SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 4.
Issue: 4.
Page N. 13-22
Year: 2020

Original Article www.wjahr.com

SANITARY ANTECEDENTS AND NUTRITIONAL STATUS OF PREGNANT WOMEN ATTENDING ON CHU OF COCODY-ABIDJAN (COTE D'IVOIRE)

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Received date: 07 May 2020 **Revised date:** 28 May 2020 **Accepted date:** 18 June 2020

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ABSTRACT

This survey was conducted to evaluate the sanitary antecedents, and to determine the nutritional status of pregnant women. The target population consisted of 504 pregnant women, aged 15 to 44, who were admitted to the Gynecology and Obstetrics Department of the University Hospital Center in Cocody-Abidjan (Côte d'Ivoire). The results show that one-third of these pregnant women have previously undergone surgery, and that 35.52 % have pathological antecedents. In this study population, 41.27 % are nulliparous, 20.04 % are primigest and 0.99 % of these women are mothers of 2 children under 5 years of age. 60.52 % of respondents never voluntarily interrupted a pregnancy, against 39.48 % who have already had an abortion, at least once in their life. Of those surveyed, 24.8 % had at least one miscarriage, and 20.44 % had cesarean deliveries. With regard to the term of pregnancy, 2.98 % of these women have already given birth prematurely. The inter-reproductive interval concerns 58.73 % of women. The number of prenatal consultations (PNC) was reported each trimester of pregnancy. Thus, the highest rate is for women who received 2 PNC in the first trimester (56.55 %), 3 PNC in the 2nd trimester (46.64 %) and 4 PNC in the 3rd trimester of pregnancy (43.65 %). Anthropometric measurements show that in early pregnancy, 38.89 % of these pregnant women are overweight, 49.21 % are in satisfactory weight and 11.9 % are undernourished.

KEYWORDS: Pregnant women, sanitary antecedents, nutritional status, obstetric gynecology, Ivory Coast.

INTRODUCTION

The health and nutritional status of a woman are largely dependent on her ability to cope with difficulty during pregnancy or childbirth (Henz and Anthony, 2004). Indeed, the mother's state of health remains a worrying situation in the world. The United Nations Millennium Development Goals aim to improve the health status of the mother-child couple by reducing the maternal and infant mortality rate (DIUN, 2003). Maternal malnutrition is known to be one of the risk factors that promote maternal mortality and adversely underpin the outcome of pregnancy. Insufficient food intake during pregnancy is considered to be an important factor in maternal malnutrition in developing countries (Abubakari and Jahn, 2016), since these countries are the most affected by this type of maternal malnutrition. Whatever the origin of malnutrition, the consequences remain serious for the woman and the child she bears. An undernourished mother is more likely to cause postpartum hemorrhage (Ravaoarisoa, 2010) or to deliver a baby with low birth weight, which greatly increases the risk of death (Kavosi *et al.*, 2014; Kinyoki *et al.*, 2015). However, an analysis by Kramer (2000) highlights a relationship between intrauterine growth retardation, nutritional status before pregnancy and weight gain during pregnancy (Stein *et al.*, 1975). Adequate weight gain is therefore an essential element of fetal growth and the outcome of pregnancy (Abrams *et al.*, 2000). Excessive weight gain is associated, due to fetal macrosomia, with an increased risk of obstetric complications and perinatal mortality. Conversely, insufficient weight gain is linked to an increased risk of stunting, morbidity and perinatal mortality and could be accompanied by an increased cardiovascular risk in adulthood (Levy, 2002). The adequate nutritional status of women, especially during pregnancy, is therefore crucial for the survival of the mother and child (Saaka *et al.*, 2017). The aim of this work is to assess the medical history and the nutritional status of pregnant women attending the Cocody-Abidjan University Hospital (Côte d'Ivoire).

MATERIAL AND METHODS

1- Study area and subjects

Abidjan, located in the south-east of Côte d'Ivoire, with an area of 422 km², is the Ivorian economic capital. In 2014, the population of Abidjan was estimated at 4 707 404 inhabitants (RGPH, 2014), or more than 20 % of the Ivorian population. It has 10 municipalities in North Abidjan and South Abidjan located respectively north and south of the Ebrié lagoon, and 4 sub-prefectures. The municipality of Cocody, known for its residential neighborhoods and large institutions, with 447 055 inhabitants (RGPH, 2014), is home to a University Hospital Center (CHU). Indeed, the CHU of Cocody includes 13 services including the gynecology-obstetrics department where a survey was conducted in the period from August 26, 2015 to February 23, 2017. The target population consisted of 504 pregnant women (all nationalities combined), aged between 15 and 44, who came for consultation within this department. Excluded were all non-pregnant women.

2- Material

A metal wall measuring device of SECA type, suitable exclusively for adults, is used to measure the height of pregnant women. It allows a reading of the size up to 2 m height. The weight gain was achieved using a mechanical weigh scale brand SECA, range 150 kg. The respondents were weighed at each antenatal consultation.

3- Methods

A survey sheet is designed to collect information on sanitary antecedents, which provides information on medical antecedents and gynecological obstetrics. The medical antecedents consists of the number of surgical procedures and pathologies. Gynecologic obstetric antecedents includes parity, gestational status, number of children under 5 years of age, number of abortions, miscarriages, premature deliveries, caesareans, prenatal visits and inter-reproductive interval. Morpho-physiological status is determined to assess the nutritional status of the respondents. It is based on anthropometric measurements. Anthropometric assessment of nutritional status during pregnancy is a widely used method, which requires little technical means and is likely to provide a lot of useful information, but which has rarely been the subject of a rigorous evaluation. Anthropometric measures taken during pregnancy will indicate both the nutritional status of the woman and, indirectly, the growth of the fetus and later the quantity and quality of breast milk (WHO, 1995). Measurements taken in early pregnancy should be used to assess the nutritional status of the woman and to predict how well she can cope with the physiological needs of the pregnancy. Quetelet index or body mass index (BMI = weight (kg) / height² (m²)) and mean gestational weight gains (weight at the end of pregnancy - weight at the beginning of pregnancy) were calculated.

4- Data analysis

Sphinx version 5. and IBM SPSS statistics 20.0 were used for data entry and processing. The graphs were made using "Excel 2013".

RESULTS

1- Sanitary antecedents

The survey found that 33.33 % of pregnant women have had surgery at least once, compared with 66.67 % who have never been exposed (Figure 1). 35.52 % of respondents have a pathological antecedents, against 64.48 % who are apparently in good health. These pathologies are anemia, asthma, diabetes, hemoglobinopathies, hepatitis, arterial hypertension, heart disease, ulcer and others (Figure 2).

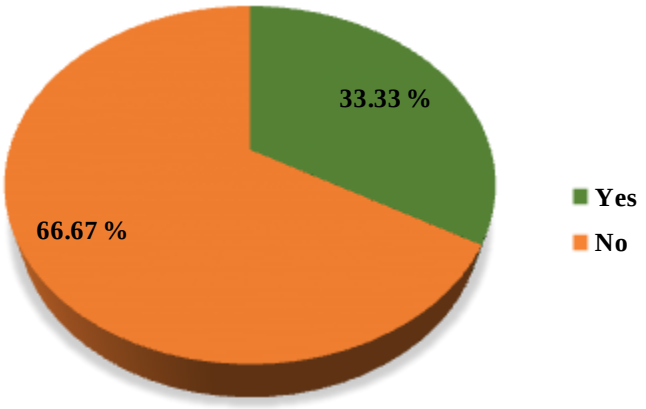

Figure 1: Distribution of pregnant women according to surgical interventions.

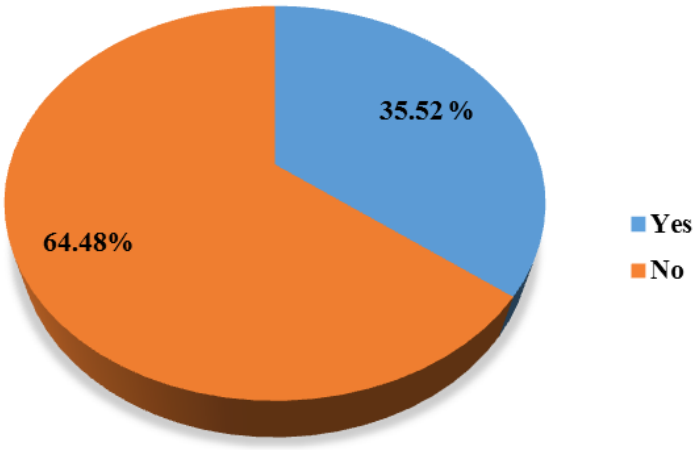

Figure 2: Distribution of pregnant women according to pathological antecedents.

Parity is defined as the number of live children born, fetal deaths or stillbirths are excluded. This target population comprises 41.27 % of nulliparous women. Among 58.73 % of women who gave birth at least once, 22.02 % are primiparous; the largest multiparas represent 1.79 %, with 5 deliveries (Figure 3).

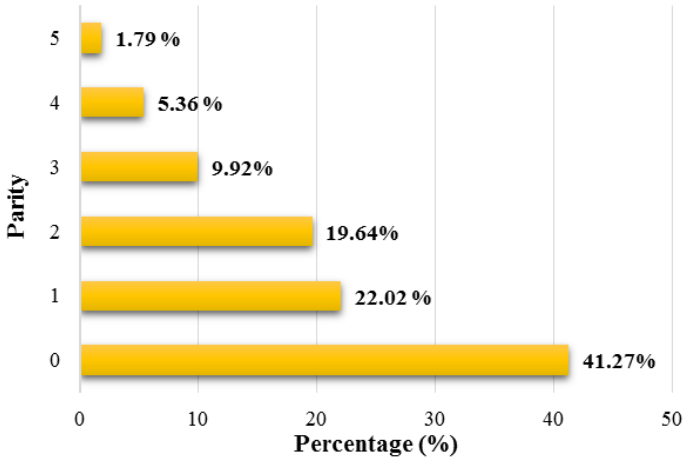

Figure 3: Distribution of pregnant women by parity

Primigest women or women who are in their first pregnancy, have a rate of 20.04 %, the largest multigeste represents a rate of 0.2 %; contracted 13 pregnancies (Figure 4).

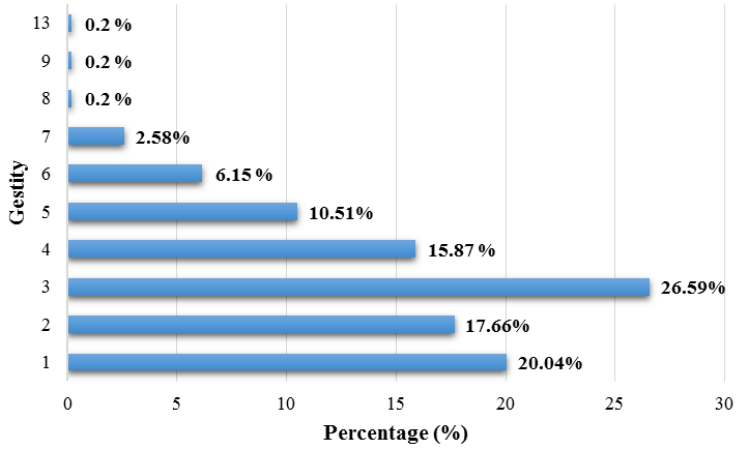

Figure 4: Distribution of pregnant women by gestational.

With regard to the number of children under 5, 0.99 % pregnant women have 2. Those with a child under 5 represent 32.74 % and finally 66.27 % have no child of this age group (Figure 5).

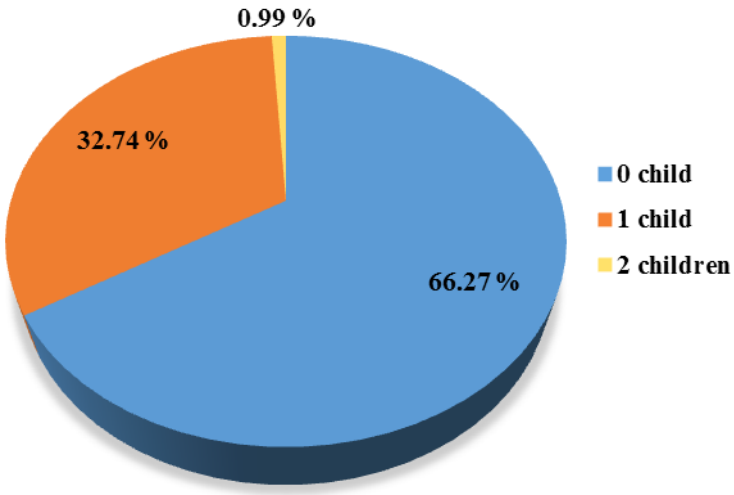

Figure 5: Number of children under 5 years old per woman.

Women who performed at least once a voluntary abortion (abortion) accounted for 39.48 %, against 60.52 % who never interrupted a pregnancy. According to the survey, one woman in this study (0.2 %) performed 7 abortions (Figure 6).

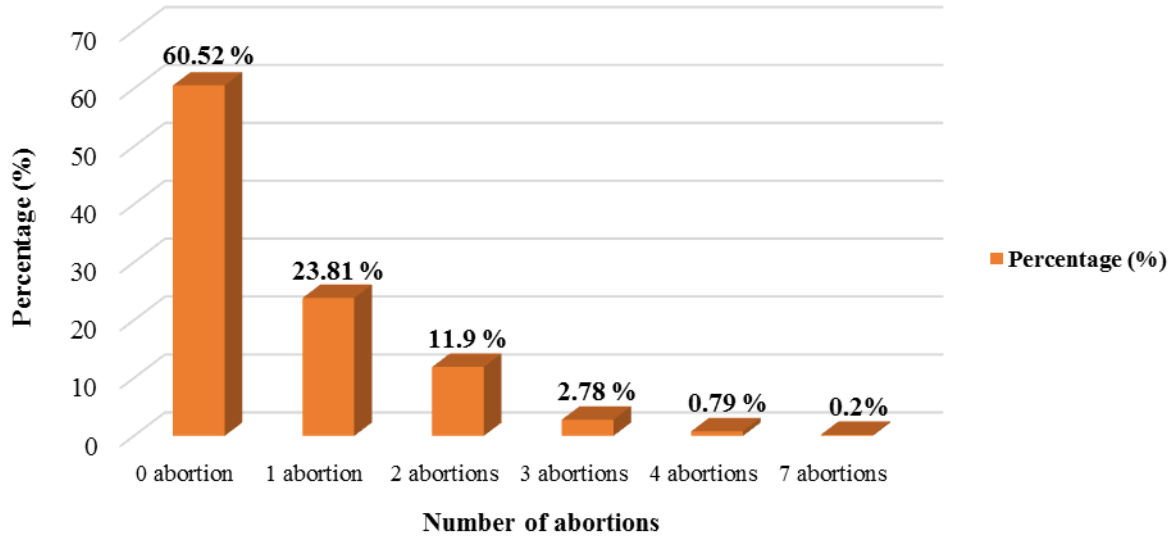

Figure 6: Distribution of pregnant women by number of abortions.

While 3/4 of the respondents (75.2 %) never had a miscarriage, 19.84 % had done it once. The proportions 3.37 %, 1.39 % and 0.2 % respectively represent women who were victims of 2, 3 and 7 miscarriages (Figure 7).

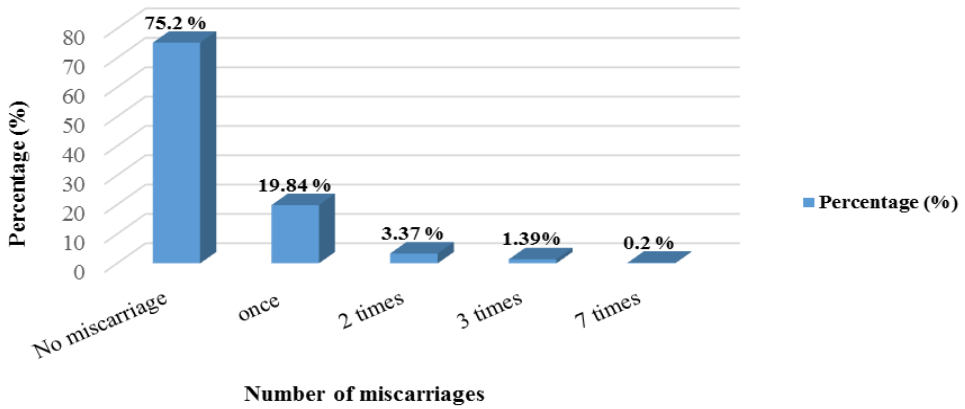

Figure 7: Distribution of pregnant women according to the number of miscarriages.

The survey found that 2.98 % of pregnant women have already had a premature baby, and 98.02 % have completed term pregnancies (Figure 8). With regard to the number of caesareans, the rate is 20.44 %, distributed as follows: 11.31 % for women who have had a caesarized once, 8.73 % for those who have had caesarized twice and 0.4% for the respondents who were césarisés 3 times. The other 79.56 % never had a caesarean section (Figure 9).

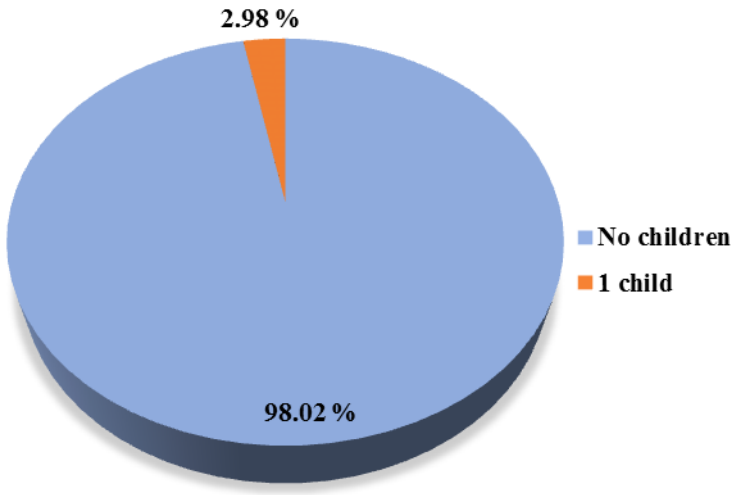

Figure 8: Number of premature children per woman.

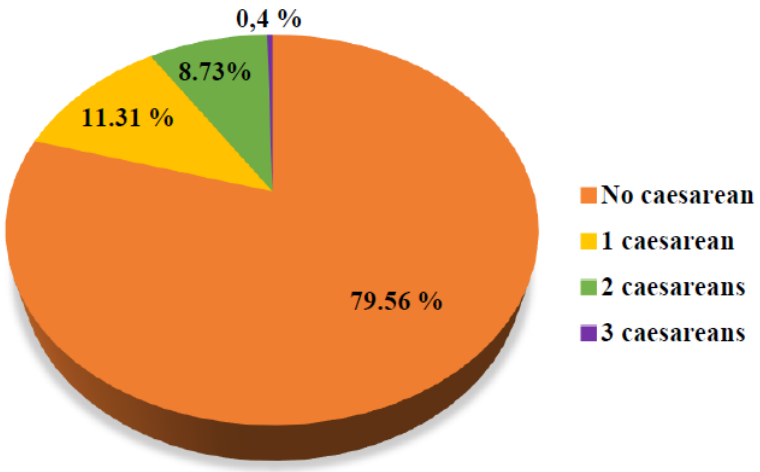

Figure 9: Distribution of pregnant women by number of Caesareans.

The inter-reproductive interval or the number of months separating 2 successive births gave a rate of 13.09 % for the interval between 13 and 24 months, 20.24 % for the interval 25 to 59 months, and 25.4 % for women whose last two births are spaced 59 months or more apart. The respondents in whom it has not been defined interval of birth, are those who are in their first pregnancy; they represent 41.27 % (Figure 10).

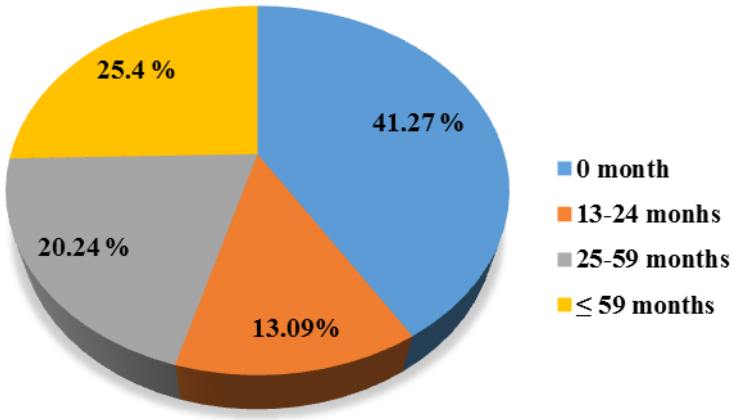

Figure 10: Distribution of pregnant women by inter-reproductive interval.

Good pregnancy follow-up is determined by the number of antenatal visits (ANC) in each trimester of pregnancy. Thus, in the first quarter, more than half (56.55 %) of respondents completed 2 ANC. In the second trimester of pregnancy, those who came to 3 ANC are in the majority (44.64 %). Finally, in the last quarter, the highest proportion is for women who performed 4 ANC, with 43.65 % (Figure 11).

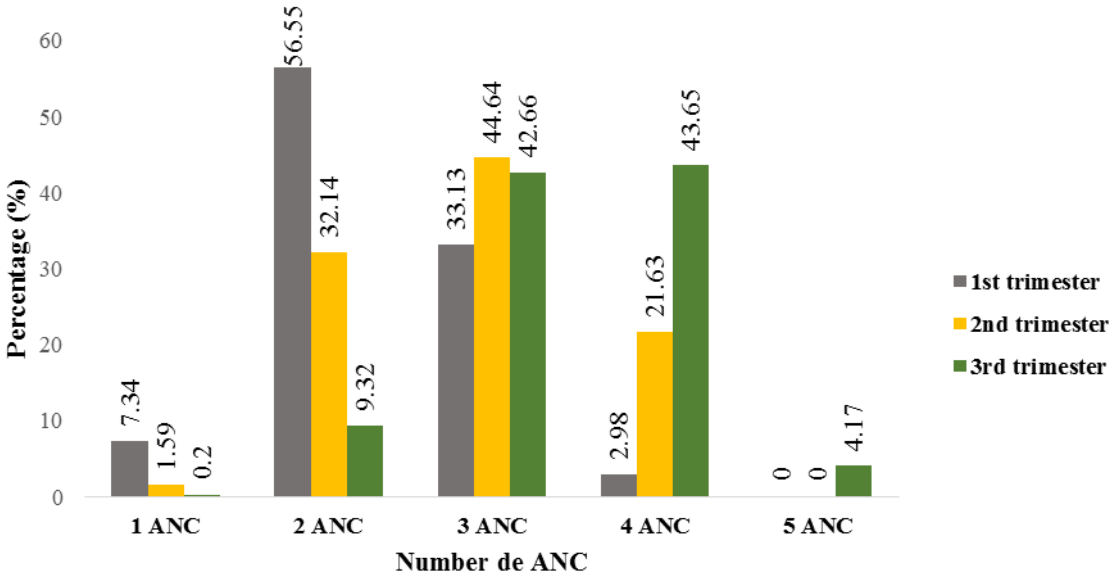

Figure 11: Distribution of women by number of ANC in each trimester of pregnancy.

2- Nutritional status of the respondents

Morpho-physiological status is determined to assess the nutritional status of the respondents. From 63.34 kg in early pregnancy, the average weight of pregnant women increases to 70.14 kg at the end of pregnancy. With a minimum of 1.27 m and a maximum of 1.79 m, the average size of respondents is 1.64 m ± 0.04. The mean BMI ranges from 23.43 ± 3.46 in early pregnancy to 25.96 ± 3.50 in late pregnancy (Table 1).

Table 1: Anthropometric Characteristics of Women.

Criteria	Average ± ET	Médian	Minimum	Maximum
Weight in early pregnancy (kg)	63.34 ± 10.44	63	40	107
Weight in end of pregnancy (kg)	70.14 ± 10.63	69	45	121
Height (m)	1.64 ± 0.04	1.64	1.27	1.79
BMI in early pregnancy	23.43 ± 3.46	23.42	14.36	38.46
BMI in end of pregnancy	25.96 ± 3.50	25.99	16.07	42.87

The body mass index (BMI) was determined at the very beginning of pregnancy. Thus, the results gave 49.21% of pregnant women whose BMI is normal, 11.9% of undernourished women, 33.14% of overweight women and 5.75% of women with obesity (Figure 12).

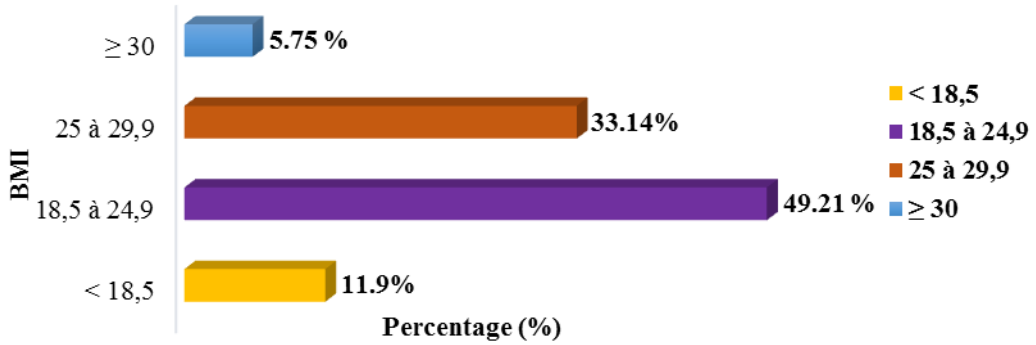

Figure 12: Distribution of women according to calculated BMI in early pregnancy.

Weight gain in pregnant women was defined on the basis of recommended weight gain during the gestation period by the Institute of Medicine (IOM). For this purpose, in the cohort of 504 pregnant women, 8.73 % of the women in a state of leanness had a weight gain lower than the normal one, against 3.17 % whose weight gain was in conformity with the gain of weight recommended. For women with normal weight status, 25.6 % had normal weight gain, compared to 23.61 % who had a lower weight gain than normal. Of the 33.14 % of overweight women, 22.82 % were able to meet the recommended weight gain. 9.13 % and 1.19 % respectively had a lower and higher weight gain than normal. Finally, out of 5.75 % of the respondents who were at the obesity stage, 4.9 % had normal weight gain, 0.2 % had a lower weight gain and 0.59 % took more than that recommended at the end of pregnancy (Figure 13).

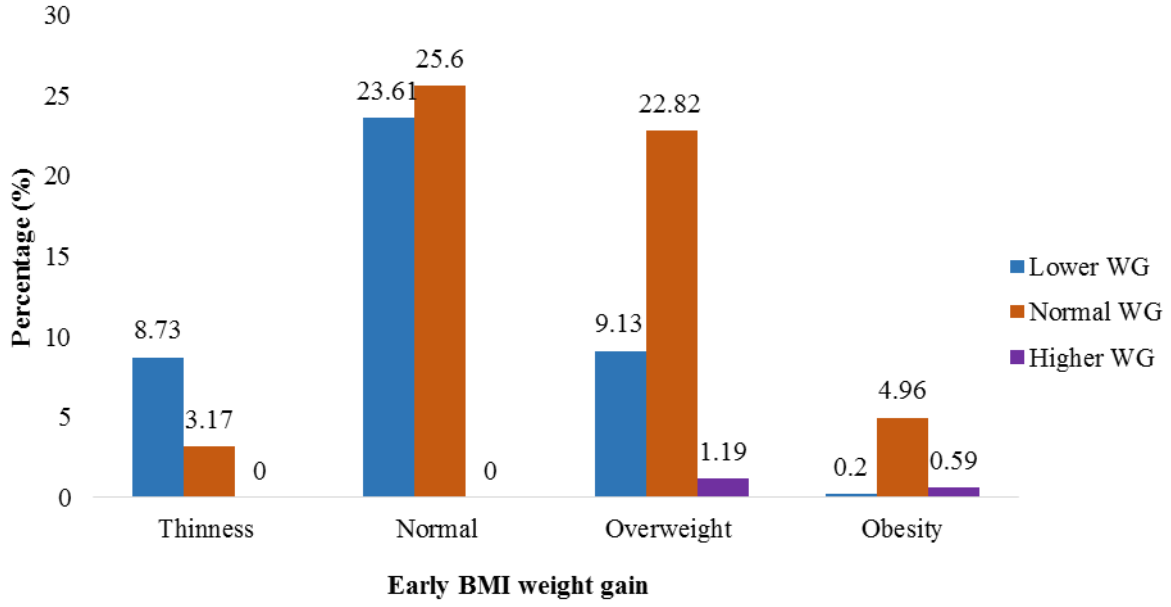

Figure 13: Weight gain obtained by respondents during pregnancy.

DISCUSSION

The results of the survey show that surgical procedures were performed in 33.33 % of women, one-third of this study population. In addition, the pathological antecedents were recorded in 35.52 % of women, against 64.48 % who had no pathology. These figures are higher than those obtained in Algeria, specifically in El Khroub with 14% of pregnant women with pathological antecedents (Touati-Mecheri, 2011). Nulliparous mothers represent more than 41.27 % of the population, compared to 58.73 % who have one to five living children. This proportion is practically the same as that found by Triaa Benhammadi, in her doctoral thesis work in medicine, in which, 40 % of the women surveyed at Max Fourestier's maternity hospital in Nanterre (France), had no children, against 60 % who had between one and five children (Triaa Benhammadi, 2009). 20.04 % of these pregnant women were at their very first pregnancy, 44.25 % were in the second or third pregnancy. Those with four or more pregnancies are estimated at 35.71 %. Studies conducted in Algeria in 2011 gave fewer primigest (16.8 %), and more women with more than 3 pregnancies (38.6 %). On the other hand, the proportion of women who have contracted 2 or 3 pregnancies is practically the same, 44.6 % (Touati-Mecheri, 2011).

By comparing the gestationality and parity of this target population, the observation is that these women are large multigestes to the extent that there are those who contract up to 13 pregnancies. However, they do not have enough children. This could be explained by the fact that women in Ivory Coast do a lot of abortions or miscarriages. Pregnancy is a process that normally results in the birth of a live child. However, it happens that some pregnant women, for personal reasons, decide to terminate the pregnancy. Others, on the other hand, face complications that can lead to miscarriages. For example, women who voluntarily interrupt a pregnancy, at least once in their lifetime, represent a rate of nearly 40 %; in contrast to studies conducted by Melku *et al.* (2014) in north-western Ethiopia and the Souissi university maternity hospital in Rabat, Morocco (Izrar, 2016), where abortion rates are estimated at 23.7 % and 10 %, respectively. About 3 % of these mothers have already had a premature baby and 20.44 % have delivered by caesarean section. These results differ from those obtained in 2015 by Benhafid, in Constantine with 1 % premature birth and 23 % of women having delivered by caesarean section. Cesarean delivery is praticed to resolve complications of childbirth and reduce maternal and fetal mortality rates (Betran *et al.*, 2015). However, this practice has several consequences. Indeed, women who undergo a cesarean section very often have complications, such as infections and pain, repeated hospital admissions, late reconciliation between mother and child, difficulties in breastfeeding and complications during future pregnancies, such as high probability of cesarean section (Azam *et al.*, 2014; Visser, 2014). In addition to maternal complications, there are also significant neonatal consequences, including increased hospital admission rates, respiratory failure, neurological problems, and neonatal mortality (Essex *et al.*, 2013). The present study showed that the intergénésie concerns 58,73 % of the women, more than the others 41,27 % are nulliparous. This rate is lower than that published by Touati-Mecheri in 2011 (83.2 %). Regarding the number of ANC, it was noted that most women received 2 ANC in the 1st trimester of pregnancy, 3 ANC in the 2nd trimester and 4 ANC in the 3rd trimester. Antenatal consultations (ANC) constitute a set of specialized care organized for pregnant women with the aim of staying healthy and promoting a healthy birth of the newborn (Oloko *et al.*, 2016).

With an average size of 1.64 ± 0.04 m, the average weight of the study population increases from 63.34 kg in early pregnancy to 70.14 kg in late pregnancy; an average increase of 6.8 kg. The same goes for BMI, which goes from 23.43 to 25.96. Compared to the results of the work of Toul in 2012 in Tlemcen (Algeria), the average size is the same, however the average weight is much higher ranging from 69.7 kg to 75.17 kg; as well as BMI at the beginning and end of pregnancy (Toul, 2012). BMI is the best known way to determine the nutritional status of a population. For this purpose the study showed that in early pregnancy, 11.9 % of women had an insufficient weight status, 33.14 % were overweight and obesity was observed in 5.75 % of these women. Women who have a satisfactory or normal weight status represent 49.21 %. The studies conducted by Soncin in 2012, in Nancy (France), gave the following figures: 11 % of skinny or malnourished women, 18 % overweight, 13 % of obese women and 58 % who have a normal weight status. Regarding weight gain during pregnancy, 3.17 % of undernourished women had normal weight gain. For those who are overweight and obese, the recommended weight gain was 22.82 % and 4.96 %. An overweight or obese pregnant woman, even in a situation of constitutional wasting, can be a source of neonatal pregnancy complications (Pellaë, 2001). The French National Nutrition and Health Plan (PNNS, 2007) describes these situations as major public health issues. For this purpose, it has been shown that weight gain exceeding the recommendations of IOM or excessive gestational weight gain is associated with an increase in certain fetal and metabolic complications (Benchimol, 2008), and can put health mother and her baby at risk. These are gestational hypertension, pre-eclampsia, gestational diabetes, cesarean delivery (Stang and Huffman, 2016), weight retention and abdominal adiposity leading to risk of cardiovascular disease during the lifetime of women (Gaillard, 2015). Risks to the fetus include stillbirth, miscarriages, deformities, macrosomia, as well as the increased risk of premature death and transgenerational obesity (Slyvka *et al.*, 2015). Conversely, less than the recommended weight gain is associated with a higher probability of preterm delivery, low birth weight, caesarean section and maternal and neonatal mortality (Goldstein *et al.*, 2017). This demonstrates the importance for women to benefit from

nutritional counseling and optimal nutrition during the reproductive period (Apfelbaum *et al.*, 2004). A pregnant woman who does not gain enough weight could affect the health of the child. Also, a woman who takes too much extra weight could cause health problems for the baby (Lafay, 2010).

CONCLUSION

At the end of this study, it appears that at the level of medical history, more than a third of the women surveyed have already undergone surgery and have pathological antecedents such as arterial hypertension, diabetes, asthma, cardiopathies etc ... With regard to gynecological obstetric history, 44.27 % have no children, compared to 58.73 % who have at least one child. Women who are in their first pregnancy account for 20.04 % and more than 9 % of these women have contracted 6 or more pregnancies. The number of pregnant women with a child under 5 is 32.74 %. Nearly 40 % of respondents have already voluntarily interrupted at least one pregnancy, 24.8 % have unfortunately been prone to miscarriage. The frequency of premature births and caesarean deliveries represent respectively 2.98 % and 20.44 %. Intergeneration affects 58.73 % of these women and visits prenatals were extensively represented among women who made 2 visits in the 1st trimester, 3 visits in the 2nd trimester and 4 visits in the 3rd trimester. This information on the health history could influence the progress of the pregnancy. The assessment of nutritional status gave 50.79 % of malnourished pregnant women, of which 11.9 % were undernourished and 38.89 % were malnourished. In general, women do not gain enough weight during pregnancy.

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