple	- Newborn will be malformed - Newborn will look like him - Newborn will have sore
Nande	12	5.3	- Hen - Grasshoppers	- Agitation and convulsion during childbirth

Basoko	6	2.6	- Caterpillars - Snail - Fish « Nina »	- Peripartum haemorrhage - Child used to drool -Convulsion during childbirth
Kumu	20	8.9	- Antelope - Hen - Caterpillars	- Sleep during childbirth - Restlessness during childbirth - Soft or flabby newborn
Walengola	12	5.3	- Buffalo meat - Eggs - Fish « kafeke »	- Peripartum haemorrhage - Bald newborn -Newborn born with bronchitis
Total	226	100.0		

The data in Table 6 indicate some foods mainly prohibited by to each pregnant woman.

Table 6: Distribution of pregnancy cases by dietary restrictions

Prohibited foods	Effective	%
Drink (alcohol)	92	40.7
Meat	50	22.1
Drink (coffee)	34	15.0
Margarine	39	17.3
Cereal	11	4.9
Total	226	100.0

Figure 5 shows the distribution of pregnant women according to the practice of dietary prohibitions; 71.7% of cases believe in dietary prohibitions and the majority (28.3%) of cases do not believe in dietary prohibitions.

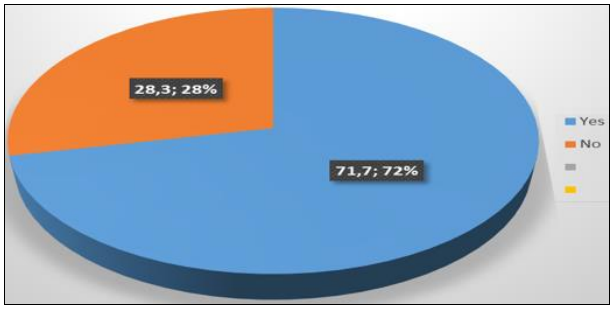

Fig 5: Distribution of pregnancy cases according to the practice of interdicts food

4. Discussion

The study of the issue of dietary prohibitions on the prognostic materno-fetus was organized among pregnant women treated at Saint Camille health center in the city of Kisangani and the following results were obtained: gives the following results:

- The analyzes of dietary prohibitions during pregnancy according to tribes have shown that "Lokelé" occupy the first place with 42.5%. Our result is lower than that obtained by Fainzang and his collaborators in a study organized in Burkina Faso which found 56.6% of women belonged to the tribe "Biasa" [17] as majority as the "Lokelé" in Kisangani. This difference can be explained by the poverty caused by wars in eastern DR Congo [18].
- The civil status of our study tells us that 72.6% of pregnant women are married. In comparison with the results of Savy M. *et al*., in a study based on Muslim women in Burkina Faso, found 47.8% of pregnant married women [19]. The difference in our results can be explained by the sociological facts of the marriage concept in Kisangani, where all pregnancy is attributed to a manager who is wrongly called a husband.
- Regarding the age of pregnant women surveyed, the age range of 20 to 25 years presents 54.0% of pregnant women. Our results contrast with those of Grandi CA who had worked in urban areas in Argentina, for him the age range most concerned was 25 to 30 years which represented 40.1% [9]. This difference can be explained by the high rate of illiteracy in Kisangani due to repeated wars, girls do not study and give themselves only to married life.
- The result of our study shows that 50.9% of pregnant women had a primary level of education. This result is inferior to that found in the Kanen and Beg region of Chad in the study by Wyss, K. and Nandjingar M. who found respectively 84.4% and 91.0% in the surveyed maternities [20]. This rate could have an influence on the practices of food hygiene, culinary preparations, practices of diversification and balanced nutrition as well as hygiene in general [21].
- The proportion of multiparas in our study is 49.1%, this result is similar to that found in a cross-sectional study conducted in Buenos Aires, Argentina by Grandi CA., of which the multiparas accounted for 48.0% [9]. This similarity is explained by the fact that in two study environments the living conditions are similar.
- In our survey, this study shows that BMI, the majority, is between 18.5 to 24.9. This result is similar to that of Pagezy who found in her study of pregnant women in Rwanda who had a BMI of 19 to 25 [22]. This is because women start their pregnancies with low BMI, but with the increase in pregnancy-related weight, BMI becomes normal.
- Regarding the weights of newborns in our study, the majority of them, or 42.9%, have a weight that varies between 3000 and 3500 gr Victoria *et al*. found the results opposite to ours, their result gave a prevalence of low birth weight (NPP) at 15.8%; neonates of PPN weighed on average 738 gr less than those of normal (PN) and measured 2.3 cm less [23]. This difference is explained by the fact that we work in poor environments.
- In terms of knowledge of the consequences of dietary prohibitions, 31.4% of pregnant women do not have knowledge of the consequences of the prohibition of alcoholic beverages. Contrary to Grandi CA's study, the frequency of smoking is marginal in our context and the preponderance of the Muslim religion explains that only

10% of women surveyed said they had used alcohol during pregnancy [9].

- The practice of food bans among our respondents was 71.7% of pregnant women. Our result is close to that found in the analyzes of Orliagu *et al*. which was 68.2% of respondents who practiced food bans during pregnancy [21, 24]. The high percentage 71.7% of our study can be explained by the poverty in which households live in the city of Kisangani.
- The results of our study show that 68.6% of pregnant women had knowledge about the consequences of dietary restrictions during pregnancy. The same results were obtained in the study of Yoro Ble M. on the study of diseases derived from food in Cote d'Ivoire, this study indicates that only 71% of women interviewed had an idea about the consequences of food bans during pregnancy [25].

5. Conclusion

A cross-sectional descriptive study was conducted in Kisangani City, at Kabondo commune, Saint-Camille health center, from January 1st to June 1st, 2019. This study analyzes the problematic of dietary prohibitions on the maternal-fetal prognosis with the data sheets. women who attended antenatal care at this health center. To collect our data, we had recourse to the documentary technique of the individual files and the register of the maternity of women who had respectively followed the prenatal consultation and delivered to the Saint Camille health center. The results of our investigation show that the Lokelé tribe has more food prohibitions (42.5%) to women during their pregnancy period. With regard to food prohibitions, the practice of food bans was applied to 71.7% of our respondents; 68.8% of our respondents had knowledge about the consequences of dietary restrictions on pregnant women and 40.7% of our respondents say to practice the prohibition to consume alcoholic beverages during pregnancy.

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