



The Behavioural Pattern of Pregnant Mothers towards Antenatal Clinics and Its Implications on their Nutritional Knowledge in Obio-Akpor Local Government Area, Rivers State

Wachukwu-Chikodi, I. Happiness^{1*}, Amadi, Gift Amukeru¹ and Deedam, Nua Janet¹

¹*Department of Science and Technology, Rivers state University, P. M. B 5080. Nkpolu Oroworukwo, Port Harcourt, Nigeria.*

Authors' contributions

This work was carried out in collaboration among all authors. Author W-CHI, designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author AGA managed the analyses of the study. Author DNJ managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

The study examined the behavioural pattern of pregnant mothers towards antenatal clinics and its implications on their nutritional knowledge. The study adopted descriptive cross sectional study with a target population of pregnant women in the some selected villages in Obio/Akpor Local Government Area. The sample size of the study comprised 200 pregnant women attending their normal antenatal cares clinics in the sixty-six (66) primary health care centres in Obio-Akpor Local Government Area. The instrument for data collection was questionnaire. To ensure the validity of the instrument, the questionnaire was being giving to the women during their antenatal visit in the hospitals and lectures in the department of Food Sciences and Technology for scrutiny and

*Corresponding author: Email: wachukwu54@gmail.com;

suggestions, correction and amendment. The data obtained from the sampled respondents through the use of structured questionnaire were analyzed using frequency, percentage, cumulative percentage, mean and standard deviation. The result of the findings indicated that majority of the respondents strongly agreed that the most observable negative implications of pregnant mothers' behavioural pattern towards antenatal cares clinic on their nutritional knowledge is that it increases the potential health risks during and after pregnancy while lesser number of the respondents strongly believed that the negative implications could be a reduction in the intake of nutrient capable of preventing anemia in the mother and lacks knowledge on the relevance of balanced diets during pregnancy. Therefore, it was recommended that the relationship existing between pregnant mothers and personnel of antenatal clinics should be made more cordial through increased awareness especially to pregnant mothers on the roles of antenatal cares clinics in ensuring the development of fetus and ensuring good maternal health. This will reduce the nonchalant attitude existed by pregnant mothers in seeking available antenatal care.

Keywords: Behavioural pattern; pregnant mothers; antenatal clinics and nutritional knowledge.

1. INTRODUCTION

The behavioral pattern of some women during pregnancy is thought by so many people to be a time of happiness and excitement but the reality for most women is that pregnancy is a mixture of ups, downs and other extreme emotions. Some women appear to breeze through pregnancy with no problems at all [1]. They love being pregnant and do not appear to have problems adjusting at all. For others, it is a more turbulent journey. Pregnancy and childbirth are a time of significant change, and it is completely normal to feel anxious or worried or more vulnerable than normal.

Abman (2011) opined that during pregnancy, and in the postnatal period, there are significant changes in a woman's hormone levels. This can have an effect on how they may feel or behave. Women are often more emotionally up and down during pregnancy and less able to cope with normal stresses than usual. When pregnant, women may become upset and anxious more easily. This is probably due to both the hormonal and emotional changes that you are experiencing. Being pregnant can affect your lifestyle (for example, you may have stopped drinking alcohol) and the activities or hobbies you do. This in turn can affect your emotions and behaviours.

Similarly, proper nutrition with additional nutrients are required during pregnancy for the development of the fetus, good maternal health enhances the effective breastfeeding after delivery. Adequate maternal weight status arising from good dietary pattern influences the health of both the mother and her child throughout the entire reproductive cycle, spanning from the time

of conception and post delivery period of lactation. Adequate and quality maternal nutrition is important for the health and reproductive performance of women as well as the health, survival, and development of children [2]. Particularly, the first 1000 days of life, from conception to age two, is often considered as "the window of opportunity to prevent chronic malnutrition, childhood obesity and medical complications arising later in life" [3] (Pen, 2015). Improvements in maternal and child nutrition can reduce multiple risks of Adverse Pregnancy Outcomes (APO) such as: fetal growth restriction, low birth weight babies and small-for-gestational age births.

According to Islam, [4] and Imdad, [5], stated that nutrition during pregnancy also helps to prevent micronutrient deficiencies. As the high nutritional cost in pregnancy and lactation, it contributes significantly to poor nutritional status, healthy nutrition intake during pregnancy is critical for pregnant women [6]. Nutritional knowledge and attitude are important factors of dietary practices, it is the potential targets for appropriate planning of nutrition interventions for vulnerable population groups like those lactating and women that are pregnant [7,8]. Nutrition education enhances nutritional knowledge, thereby influencing attitude and practices towards good nutrition [9,10]. Mother's knowledge of nutrition is a very important nexus in good pregnancy outcomes and a crucial skill in improving children's nutritional status [8].

The National Demographic Health Survey in Nigeria estimated that about 26% of women of childbearing age were malnourished largely due to poor dietary habits and more than 50% of child bearing age women in their pre pregnancy state,

have less than optimal nutritional status (NDHS, 2008). In view of these facts, the concept of poor nutrition during pregnancy resulting in childhood and adult disease has been generated by the fetal origin theory of adult diseases (Godfrey, 2002). Factors such as poor quality of food, food restrictions due to superstitious beliefs, unhealthy feeding habits and inadequate knowledge of good dietary pattern have been well documented as variables associated with pregnancy outcome and weight gain during pregnancy (Campbell & Campbell, 2008). This has resulted in morbidity and mortality among pregnant women with children born either weighing below or above the expected normal weight for a healthy new-born. Most congenital cardiovascular diseases among children and adulthood originate at the embryonic developmental stages where essential nutrient required for healthy fetus development are lacking because they are not transferred through the placental of the woman to the unborn baby due to consumption of poor quality diet deficient of such basic nutrients (Gluckman, Hanson & Pinal, 2005).

However, to ensure that pregnant mothers are adequately informed on the nutritional requirements needed during their antenatal period in order to ensure healthy fetus development, there should be a cordial relationship between pregnant mothers and antenatal care clinics. According to Abu-Saad & Fraser (2010), stated that antenatal care clinics provide benefits both to the mother and the baby; assists in screening, diagnosing and managing or controlling the risk factors that might adversely affect the pregnant women and/or the pregnancy outcome. Supporting the above statement, Fouda et al., [11] asserted that the purpose of antenatal care is to screen, diagnose and manage or control the risk factors that might adversely affect the pregnant woman and/or the pregnancy outcome. Both Abu-Saad & Fraser, (2010) and Fouda, et al., [11] attest to this by saying: The quality of health care that a pregnant woman receives during ANC has an impact on the health of the woman and on the outcome of pregnancy. Keever, et al., [12] highlight four (4) major goals of antenatal care (a) promotion and maintenance of the physical and social health of the mother and the baby, (b) detection and management of complications during pregnancy, (c) development of birth preparedness and complication readiness plan and (d) preparation of the women for normal puerperium. The World Health Organization (WHO) identifies antenatal care as one of the most widely used strategies to

improve maternal and child health. It was also one of the worldwide strategies towards the achievement of millennium development goal MDGs numbers 4 and 5, which were to reduce child deaths by 75% and improve maternal health by 50% in the year 2015.

Adequate knowledge of the nutritional requirements of pregnant mothers improves the maternal weight status arising from good dietary of both the mother and her child throughout the entire reproductive cycle, spanning from the time of conception and post delivery period of lactation. Nutritional status of pregnant women is very crucial to the wellbeing of the unborn child. Poor dietary pattern among pregnant women increases the rate of maternal and infant mortality, which is still a big problem in developing countries. For the nutritional status of pregnant women to be improved during the reproductive cycle, adequate nutritional knowledge of the dietary pattern that should be carefully followed by pregnant mothers should be properly disseminated by antenatal clinics and the disseminated information should be adequately absorbed by pregnant mothers. This is because antenatal clinics furnish the requisite information that pregnant mothers need all through their reproductive cycle.

Finally, the behavioural pattern of pregnant mothers towards antenatal clinics influences the acceptance and usage of nutritional knowledge disseminated by antenatal clinics. These behavioural patterns exhibited by pregnant mothers in Obio/Akpor towards antenatal clinics vary significantly, and this variation is largely influenced by physical and mental issues that predominantly happen to women during the prenatal period which undermine the quality of life in this sensitive and critical period. The physical and mental issues overtime affect the behavioural patterns pregnant mothers display towards the nutritional knowledge made available by antenatal clinics in Obio/Akpor is highly reducing because of the economy situation of the country. Therefore, the study is poised to ascertain the implications of behavioural patterns exhibited by pregnant mothers on nutritional knowledge provided by antenatal clinics in Obio/Akpor.

1.1 Statement of the Problem

Maternal and newborn health remains a critical issue in the health agenda of developing countries around the world. In 2013, 289,000

women died from causes related to pregnancy and childbirth, 2.6 million babies died from premature childbirth during the last three months of pregnancy or during delivery, and 2.7 million babies died as newborns [13]. This could be attributed to poverty and low level of education of most pregnant mothers in Nigeria, especially in rural areas, as they cannot easily access the services offered by antenatal clinics and nutritional knowledge needed during the reproductive cycle. This no doubt has negatively affected their behavioural patterns of pregnant mothers towards nutritional knowledge provided by antenatal clinics. A greater number of pregnant mothers shy away from antenatal clinics because of the heterogeneity of rural cultures, social norms and generally accepted beliefs. Hence, they are not adequately informed of the nutritional requirements pregnant mothers must adhere to in order to ensure the successful development and safe delivery of their babies. Similarly, evidence on maternal knowledge and attitudes towards nutrition during pregnancy, and its association with their dietary diversity practices is hardly available. Existing studies [14,15] reported maternal awareness levels or association with some pregnancy outcomes but lacked explanations of how awareness levels relate to behavioural patterns and dietary diversity practices during pregnancy. Therefore, in this study, we aimed to assess the behavioural patterns of pregnant mothers towards nutritional knowledge provided by antenatal clinics.

1.2 Objectives of the Study

The study examined the behavioural pattern of pregnant mothers towards ante natal clinic and its implications on their nutritional knowledge. However, the study is guided by the below highlighted specific objectives, which are to;

Identify the Behavioural Patterns of Pregnant Mothers towards Antenatal Clinics;

Describe the Roles of Antenatal Clinics in Providing Nutritional Knowledge to Pregnant Mothers;

Identify the Negative Implications of Pregnant Mothers' Behavioural Pattern towards Antenatal Clinic on their Nutritional Knowledge.

1.3 Scope of the Study

This study was delimited to the pregnant women that attend antenatal clinic in health centres

within Obio-Akpor local government area of Rivers State. It was also delimited to the behavioural patterns of pregnant mothers towards antenatal clinics, the roles of antenatal clinics in providing nutritional knowledge to pregnant mothers and the implications of pregnant mothers' behavioural pattern towards antenatal clinic on their nutritional knowledge.

2. METHODOLOGY

Research Design: The research design for this study was descriptive cross sectional study with a target population of pregnant women in Obio-Akpor Local Government Area, Rivers State. Descriptive research involves the collecting of data from respondents to answer questions concerning the current status of the subject of the study and also involves a one-time observation of variables.

Area of the Study: The study was commenced in fifteen (15) randomly selected villages of Obio/Akpor local government area of Rivers State, Nigeria. Obio/Akpor LGA is a one-town LGA with sixty five (65) villages and Obio/Akpor has its headquarters at Rumuodomaya. There are primary health centres (PHCs)/clinics managed by the State Government through the State Hospital Management Board of the State Ministry of Health and the local governments respectively.

Population of Study: The population of the study comprised all the pregnant women attending their normal antenatal clinics in the sixty-six (66) primary health care centres in Obio-Akpor Local Government Area, Rivers State during the period of this research work. This include all the women of childbearing whose age group falls between 18 years and above, who are attending or have attended antenatal clinics prior, during and after childbirth.

Sample and Sampling Techniques: The Taro Yamane formula was used to determine the sample size for the study.

$$n = \frac{N}{1 + Ne^2}$$

Where

n = Sample size
N = Population size (400)
1 = Constant

e = Error limit or margin of error or level of significance (5%)

Therefore,
$$n = \frac{400}{1+400(0.05)^2}$$

$$n = \frac{400}{1 + 400(0.0025)}$$

$$n = \frac{400}{1 + 1}$$

$$n = \frac{400}{2}$$

n = 200

Therefore, the sample size of this study 200 respondents.

Research Instrument: The instrument for data collection was questionnaire. Enumerators who were trained for this purpose were used for field data gathering. The research instrument was structure into three sections namely A, B and C. **Section A:** Behavioural pattern of pregnant mothers towards antenatal clinics; **Section B:** Roles of antenatal clinics in providing nutritional knowledge to pregnant mothers; and **Section C:** Negative implications of pregnant mothers' behavioural pattern towards antenatal clinic on their nutritional knowledge.

Validity of the Instrument: To ensure the validity of the instrument, the questionnaire was being submitted to the project supervisor and other lectures in the department of Food Sciences and Technology for scrutiny and suggestions, correction and amendment.

Reliability of the Instrument: It was determined through the research instrument (questionnaire) was administered to 200 respondents. The reliability of the instrument was established with the use of the test-retest method. The retrieved copies were scored, coded, and inputted into the

computer for the calculation of reliability using Cronbach alpha 0.825 methods to determine the level of coefficient of the result. This was facilitated with the use of Statistical Packages for Social Science (SPSS) version 22.

Administration of the Instrument: The researcher personally administered the questionnaire to the respondents with the help of research assistant by carefully reading out the instructions to them, to ensure that the entire study area is fully covered, completed instrument will be collected immediately after completion by the respondents.

Method of Data Collection: The researcher used direct delivery method to administer the questionnaire to the respondents. The research assistant was educated by the researcher on the purpose of the study and how to administer the questionnaire. The researcher and research assistants administered the questionnaire to the respondents and collect it back immediately on completion. The reason for the use of research assistants was to facilitate the quick distribution and retrieval of the questionnaire copies from the respondents. The researcher also employed the use of an interview specifically for the illiterate women and jotted their responses.

Method of Data Analysis: The data obtained from the sampled respondents through the use of structured questionnaire were analyzed using frequency, percentage, cumulative percentage, mean and standard deviation with the aid Statistical Package for Social Sciences (SPSS).

3. RESULTS

Data Analysis: This section focused on analyzing data generated from target respondents directed towards addressing the raised questions.

Table 1. Behavioural pattern of pregnant mothers towards antenatal clinics

Statement	\bar{X}	S.D	Remark
Nonchalant attitude	4.63	0.78	Accept
Lack of consistency	4.58	0.49	Accept
Laziness to seek antenatal care	3.82	0.38	Accept
Lack of commitments	4.58	0.49	Accept
Unwillingness to open up to healthcare workers	3.87	0.98	Accept
Procrastination among pregnant mothers	4.63	0.78	Accept
Grand Mean	4.35		

Source: Researcher's Computation, 2020

Note: The basis for accepting or rejecting any of the items is based on the decision criteria which states that when the mean value (\bar{X}) of each item is ≥ 3.00 which is the average mean of the responses.

Research Question 1: What is the Behavioural Pattern of Pregnant Mothers towards Antenatal Clinics?

The result of the analysis depicted on Table 1 above showed that all the statement made as behavioural pattern of pregnant mothers towards ante-natal clinics were largely accepted by majority of the respondents. This is because all the mean values of each item is greater than the average mean criteria for acceptance or rejection of each statement provided in the questionnaire. Therefore, it can be empirically agreed that nonchalant attitude, lack of consistency, laziness to seek antenatal care, lack of commitments, unwillingness to open up to healthcare workers and procrastination among pregnant mothers are commonly exhibited behaviour of pregnant mothers towards antenatal clinics.

Research Question 2: What are the Roles of Antenatal Clinics in Providing Nutritional Knowledge to Pregnant Mothers?

Table 2 above illustrates 1 to 10 with mean values (\bar{X}) of 5.00, 4.00, 4.81, 4.42, 4.44, 4.61, 4.38, 4.19, 4.20 and 4.63 respectively were largely accepted by the sampled respondents as roles of antenatal clinics in providing nutritional knowledge to pregnant mothers. However, according to the responses provided by the respondents, it can be deduced that the most significant role of antenatal clinics in providing nutritional knowledge to pregnant mothers is providing information needed to ensure the safety of the pregnant mother and her unborn baby while the less significant role is identifying, prevent and reduce potential risks during and after pregnancy. This conclusion is made based

on the fact that item 1 has the highest mean value of 5.00 while item 2 has the least mean value of 4.00.

Research Question 3: What are the Negative Implications of Pregnant Mothers' Behavioural Pattern towards Antenatal Clinic on their Nutritional Knowledge?

Table 3 above shows that all the items numbering 1 to 10 with associated mean values of 5.00, 4.42, 4.81, 3.82, 4.45, 3.45, 4.45, 3.82, 4.37 and 4.05 respectively were identified by majority of the respondents negative implications of pregnant mothers' behavioural pattern towards antenatal clinics on their nutritional knowledge. Based on the result of the analysis conducted, it can be empirically deduced that increase in the potential health risks during and after pregnancy, reduction in the availability of advices on essential dietary habit, increase in the rate of hypertension and diabetes among mothers due to poor nutrition, reduction in the intake of nutrient capable of preventing anemia in the mother, reduction in the growth of the brain in the foetus, increases the maternal and infant mortality, and morbidity, reduction the opportunities of health education among pregnant mothers, lack of knowledge on the relevance of balanced diets during pregnancy, limited knowledge on the nutritional requirements at various phases of foetus development and increase in the chances of obesity during pregnancy and its associated health consequences are all negative implications of pregnant mothers' behavioural pattern towards antenatal clinics on their nutritional knowledge.

Table 2. Roles of antenatal clinics in providing nutritional knowledge to pregnant mothers

Statement	\bar{X}	S.D	Remark
Provide information needed to ensure the safety of the pregnant mother and her unborn baby	5.00	0.00	Accept
Identify, prevent and reduce potential risks during and after pregnancy	4.00	0.00	Accept
Provide essential dietary advices	4.81	0.39	Accept
Reduces the possibility of hypertension and diabetes during pregnancy	4.42	0.79	Accept
Ensures the intake of nutrient capable of preventing anemia in the mother	4.44	0.49	Accept
Provides nutritional knowledge that assists with the growth of the brain in the foetus	4.61	0.49	Accept
Helps mothers understand basic elements of early child care	4.38	0.49	Accept
Reduces maternal and infant mortality, and morbidity	4.19	0.72	Accept
Provides opportunities for health education of the mothers and children	4.20	0.40	Accept
Organizes and sponsors seminars and workshop programmes on diets and lifestyle pregnant women must adopt	4.63	0.78	Accept
Grand Mean	4.46		

Source: Researcher's Computation, 2020

Table 3. Negative implications of pregnant mothers' behavioural pattern towards antenatal clinics on their nutritional knowledge

Statement	\bar{X}	S.D	Remark
Increases the potential health risks during and after pregnancy	5.00	0.00	Accept
Reduces the availability of advices on essential dietary habit	4.42	0.49	Accept
Increases the rate of hypertension and diabetes among mothers due to poor nutrition	4.81	0.39	Accept
Reduces the intake of nutrient capable of preventing anemia in the mother	3.82	0.39	Accept
Reduces the growth of the brain in the foetus	4.45	1.17	Accept
Increases the maternal and infant mortality, and morbidity	3.45	1.17	Accept
Reduces the opportunities of health education among pregnant mothers	4.45	1.17	Accept
Lacks knowledge on the relevance of balanced diets during pregnancy	3.82	0.39	Accept
Limited knowledge on the nutritional requirements at various phases of foetus development	4.37	0.49	Accept
Increasing the chances of obesity during pregnancy and its associated health consequences	4.05	0.65	Accept
Grand Mean	4.26		

Source: Researcher's Computation, 2020

4. DISCUSSION OF FINDINGS

The findings of this study provides new and valuable insight into the behavioural patterns of pregnant mothers towards antenatal clinics and its implications on the nutritional knowledge. The result analyzed and presented in Table 1 showed that all the items provided were largely accepted by a greater number of the respondents as behavioural pattern of pregnant mothers towards antenatal clinics. This is because the grand mean value (4.35) is greater than the average mean value (3.00) which served as a criteria for acceptance or rejection of each item or statement made. However, majority of the respondents agreed that most pregnant women exhibit nonchalant attitude when it comes to seeking antenatal advice prior, during and after pregnancy and that they like procrastinating when it comes to seeking medical care and dietary advice from antenatal clinics, this is because the associated mean values (4.63) is the highest mean values in Table 1 while fewer number of the respondents agreed that most pregnant women are lazy when it comes to seeking antenatal care, this is because the mean value (3.82) is the least mean value in Table 1. This is in corroboration with the findings of Zahara et al., [16]; Zhang et al., [17] which state that most pregnant mothers especially in less developed nations are nonchalant when it comes to seeking antenatal advices or care. This could be attributed to high level of illiteracy among women in developing world and difficulty in accessing antenatal clinics dues to poor infrastructural facilities. Similarly, the findings of Nabarro [1] supports the assertion made that most pregnant mothers like procrastinating when

it comes to seeking medical care and dietary patterns from antenatal clinics. This procrastination is largely due to low level of income among pregnant mothers as most of them are not gainfully employed. As such they don't have the financial capacity needed to seek antenatal care prior and during pregnancy.

Table 2 focused on the roles of antenatal clinics in providing nutritional knowledge to pregnant mothers. The grand mean value of 4.46 > 3.00 which is the average mean value for acceptance or rejection of each item or statement. Hence, it can be deduced that all the stated items were largely accepted by the respondents as the various roles of antenatal clinics in providing nutritional knowledge to pregnant mothers. However, the first statement on Table 2 i.e. provide information needed to ensure the safety of the pregnant mother and her unborn baby were mostly accepted by majority of the respondents as the most significant role antenatal clinics plays in providing nutritional knowledge to pregnant mothers while the second statement i.e. identify, prevent and reduce potential risks during and after pregnancy with the mean value of 4.00 was less accepted by majority of the respondents as role of antenatal clinics in providing nutritional knowledge to pregnant mother. These findings are in line with the observations of Karoline, Jackoniah and Temmerman [18] which states that one of the most useful benefits of antenatal clinics to pregnant mothers is that they supply essential information needed by pregnant women to improve their safety and that of their babies. However, strict compliance to medical and dietary directives provided by antenatal clinics

doesn't reduce potential risks during and after pregnancy.

Table 3 provides information on the negative implications of pregnant mothers' behavioural patterns towards antenatal clinics on their nutritional knowledge. The grand mean value obtained as 4.26 is greater than 3.00 i.e. $4.26 > 3.00$ which is the average mean value for acceptance or rejection of each item or statement. This simply implies that all the identified negative implications of pregnant mothers' behavioural pattern towards antenatal clinics on their nutritional knowledge were largely accepted by the sampled respondents. However, a greater percentage of the sampled respondents strongly agreed that the negative implications of pregnant mothers' behavioural pattern towards antenatal clinics on their nutritional knowledge is, it increases the potential health risks during and after pregnancy while minority are in support of the statement made that there is a reduction in the intake of nutrient capable of preventing anemia in the mother and there is lack of knowledge on the relevance of balanced diets during pregnancy as negative implications of pregnant mothers' behavioural pattern towards antenatal clinics on their nutritional knowledge. Previous documented studies have affirmed the fact that unfavourable behavioural patterns existed by pregnant women towards antenatal clinics has negatively impacted the availability and utilization of nutritional knowledge needed for the development of the foetus [19].

Similarly, the study encountered some limitation which was as a result of some women to understand effectively but the research handled it by coming down to the level of the respondent. Also, the inability of the researcher to attend to all the respondents because of time factor.

4.1 Summary of Findings

The study examined the behavioural pattern of pregnant mothers towards ante natal clinic and its implications on their nutritional knowledge. Therefore, questionnaire were drafted and distributed to the target respondents to provide useful information to help achieved the core objective of this study. Data generated were analyzed using mean and standard deviation. The findings obtained were summarized in the paragraphs below:

A greater percentage of the respondents are of the opinion that commonly exhibited behaviour of pregnant mothers towards antenatal clinics are nonchalant attitude and unnecessary procrastination among mothers while majority of the respondents when identifying the behavioural patterns of pregnant mothers towards antenatal clinics do not fully agreed to the statement that most pregnant mothers are lazy when it comes to seeking antenatal care.

Identifying the key roles of antenatal clinics in providing nutritional knowledge to pregnant mothers, majority of the respondents were of the view that antenatal clinics help in providing valuable information needed to ensure the safety of the pregnant mother and her unborn baby, and antenatal clinics provide essential dietary advices to pregnant mothers while fewer respondents concord to the notion that favourable relationship with antenatal clinics help mothers identify, prevent and reduce potential risks during and after pregnancy.

Majority of the respondents strongly agreed that the most observable negative implications of pregnant mothers' behavioural pattern towards antenatal clinic on their nutritional knowledge is that it increases the potential health risks during and after pregnancy while lesser number of the respondents strongly believed that the negative implications could be a reduction in the intake of nutrient capable of preventing anemia in the mother and lacks knowledge on the relevance of balanced diets during pregnancy.

5. CONCLUSION

The relevance of antenatal clinics in providing essential information on the medical and nutritional requirements of pregnant mothers cannot be undermined. In developed countries where there is improved medical facilities and cordial relationship between medical personnel and pregnant mothers, there is an improvements in maternal and child nutrition thereby reducing multiple risks of Adverse Pregnancy Outcomes (APO) such as: fetal growth restriction, low birth weight babies and small-for-gestational age births. Conclusively, the findings elongate on the established benefits arising from antenatal clinics on nutritional knowledge of pregnant mothers to include; provision of information needed to ensure the safety of the pregnant mother and her unborn baby, provision of essential dietary and medical advices to pregnant mothers, organizes and sponsors seminars and workshop

programmes on diets and lifestyle pregnant women must adopt, and provision of nutritional knowledge that assists with the growth of the brain in the foetus.

6. RECOMMENDATIONS

Based on the findings obtained, the study recommends that:

- i. The relationship existing between pregnant mothers and personnel of antenatal clinics should be made more cordial through increased awareness especially to pregnant mothers on the roles of antenatal clinics in ensuring the development of foetus and ensuring good maternal health. This will reduce the nonchalant attitude existed by pregnant mothers in seeking available antenatal care.
- ii. Increasing cost of medical bill especially in less developed areas where government don't subsidize medical bills has always been a hindrance to seeking antenatal care by pregnant mothers. Hence, government should ensure that antenatal care services are well subsidized and made affordable, especially at the grass root.
- iii. Government should grant a policy on women empowerment to enable them take decision of their health problem especially in pregnancy.
- iv. Public health campaign on the importance of healthy pregnancy, problems in pregnancy and where to get care.
- v. Nutritional education ought to be intensified to empower antenatal mothers to understand the importance of nutrition in pregnancy, a vital determinant for optimal maternal and infant health outcomes.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Nabarro D. Global child and maternal nutrition - the SUN rises. *Lancet*. 2013;382:666–7.
2. Bloomfield FH, Spiroski AM, Harding JE. Fetal growth factors and fetal nutrition. *Semin Fetal Neonatal Med*. 2013;18:118–23.
3. Mameli C, Mazzantini S, Zuccotti GV. Nutrition in the first 1000 days: The origin of childhood obesity. *International Journal of Environmental Resources Public Health*. 2016;13:9.
4. Islam KA. Effects of pre- and postnatal nutrition interventions on child growth and body composition: the MINIMat trial in rural Bangladesh. *Global Health Action*. 2013;6:22476. Available: <https://doi.org/10.3402/gha.v6i0.22476>
5. Imdad AZ. Effect of balanced protein energy supplementation during pregnancy on birth outcomes. *BMC Public Health*. 2011;11(3):S17.
6. McGowan C, McAuliffe FM. Maternal nutrient intakes and levels of energy underreporting during early pregnancy. *European Journal of Clinical Nutrition*. 2012;66(8):906–13.
7. Perumal N, Cole DC, Ouédraogo HZ, Sindi K, Loechl C, Low J. Health and nutrition knowledge, attitudes and practices of pregnant women attending and not-attending ANC clinics in Western Kenya: a cross-sectional analysis. *BMC Pregnancy Childbirth*. 2013;1–12.
8. Popa AD, Niță O, Graur AL, Popescu RM, Botnariu GE, Mihalache L. Nutritional knowledge as a determinant of vitamin and mineral supplementation during pregnancy. *BMC Public Health*. 2013;13:1105.
9. Shariff ZM, Bukhari SS, Othman N, Hashim N, Ismail M, Kasim SM. Nutrition education intervention improves nutrition knowledge, attitude and practices of primary school children: a pilot study. *Health Education*. 2008;103:119–32.
10. Girard AW, Olude O. Nutrition education and counselling provided during pregnancy: Effects on Maternal, Neonatal and Child Health Outcomes. *Paediatr Perinat Epidemiol*. 2012;26:191–204.
11. Fouda LM, Ahmed MH, Shehab NS. Nutritional awareness of women during pregnancy. *Journal of American Science*. 2012;8 7:494-502.
12. Keever RT, Martins SD, Lola N, Dathini H, Habu H, Fatima AA, Sambo BD. Knowledge and attitude of pregnant women towards dietary practices in Yerwa Clinic, Maiduguri Metropolitan Council; Borno State. *Journal of Research in Nursing and Midwifery*. 2015;4(1): 12-19.

13. United Nations (UN). The global strategy for women's, children's, and adolescents' health (2016–2030): Survive, Thrive, Transform. Series Every Woman, Every Child. UNO, New York, United States; 2015.
14. Erkkola M, Virtanen SM. Folate, vitamin D and iron: Low among pregnant finnish women. *Eur J Clin Nutr.* 2008;52:742–748.
15. Hasunen K, Kalavainen M, Talvia S. The child, family and food - nutrition recommendations for infants and young children as well as pregnant and breastfeeding mothers (in finnish). 2014).
16. Zahara AM, Nuruljannah J, Lee YM, Ng SY, Chua KY, Loke WT. Nutritional status and nutritional knowledge of Malay pregnant women in selected private hospitals in Klang Valley. *International Electronic Journal of Health Education.* 2014;11:119-132.
17. Zhang F, Cai QX, Yi C. Investigation of pregnant women's nutritional knowledge in nationality rural area of Hainan and analysis of its influence factors *Modern Preventive Medicine.* 2009;10, 37.
18. Karoline K Jackoniah G, Termmerman F. Health seeking behaviour among pregnant women in Utah- Nairobi Kenya; 2016. Available:<http://www.sexuallytransmitteddiseases.com/articles-on-health-seeking-behavior-issue248970771.html>
19. Becker W, Alexander J, Andersen S, Aro A, Thorsdottir I. Nordic nutrition recommendations. *Ugeskr Laeger.* 2016;168:76–77.

APPENDIX

Questionnaire

The Behavioural Pattern of Pregnant Mothers towards Ante Natal Clinics and its Implications on their Nutritional Knowledge in Obio-Akpor Local Government Area, Rivers State.

Instruction: Please indicate the degree to which you Agree or Disagree with the following statement by ticking [✓] in the response column for such item that is applicable to you.

The response categories and their corresponding values are as follows: Strongly Agree (SA) = 5; Agree (A) = 4; Undecided (U) 3; Disagree (D) = 2; Strongly Disagree (SD) = 1

Section A. Behavioural pattern of pregnant mothers towards antenatal clinics

S/N	Items	SA	A	U	D	SD
1	Nonchalant attitude					
2	Lack of consistency					
3	Laziness to seek antenatal care					
4	Lack of commitments					
5	Unwillingness to open up to healthcare workers					
6	Procrastination among pregnant mothers					

Section B. Roles of antenatal clinics in providing nutritional knowledge to pregnant mothers

S/N	Items	SA	A	U	D	SD
1	Provide information needed to ensure the safety of the pregnant mother and her unborn baby					
2	Identify, prevent and reduce potential risks during and after pregnancy					
3	Provide essential dietary advices					
*4	Reduces the possibility of hypertension and diabetes during pregnancy					
5	Ensures the intake of nutrient capable of preventing anaemia in the mother					
6	Provides nutritional knowledge that assists with the growth of the brain in the foetus					
7	Helps mothers understand basic elements of early child care					
8	Reduces maternal and infant mortality, and morbidity					
9	Provides opportunities for health education of the mothers and children					
10	Organizes and sponsors seminars and workshop programmes on diets and lifestyle pregnant women must adopt					

Section C. Negative implications of pregnant mothers' behavioural pattern towards antenatal clinics on their nutritional knowledge

S/N	Items	SA	A	U	D	SD
1	Increases the potential health risks during and after pregnancy					
2	Reduces the availability of advices on essential dietary habit					
3	Increases the rate of hypertension and diabetes among mothers due to poor nutrition					
4	Reduces the intake of nutrient capable of preventing anaemia in the mother					
5	Reduces the growth of the brain in the foetus					
6	Increases the maternal and infant mortality, and morbidity					
7	Reduces the opportunities of health education among pregnant					

S/N	Items	SA	A	U	D	SD
	mothers					
8	Lacks knowledge on the relevance of balanced diets during pregnancy					
9	Limited knowledge on the nutritional requirements at various phases of foetus development					
10	Increasing the chances of obesity during pregnancy and its associated health consequences					

Appendix ii

Interview Questions (Specifically for the illiterate Women)

- i. Can you explain your mood as a result of your pregnancy?
- ii. Do you go for antenatal and if yes how often?
- iii. What effect whether negative or positive has the role of antenatal affected you?
- iv. How do nurses handle you when you come for antenatal?
- v. Would you recommend your friends to the clinic you go for antenatal?

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