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IASET

THE ASSOCIATED FACTORS THAT CAUSE AND HEALTH ENSURING STRATEGIES TO CUSHION ANEMIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC IN CENTRAL HOSPITAL, WARRI

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ABSTRACT

Anemia is one of the health challenges known to affect maternal and child health hence, constitutes burden to development efforts in Africa such as Nigeria. This has propelled the need to investigate associated factors that cause and health ensuring strategies so as to be able to cushion anemia among pregnant women attending antenatal clinic in central Hospital, Warri. The predicting health behaviour with social cognition models of MacKian (2003) to provide a basis for this study. The descriptive survey design was used in this study and a sample size of 100 was used and a convenience sampling technique was used to select respondents. Data was obtained through the questionnaire designed to obtain relevant information to suit the purpose of the study and was also subjected to validity and reliability analysis. The data collected was analysed and results were presented using frequency and percentage due to the descriptive nature of the study. The results showed that the demographic characteristics; maternal factors, genetic factor, nutritional factor and infectious diseases are major causes of anemia among pregnant women in Nigeria. In addition, several health ensuring strategies are deployed to curtail anemia among pregnant women. The study recommends that with the increasing global health challenge posed by anemia, it is imperial that government at all levels provide supports to various hospitals to help raise the awareness of anemia among pregnant women by organizing workshop to lecture pregnant women especially during antenatal visits in various hospitals. In addition, major drugs that could help curtail anemia among pregnant women should be provided for free and distributed to various hospitals to give to pregnant women by the governments and hospitals.

KEYWORDS: *Associated Factors, Health Ensuring, Strategies, Cushion, Anemia and Pregnant Women*

INTRODUCTION

Health challenges, especially in developing countries such as Nigeria have constituted a major threat to development. Hence, ensuring good health and well-being, as goal, three of the sustainable development goals (SDGs) has been a fundamental objective in transforming the global world economy. A major example of these health challenges is child mortality and maternal health. According to Omiunu (2015), child mortality and maternal health challenge are major

problems that impede community and national development hence, it haa raised debates and attentions among scholars. Child mortality and maternal death have been traced to health challenges that occur during pregnancy. From a general perspective, there are so many health challenges that are common with women during pregnancy and if they are not handled carefully, it may endanger the life of the baby and that of the mother.

One of such major health challenges during pregnancy is anemia. Other health challenges common with women during pregnancy are high blood pressure, depression, fetal problems, miscarriages, ectopic pregnancy, gestational diabetes, preterm labour, hyper-emesis gravidarum, placenta previa, placenta abruption, preeclampsia, among others (Office on Women's Health, 2010). Although, there are so many health challenges that occur among pregnant women but this study focuses on anemia because studies such as Omiunu (2015); Suryanarayana, Santhuram, Chandrappa, Shivajirao and Rangappa (2016); Anlaakuu and Anto (2017); Stephen, Mgongo, Hashim, Katanga, Stray-Pedersen and Msuya (2018); among others noted that anemia in pregnancy is an important health issue resulting in high maternal morbidity and mortality.

Anemia is a condition where the number of red blood cells or the oxygen-carrying capacity in a pregnant woman is insufficient to meet the physiologic needs (World Health Organisation, 2011). The levels of hemoglobin below which anemia is likely to occur for population living at sea level are: 11g/dl for children aged six months to six years, 12g/dl for children aged between 6 and 14 years, 13g/dl for adult males, 12g/dl for non-pregnant adult females and 11g/dl for adult pregnant females. Maternal anemia occurs at a Hemoglobin (Hb) level of <11g/dl, or Hematocrit (Hct) of <33% in all trimesters of pregnancy (World Health Organisation, 2011). During the stage of pregnancy, anemia could be further divided into different groups and categories depending on its severity. These includes: mild anemia (haemoglobin 10–10.9g/dL), moderate anemia (Hb 7.0–9.9g/dL) and severe anemia (haemoglobin< 7g/dL) (World Health Organization, 1992; Nwizu, Iliyasu, Ibrahim and Galadanci, 2011). According to Mayo Foundation for Medical Education and Research (MFMER) (2019), signs and symptoms of anemia includes fatigue, weakness, pale or yellowish skin, irregular heartbeats, shortness of breath, dizziness or lightheadedness, chest pain, cold hands and feet, headache, among others.

Adamu, Crampin, Kayuni, Amberbir, Koole, Phiri, Nyirenda and Fine (2017) stated that at the global level, there is prevalence of 32.9% of anemia in all ages combine, contributing more years lived with disability than either depression or chronic respiratory diseases. Also, according to Omiunu (2015), approximately half of pregnant women suffer from anemia worldwide. Anemia is high in Nigeria with higher prevalence reported among individuals with lower socioeconomic class (Bisoi, Haldar, Majumdar, Bhattacharya, Sarkar and Ray, 2011; Ivoke, Eyo, Ivoke, Nwani, Odii and Asogw, 2013). It has been estimated that 58.27 million women have anemia during pregnancy, of whom 55.75 million (95.7%) live in developing countries which Nigeria is among (Van den Broek, 2003). This prevalence of anemia especially among pregnant women has necessitate the need to investigate the causative factors of anemia.

The associated factors causing anemia differ with respect to the type of anemia (Health24, 2019) hence there could also be differences in the health ensuring strategies to curtail anemia in pregnant women. There are common types of anemia but the most common are: Iron deficiency anemia; Thalassaemia; Aplasticanemia; Haemolyticanemia; Sickle cell anemia; Pernicious anemia; Fanconianemia. From a general perspective, associative factors of anemia are iron deficiency; deficiency in nutritional value or intake; lack of folate, vitamin B12 and vitamin A; acute and chronic inflammation; parasitic infections and inherited or acquired disorders which could affect the haemoglobin synthesis, red blood cell production or red blood cell survival (World Health Organisation, 2011). In addition, according to Van den Broek (2003)

The Associated Factors that Cause and Health Ensuring Strategies to Cushion Anemia
Among Pregnant Women Attending Antenatal Clinic in Central Hospital, Warri

47

and Lebso, Anato and Loha (2017), factors such as the demographic, genetic factors and infectious agents can cause anemia. Also, Adamu et al. (2017) noted that socioeconomic and biological factors are important factors causing anemia. Suryanarayana et al. (2016) added that high parity, short birth interval, poor diet both in quantity and quality, lack of health and nutrition awareness, and a high rate of infectious diseases are major factors associated with the prevalence of anemia especially in developing countries such as Nigeria.

Kisioglu, Ozturk, Cakmak and Özgüner (2005) and Omiunu (2015) affirmed that the consciousness and awareness of anemia among pregnant women are very much essential hence, the need to curtail its effect towards the attainment of SDGs. From a general perspective, awareness influences usage and increase awareness leads to increase usage (Okik, 2012). Usage could imply the deployment and the adoption of various strategies to curtail anemia prevalence among pregnant women. Buseri, Uko, Jeremiah, and Usanga (2008) and Dattijo, Daru and Umar (2016) stated that awareness of anemia could improve the need to curtail it by deploying various necessary strategies such as utilization of antenatal care services, use of drugs, constant and regular balanced diets, among others.

Hence, Osungbade and Oladunjoye (2012) and Omiunu (2015) noted the need for enhancing the strategies to improve the level of awareness and knowledge of mothers and health workers. Although, studies have noted these causative factors but there is need to further investigate the level of effect of these factors. To this end, this study seeks to investigate the associated factors that cause and health ensuring strategies to cushion anemia among pregnant women attending antenatal clinic in central Hospital, Warri. To this end, the following research questions are used to drive this study:

- What are the associative factors that can cause anemia among pregnant women attending antenatal clinic in central Hospital, Warri?

- What are the various strategies undertaken to curtail anemia among pregnant women attending antenatal clinic in central Hospital, Warri?

REVIEW OF LITERATURE

Studies on anemia have been conducted widely. There are different types of anemia and they include (Sanam, 2013): Iron deficiency, Megaloblastic, Thalasemia, Hemoglobinopathy, Vitamin B12 deficiency, Fanconi anemia, among others. But the most common is the Iron deficiency anemia which is as a result of dietary and iron deficiency, worm infestations or due to repeated pregnancies at short intervals when it occurs in pregnant women. From a general perspective in developing countries such as Nigeria, 35% to 75% (56% on average) of pregnant women and, in industrialized countries, 18% of women are anemic (Suryanarayana et al., 2016). Brabin, Hakimi and Pelletier (2001) and VanderJagt, Brock, Melah, El-Nafaty, Crossey, and Glew (2007) stated that in the USA, less than 30% of pregnant women develop anemia, whereas the prevalence rates in Africa, Asia, and Latin America range from 35% to 75%. Also, maternal deaths from anemia range from 34 per 100,000 live births in Nigeria (World Health Organisation, 1992).

In a World Health Organisation's database, De Benoist, Mclean, Egli and Cogswell (1993–2005), the worldwide statistics showed that, 41.8% of pregnant women are anaemic as compared with 30.2% non-pregnant women; the most severely affected areas are South-East Asia (48.2%) and Africa (57.1%). A large proportion of this in Africa live are in West African sub-region. The prevalence rate in some of the countries ranges from 50.2% in Togo, 66.7% in Nigeria, 68.3% in Burkina Faso, 72.7% in Benin and 75.1% in Gambia. Local prevalence studies from Nigeria range from 35.3% in

Lagos to 72.0% in Kano State (Anorlu, Oluwole & Audu, 2006; Iman & Yahaya, 2008). According to Vander Jagt et al. (2007), anemia in pregnancy is more common in developing countries such as Nigeria than in developed countries. Specifically, Northern Nigeria, a total of 17% of pregnant women were having anemia (PCV<30%); 83% had normal packed cell volume while 12.7% and 4.3% had mild and moderate anemia respectively. To this end, Ndukwu & Dienye (2012) noted that, the prevalence of anemia in Nigeria is still very high and this could affect development and hence the attainment of sustainable development goal hence the need for the study.

In addition, there are several factors that have been observed to cause anemia among pregnant women, and include socio-demographic (Nwizu et al., 2011); maternal factors (Nagaraj, 2003); genetic factors (Van Den Broek, 2003 and Glover-Amengor et al. 2005); nutritional deficiencies (Sanders and Reddy, 1994); and infectious agents (Stephenson et al., 1985). According to Nwizu et al., (2011), with regards to socio-demographic characteristics, anemia was found to be highest among pregnant women with no formal education and lowest among those with tertiary education. Married women were less likely to be anaemic compared to those who were either single or divorced. Also, the age, family type, illiteracy of the husbands which could entail the level of education had strong and significant association with severe anemia. Furthermore, there was an increase in the prevalence of anemia as one went down the socioeconomic ladder, being highest among women in the low socioeconomic category.

With regards to maternal factors, Nagaraj (2003) found that, maternal and obstetric risk factors also influence severe anemia in pregnancy. Also, van den Broek (2003); Akanmu, Abudu & Akinsete (1998); Ndukwu & Dienye (2012); and Glover-Amengor, Owusu, and Akanmori (2005) found that genetic factors can also cause anemia in pregnancy. With regards to nutritional factors, diets that have high content of phytate and other modifiers of mineral absorption are associated with an increased risk of iron deficiency anemia (Sanders and Reddy, 1994). Oetofse, Faber, Benade, Benade & Kenoyer (1999) noted that the in a certain rural community in KwaZulu-Natal, South Africa, nutritional status was found to have significant effect on the prevalence of anaemic. Furthermore, Fleming (1989); Scholl, Hediger & Belsky (1994) and Hoque et al. (2009) noted that on developing countries such as Nigeria, nutritional iron deficiency is the main cause of anemia in pregnancy.

With regards to infectious agents, Fleming (1989); Scholl, Hediger & Belsky (1994); Stephenson et al. (1985); Khurram (1997); Huddle, Gibson and Cullinan (1999); Ndomugyenyi et al. (2002); McDevitt et al. (2004); Qureshi et al. (2011); Getachew et al. (2012); among others have stated that certain infections such as a single helminth species, hook worm infection, Ascarislumbricoides, Trichuristrichiuria, malaria, P. falciparum, H. pylori, diarrheal, febrile illnesses, among others are associated and could cause with anemia in pregnant women. Notwithstanding, the causative factors, there is need to further investigate the perceptions of pregnant women on level of effect of these factors on anemia hence, the need for this study.

Theoretical Underpinning

The" predicting health behaviour with social cognition models" of MacKian (2003), a rework of the health belief model was adapted in this study. From a broader perspective, the model provides ranges of behaviours examined from three broad categories using the health belief models and are: preventive health behaviours, sick role behaviours and clinic use. A major focus of argument in this study is that for preventive health behavior towards a particular disease or ailment to be undertaken, there is need to understand the causative factors of such disease or ailment which in this study is anemia among pregnant women. Also, from the Health belief model, two major elements are deemed important which could be significant to this study: threat perception and behavioural evaluation.

Threat perception depends upon perceived susceptibility to illness and anticipated severity and which could cover the perceptions of pregnant women on the causative factors of anemia. On the other hand, behavioural evaluation could consist of the beliefs concerning the benefits of a particular behaviour and the barriers to it which in this study could also be synonymous to the associative factors to anemia. Furthermore, individuals who believed they have control over their health are more likely to engage in health promoting behaviour (Norman and Bennett, 1996), which could include deploying preventive mechanism over the prevalence of anemia. However, for these preventive measures to be taken, it is important to understand the associative factors causing anemia among pregnant women hence, the need for this study.

METHODOLOGY

The descriptive survey design is used in this study, because of its focus on the population of pregnant women and it may not be necessarily important to subject them to clinical test hence a behavioural study to investigate the perspective on the factors that can cause anemia among pregnant women. Also, due to the population of pregnant women attending antenatal at central Hospital, Warri, a 100-sample size was used for the study using a convenience sampling technique. The major instrument used for data collection of this study is the questionnaire designed to obtain relevant information and data that could provide answers to the objectives, research question and the hypotheses of the study. Furthermore, the questionnaire has three major sections namely: the demographic characteristics of respondents, general perception on personal status of anemia; and the factors that causes anemia in pregnancy which is also divided into five sub sections: genetic factors, maternal factors, nutritional, and infectious agents. For the sections, the variables of this study were captured in a likert scale of four namely agreed, strongly agreed, disagreed and strongly disagreed where the respondents are allowed to tick only one out of the choice provided.

The content and construct validity of the research instrument was done to ensure that items in the instrument meet the desired research objective and questions of the study. Also, a reliability analysis was done using the Crobach alpha and yielded coefficients of 0.68 for the general information about status of anemia; and 0.65 for genetic factors, 0.75 for maternal factors, 0.67 for nutritional, and 0.81 for infectious agents. A letter of introduction from the department was obtained and shown to the HODs of the selected department of interest of the hospital. Also, inform consent was sought from the respondents and the purpose of the study was made known before a questionnaire was administered. Data collected in respect of the questionnaire was analysed and results were presented using frequency and percentage due to the descriptive nature of the study.

RESULTS

The result of this study is presented in three subsections of this section namely: demographic characteristics; the associated factors causing anemia; and the health ensuring strategies to cushion anemia among pregnant women.

Demographic Characteristics of Respondents

This descriptive statistics of the demographic characteristics of respondents are presented in table 1.

The result in table 1 shows that respondents who are between the age brackets 26-30 years has the highest percentage (30%), followed by those who are between the age brackets 21-25 years (23%). Respondents who are married has the highest percentage (66%). Also, those who had secondary education has the highest percentage (57%), followed by those with tertiary education (26%), and respondents who had no formal education has the lowest percentage (6%). In addition, respondents who are self entrepreneurs have the highest percentage (51%), followed by those who are civil

servants, while respondents who are medical practitioners has the lowest percentage (5%). This implies that pregnant women used for this study have moderate demographic characteristics.

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Table 1: Demographic Characteristics of Respondents

Demographic Characteristics		Frequency	Percent
Age	Below 20 Years	17	17.0
	21-25 years	23	23.0
	26-30 years	30	30.0
	31-35 years	13	13.0
	Above 35 years	13	13.0
	Missing System	4	4.0
	Total	100	100.0
Marital Status	Single	14	14.0
	Married	66	66.0
	Separated	5	5.0
	Widowed	2	2.0
	Missing System	13	13.0
	Total	100	100.0
Education level	No formal education	6	6.0
	Primary education	8	8.0
	Secondary education	57	57.0
	Tertiary education	26	26.0
	Missing System	3	3.0
	Total	100	100.0
Occupation	Farming	10	10.0
	Self entrepreneur	51	51.0
	Civil servant	22	22.0
	Medical practitioner	5	5.0
	Student	7	7.0
	Missing System	5	5.0
	Total	100	100.0

Research Question One: What are the Associative Factors that can Cause Anemia among Pregnant Women Attending Antenatal Clinic in Central Hospital, Warri?

The responses to the associative factors that can lead to anemia among pregnant women attending Central Hospital, Warri, as stated in research question one is presented in tables 2- 5. There are five selected factors used in this study based in the literature reviewed and include socio-demographic, maternal, genetic, nutritional and infectious disease factors. Each factor is presented in a separate table and a description of the table is also provided below the table so as to explain the items presented in the tables. The first factor to be examined is the socio-demographic as presented in table 2.

Table 2: Socio-Demographic Factors that may Cause Anemia in Pregnancy

		Frequency	Percent
Pregnant women with lower educational status are more susceptible to anemia higher than those with higher educational status	Disagree	20	20.0
	Agree	74	74.0
	Missing System	6	6.0
	Total	100	100.0
Pregnant women with no occupation are more susceptible to anemia higher than those with occupation	Disagree	7	7.0
	Agree	91	91.0
	Missing System	2	2.0
	Total	100	100.0
Pregnant women with low paid occupation are more susceptible to anemia higher than those with high paid occupation	Disagree	24	24.0
	Agree	73	73.0
	Missing System	3	3.0
	Total	100	100.0
Pregnant married women are less likely to be anemic compared to those who are either single or divorced	Disagree	14	14.0
	Agree	83	83.0
	Missing System	3	3.0
	Total	100	100.0
Pregnant women with higher economic status are less likely to be anemic compared to those who have less economic status	Disagree	9	9.0
	Agree	88	88.0
	Missing System	3	3.0
	Total	100	100.0
Pregnant women who booked in the first trimester are less likely to be anemic compared to those who booked in the second trimester or third trimester of pregnancy	Disagree	1	1.0
	Agree	97	97.0
	Missing System	2	2.0
	Total	100	100.0
Pregnant women below the age 30 years would tend to have higher prevalence of anemia than those with above 30 years age	Disagree	52	52.0
	Agree	47	47.0
	Missing System	1	1.0
	Total	100	100.0

The result in table 2 shows that 74% stated that pregnant women with lower educational status are more susceptible to anemia higher than those with higher educational status. Also, 91% stated that pregnant women with no occupation are more susceptible to anemia higher than those with occupation. The result shows that 73% stated that pregnant women with low paid occupation are more susceptible to anemia higher than those with high paid occupation and 83% stated that pregnant married women are less likely to be anemic compared to those who are either single or divorced. Also, 88% stated that pregnant women with higher economic status are less likely to be anemic compared to those who have less economic status. Furthermore, 97% stated that pregnant women who booked in the first trimester are less likely to be anemic compared to those who booked in the second trimester or third trimester of pregnancy. Moreover, 47% stated that pregnant women below the age 30 years would tend to have higher prevalence of anemia than those with above 30 years age. This implies that to an extent, demographic characteristics of pregnant women could be a factor that can cause anemia during pregnancy in Nigeria. The maternal factor that may cause anemia in pregnancy is also presented in table 3.

The result in table 3 shows that 86% stated that women whose weight is less than 40 kgs can have anemia in pregnancy than those with higher weight; and 81% stated that women with lower height tend to have anemia than those with higher height. Also, 80% stated that lesser body weight of women can make a woman have anemia in pregnancy. Also, 95% stated that women with history of abortion can have anemia in pregnancy; and another 95% stated that women with obstetric risk factors can have anemia. This implies that maternal factor is a major factor that can lead to anemia among pregnant women in Nigeria. The genetic factor that may cause anemia in pregnancy is also presented in table 4.

Table 3: Maternal Factor that may Cause Anemia in Pregnancy

		Frequency	Percent
Women whose weight is less than 40 kgs can have anemia in pregnancy than those with higher weight	Disagree	11	11.0
	Agree	86	86.0
	Missing System	3	3.0
	Total	100	100.0
Women with lower height tend to have anemia than those with higher height	Disagree	15	15.0
	Agree	81	81.0
	Missing System	4	4.0
	Total	100	100.0
Lesser body weight of women can make a woman have anemia in pregnancy	Disagree	15	15.0
	Agree	80	80.0
	Missing System	5	5.0
	Total	100	100.0
Women with history of abortion can have anemia in pregnancy	Disagree	2	2.0
	Agree	95	95.0
	Missing System	3	3.0
	Total	100	100.0
Women with obstetric risk factors can have anemia	Disagree	4	4.0
	Agree	95	95.0
	Missing System	1	1.0
	Total	100	100.0

Table 4: Genetic Factors that may Cause Anemia in Pregnancy

		Frequency	Percent
Genetic factors can also cause anemia in pregnancy	Disagree	11	11.0
	Agree	86	86.0
	Missing System	3	3.0
	Total	100	100.0
Women who have anemia in their lineage may tend to have it during pregnancy	Disagree	2	2.0
	Agree	96	96.0
	Missing System	2	2.0
	Total	100	100.0

The result in table 4 shows that 86% stated that genetic factors can also cause anemia in pregnancy. In addition, 96% stated that women who have anemia in their lineage may tend to have it during pregnancy. This implies that genetic factor is a major factor to be considered in the cause of anemia among pregnant women in Nigeria. The nutritional factor that may cause anemia in pregnancy is also presented in table 5.

Table 5: Nutritional Factors that may Cause Anemia in Pregnancy

		Frequency	Percent
Diets that have a high content of phytate and other modifiers of mineral absorption are associated with an increased risk of anemia in pregnancy	Disagree	11	11.0
	Agree	88	88.0
	Missing System	1	1.0
	Total	100	100.0
Folate and vitamin A deficiencies are major causes of anemia in pregnancy	Disagree	10	10.0
	Agree	87	87.0
	Missing System	3	3.0
	Total	100	100.0
If pregnant woman does not eat well, it may result to anemic condition in pregnancy	Disagree	0	0.0
	Agree	97	97.0
	Missing System	3	3.0
	Total	100	100.0

The result in Table 5 shows that 88% stated that diets that have a high content of phytate and other modifiers of mineral absorption are associated with an increased risk of anemia in pregnancy. Also, 87% stated that folate and vitamin A deficiencies are major causes of anemia in pregnancy. Furthermore, 97% stated that if pregnant woman does not eat well, it may result to anemic condition in pregnancy. This implies that nutritional factor is a major factor that can be associated with anemia among pregnant women in Nigeria. The infectious diseases that may cause anemia in pregnancy is also presented in Table 6.

Table 6: Infectious Diseases that may Cause Anemia in Pregnancy

		Frequency	Percent
Anemia would be higher among pregnant women who have malaria than those do not have	Disagree	8	8.0
	Agree	89	89.0
	Missing System	3	3.0
	Total	100	100.0
Anemia would be higher among pregnant women who have hematinic than those do not have	Disagree	3	3.0
	Agree	95	95.0
	Missing System	2	2.0
	Total	100	100.0
Hookworm in pregnant women can lead to anemia in pregnancy	Disagree	14	14.0
	Agree	83	83.0
	Missing System	3	3.0
	Total	100	100.0
Anemia in pregnancy can also be associated with diarrheal	Disagree	9	9.0
	Agree	90	90.0
	Missing System	1	1.0
	Total	100	100.0
Anemia in pregnancy can also be associated with febrile illnesses	Disagree	8	8.0
	Agree	90	90.0
	Missing System	2	2.0
	Total	100	100.0
Patients with HIV can have anemia in pregnancy	Disagree	25	25.0
	Agree	75	75.0
	Total	100	100.0

The result in Table 6 shows that 89% stated that anemia would be higher among pregnant women who have malaria than those do not have; and 95% stated that anemia would be higher among pregnant women who have hematinic than those do not have. Also, 83% stated that hookworm in pregnant women can lead to anemia in pregnancy. In addition, 90% stated that anemia in pregnancy can also be associated with diarrheal; and 90% stated that it can also be associated with febrile illnesses. Moreover, 75% stated that patients with HIV can have anemia in pregnancy. This implies that infectious disease is another major cause of anemia among pregnant women in Nigeria.

Research Question Two: What are the Various Strategies Undertaken to Curtail Anemia among Pregnant Women Attending Antenatal Clinic in Central Hospital, Warri?

The responses to the health ensuring strategies to curtailing anemia among pregnant women attending Central Hospital, Warri, as stated in research question two is presented in table 7. A description of the table is also provided below the table so as to explain the items presented in the table.

Table 7: Health Ensuring Strategies to Curtail Anemia among Pregnant Women

		Frequency	Percent
Food-based approaches	Disagree	8	8.0
	Agree	90	90.0
	Missing System	2	2.0
	Total	100	100.0
Exclusive breastfeeding	Disagree	16	16.0
	Agree	79	79.0
	Missing System	5	5.0
	Total	100	100.0
Improving complementary feeding	Disagree	16	16.0
	Agree	80	80.0
	Missing System	4	4.0
	Total	100	100.0
Fortification of food	Disagree	9	9.0
	Agree	88	88.0
	Missing System	3	3.0
	Total	100	100.0
Ensuring Monitoring and evaluation of programmed	Disagree	5	5.0
	Agree	92	92.0
	Missing System	3	3.0
	Total	100	100.0
Ensuring adequate medical attention	Disagree	1	1.0
	Agree	97	97.0
	Missing System	2	2.0
	Total	100	100.0
Ensuring healthy living	Disagree	4	4.0
	Agree	92	92.0
	Missing System	4	4.0
	Total	100	100.0

The result of the study in table 7 shows that there are several health ensuring strategies that can be deployed to curtail anemia among pregnant women. The result in Table 7 reveals that food-based approaches (90%); exclusive breastfeeding (79%); improving complementary feeding (80%); fortification of food (88%); ensuring monitoring and evaluation of program (92%); ensuring adequate medical attention (97%); and ensuring healthy living (92%) are all health ensuring strategies that could be used to curtail the prevalence of anemia among pregnant women. This implies that pregnant women in Central Hospital, Warri have several health ensuring strategies to curtail anemia.

Discussion of Findings

The findings of this study revealed that pregnant women with lower demographic characteristics such as low educational status, no occupational status of low paid occupation, low income status, below age 30, either single or divorced, among others are more susceptible to anemia. This shows that demographic characteristics of pregnant women could be a factor that can cause anemia among pregnant women in Nigeria. This supports the works of Van den Broek (2003); Nwizu et al. (2011) and Lebso et al. (2017) that demographic factors could be a major cause of anemia among pregnant women in Nigeria. This also bolsters the work of Adamu et al. (2017) that socioeconomic factors are important factors causing anemia.

The findings of this study showed that the maternal factors such as weight and height of pregnant mother, pregnant women having a history of abortion and women with obstetric risk are also a major factor that can lead to anemia among pregnant women in Nigeria. This concurs with the work of Adamu et al. (2017) that biological factors which in this study is synonymous to maternal factors are important factors causing anemia. This supports the work of Nagaraj (2003) that maternal factors could be major causes of anemia in pregnant women.

Also, genetic factor such as women having anemia in their lineage is a major factor to be considered in the cause of anemia among pregnant women in Nigeria. This support the study of Van den Broek (2003); van den Broek (2006); Glover-Amengor et al. (2005) and Lebso et al. (2017) that genetic factor is a major cause of anemia. Also, this supports the works of Akanmu et al. (1998) and Ndukwu & Dienye (2012) that genetic can also cause anemia in pregnancy.

Also, nutritional factor is a major factor that can be associated with anemia among pregnant women in Nigeria. Examples of nutritional factors are eating diets that have a high content of phytate and other modifiers of mineral absorption, folate and vitamin A deficiencies, among others are major causes of anemia in pregnancy. Furthermore, if pregnant woman does not eat well, it may result to anemic condition in pregnancy. This concurs with the work of (1989); Scholl et al. (1994); Sanders and Reddy (1994); Oetofse et al. (1999); Fleming and Hoque et al. (2009) that nutritional deficiency could be a major cause of anemia among pregnant women. This supports the work of Suryanarayana et al. (2016) that poor diet both in quantity and quality and lack of health and nutrition awareness are major factors associated with the prevalence of anemia especially in developing countries such as Nigeria.

Infectious disease is another major cause of anemia among pregnant women in Nigeria such as pregnant women having malaria, prevalence of hookworm, diarrheal; febrile illnesses and HIV. This bolsters the works of Van den Broek (2003) and Lebso et al. (2017) that infectious agents could be a major cause of anemia among pregnant women in Nigeria. This also supports the works of Stephenson et al. (1985) and Suryanarayana et al. (2016) that infectious diseases are major factors associated with the prevalence of anemia especially in developing countries such as Nigeria. This also concurs with the works of Fleming (1989); Scholl et al. (1994); Khurram (1997); Huddle, Gibson and Cullinan (1999); Ndomugyenyi et al. (2002); McDevitt et al. (2004); Qureshi et al. (2011); Getachew et al. (2012); among others that certain infections such as a single helminth species, hook worm infection, etc could cause anemia in pregnant women.

Furthermore, several health ensuring strategies that can be deployed to curtail anemia among pregnant women are food-based approaches; exclusive breastfeeding; improving complementary feeding; fortification of food; ensuring monitoring and evaluation of program; ensuring adequate medical attention; and ensuring healthy living. This supports the works of et al. (2008) and Dattijo et al. (2016) that when pregnant women are aware of anemia, it could improve the knowledge of the need to curtail it by deploying various necessary strategies such as utilization of antenatal care services, use of drugs, constant and regular balanced diets, among others. This supports why Osungbade and Oladunjoye (2012) and Omiunu (2015) affirmed that there is the need to deploy various strategies to improve the level of awareness and knowledge of mothers and health workers with respect to curtailing anemia especially among pregnant women.

CONCLUSION AND RECOMMENDATIONS

In conclusion, demographic characteristics; maternal factors, genetic factor, nutritional factor and infectious disease are major cause of anemia among pregnant women in Nigeria. Several health ensuring strategies are deployed to curtail anemia among pregnant women. The study recommends that:

- Since with the global health challenge posed by anemia, it is imperial that government at all levels provide supports to various hospitals to help raise the awareness of anemia among pregnant women by organizing workshops to lecture pregnant women especially during antenatal visits in various hospitals.

- Also, major drugs that could help curtail anemia among pregnant women should be provided for free and distributed to various hospitals to give to pregnant women by the government and hospitals.

- Women should be made to know their blood group and level so as to curtail the prevalence of anemia among pregnant women attending antenatal.

- Government and hospitals should provide free medical attention to pregnant women or provide the service for a reduced bill due to the high rate of pregnancy in the country.

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The Associated Factors that Cause and Health Ensuring Strategies to Cushion Anemia
Among Pregnant Women Attending Antenatal Clinic in Central Hospital, Warri

59

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