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**Causes and Effects of Anaemia among Pregnant Women attending Specialist  
Hospital Yola North L.G.A of Adamawa State**

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**Abstract**

The main objective of this research project is to assess the causes and effects of anaemia among pregnant women attending specialist hospital Yola, Adamawa State. A population of sample size of 100 women was selected at random from the population of the study without bias. The finding of this study revealed in the age group 15-30; 24% and 19% agrees and strongly agrees respectively that anemia is caused by iron or other nutrient deficient. In the age group 31-above; 12% and 21% agrees and strongly agrees respectively that anemia is caused by iron or other nutrient deficient. The age group 15-30; 15% and 34% agrees and strongly agrees respectively that anemia can caused death of the offspring. In the age group 31-above; 19% and 18% agrees and strongly agrees respectively that anemia can result to the death of the offspring. the age group 15-30; 15% and 25% agrees and strongly agrees respectively that anemia can caused death of the mothers during labour. The age group 31-above; 10% and 23% agrees and strongly agrees respectively that anemia can result to the death of the mother during labour. The age group 15-30; 28% and 13% agrees and strongly agrees respectively that anemia can lead to reduce body mass. In the age group 31-above; 27% and 14% agrees and strongly agrees respectively that anemia can lead to reduce body mass. However the result of the Chi-square test shows that the p-value is greater than 0.05 in all the responses of the participant in relation to both their age and Education status, this implies there was no significant difference in all the responses. It is recommended that all pregnant women should ensure constant visitation of antenatal as to continue getting knowledge on issues related to pregnancy.

**Key words:** Anemia, Causes, Effect and Pregnant women

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## 1.1 Introduction

Anaemia is generally referred to a condition or state in which blood is deficient in erythrocyte (red blood cells) that is number of red cells less than 10 g/dl or the red blood cells don't have enough haemoglobin. It is a widespread condition worldwide, with a high prevalence especially among pregnant women (56%). Anaemia as a major public health problem throughout the world is widely recognized by health authorities and policy makers alike (WHO, 2008), and about four hundred different kinds of anaemia have been identified each with its own cause, however, many of them are rare (WHO, 2008). Anaemia can be temporary or long-term and it can range from mild to severe. The cause of anaemia may be blood loss, a chronic illness, a genetic or acquired defect, or disease; it may also be a side effect of a medication or an iron or vitamin deficiency. The symptoms of anaemia include weakness and sometimes being out of breath or, unable to work hard, paleness of the skin (WHO, 2008).

Iron deficiency result in a decrease in haemoglobin concentration and subsequent anaemia. Iron is an essential mineral and an important component of proteins involved in oxygen transport and metabolism (Ursel, 2001). Almost two-thirds of the iron in our body is found in haemoglobin (an iron -rich protein in red blood cells that gives blood its red colour and carries oxygen from the lungs to our body's tissues) [ Ursel, 2001].

Iron plays a crucial role in the processes of growth, cell division and in the transport of oxygen throughout the body. It is also important for the proliferation of cells of the immune system as well as for micro-organisms including the malaria parasites. Anaemia results when haemoglobin level is below the normal range of 11g/dl for a person's age and sex. The haemoglobin level tends to decrease with age and is lower in females in reproductive age than the male in the same category - as a result of blood loss during menstruation (WHO 1990). Severe anaemia in pregnancy has been defined as < 7g/dL (WHO, 1989). Smaller amounts of iron are found in myoglobin - a protein that helps supply oxygen to muscle, and in enzymes that assist biochemical reactions in cells (Ursel, 2001).

A steady supply of iron is needed to form haemoglobin and healthy red blood cells (Matt, 2004). A person can have low iron levels for three main reasons: Blood loss, either from disease or injury, nutritional deficiency, not being able to absorb the iron in the diet because of damage to the intestinal lining and inflammation leading to hepcidin anaemia. The more severe stages of iron deficiency are associated with anaemia.

## 1.2 Literature Review

Anaemia may result from defects at any stage of red cell and haemoglobin production or when an increased rate of red cell destruction (haemolysis) exceeds the capacity of the bone marrow to mount a compensatory increase in production. Changes in the relationships between red cell and plasma volumes may also result in a reduced haemoglobin concentration, such changes occur physiologically in pregnancy, where red cell volume is increased less markedly than plasma volume. Generally anaemia occurs at a haemoglobin level below 11g/dl. Haemoglobin concentrations below which anaemia is likely to be present

at sea level are usually defined as follows: Children 6 months – 6 years: 11 g/dL; Children 6-14 years: 12 g/dL; Adult males: 13 g/dL; Non-pregnant females: 11 g/dL; pregnant females 12 g/dL. All anaemia sufferers manifest signs and symptoms attributable to tissue and organ hypoxia and the ensuing reduced metabolism. It also occurs when there are an inadequate number of red blood cells or an inadequate amount of haemoglobin for the body to function properly. Haemoglobin is a protein in red blood cells that carries oxygen to the brain, muscular system, immune system, and other parts of the body. Without adequate oxygen, the physical and mental capacities of individuals are reduced (Verhoef, 1999). Most of the anaemic population lives in developing countries, where high anaemia prevalence is seen, particularly in pregnant women, young children, female adolescents, and women of childbearing age (WHO, 2001). Overall, anaemia contributes to about 20 percent of maternal and peri natal deaths in developing countries. A recent WHO World Health Report noted that the risks of both maternal and peri natal mortality were reduced by 25 percent and 28 percent, respectively, for each gram increase in hemoglobin level between 50 and 120 g/L. This is contrary to the previous generally accepted understanding that only severe anaemia resulted in death. This finding is very important because the numbers of women and children with mild and moderate anaemia are vastly greater than the number with severe anaemia. It follows then that the great majority of anaemia-related maternal and peri -natal deaths are due to mild and moderate anaemia rather than severe anaemia (WHO, 2003). Anaemia's other serious negative consequences include poor pregnancy outcomes such as low birth weight and premature birth. Anaemia also has adverse implications for social and economic development. There is now strong evidence that anaemia can reduce cognitive development and limit a child's learning in schools. This will lower the effectiveness of investments in education. Anaemia's role in reducing physical capacity and work productivity in adults has been long established. Nevertheless, anaemia continues to have a relatively low priority in health policies and programs, compared to other nutrition-related health problems with more obvious life-threatening implications (WHO, 2003). These are major constraints for policy formulation and program development. A better understanding of the etiology or causes of anaemia and the identification of critical issues related to effective anaemia program design and implementation are key to developing more successful actions. Recent progress in understanding the nature of the problem and the achievements and limitations of existing programs provides a firm basis for designing effective strategies and interventions. MOST, the USAID Micronutrient Program has supported ministries of health in the Democratic Republic of the Congo, Ghana, Uganda, and Nicaragua to develop approaches to address anaemia. According to WHO (1997), approximately 30% of the world's population is affected by anaemia. In a meta-analysis of available data using WHO threshold criteria (De Maeyer and Adiels-Tegman, 1985), the problem was found predominantly in developing regions (especially south Asia and sub-Saharan Africa) where 36% of the total population were estimated to be anaemic compared to 8% in developed nations. Prevalence was particularly high in pre-school children (51% in less developed and 10% in more developed regions) and in adult females (50% and 13% respectively). In pregnancy, a WHO tabulation of available data averaged the prevalence to be 56% in developing countries, ranging between 50-70% for Hb < 11g/dL and 5-15% for

Hb < 7 g/dL in sub-Saharan Africa (WHO 1992). Anaemia is a huge public health and nutrition problem with serious consequences (WHO, 2003).

### **1.3 Research Methodology**

#### **1.3.1 Study Area**

Yola is the administrative capital of Adamawa State, Nigeria. Yola is a twin settlement that encompasses Jimeta (the administrative and commercial centre) and Yola-Town (the traditional settlement). Yola is located at a latitude of 9°14" N and a longitude of 12°28' E and has a total population of 395,871. Specifically, Jimeta and Yola-Town have populations of 199,674 and 196,197, respectively (National Bureau of Statistics, 2006). The estimated population projection for 2011 is 399,598. Yola has a tropical climate with rainy and dry seasons. The maximum and minimum temperatures can reach 40°C and 18°C in April and between December and January, respectively. The mean annual rainfall is less than 1,000 mm (Adebayo, 1999)

#### **1.3.2 Design of the Study**

The study design was a cross sectional study restricted to pregnant women attending antenatal clinic at the specialist hospital Yola. Pregnant women attending antenatal service in the hospital for routine check-up was recruited to participate in this project work. Informed consent was sought from the participants. Ethical approval was received from the appropriate authorities before the study was undertaken. Consent was sought from pregnant women attending antenatal at the selected hospitals by explaining the concept of study to them. Those who gave their consent was recruited to participate in the study.

#### **1.3.3 Population of the Study**

In this study of approximately 3014 women attending antenatal check-up in specialist hospital Yola during the period of this research will be used.

#### **1.3.4 Sample/ Sampling Techniques**

A population of sample size of 100 women was selected at random from the population of the study without bias. This sample size is calculated using a sample size calculator which is an online research software calculator that is design for this purpose. The selected women were interviewed using pre-

structured, pre-tested questionnaires. The questionnaire was administered in English to those who gave their consent. The questionnaire was generally aimed at addressing various parameters such as age, education background, knowledge anaemia, type of food normally eaten, financial income, socioeconomic background etc

### **1.3.5 Instrument for data collection**

The questionnaire was divided into three (3) sections under the following sub headings: Socio-demographic data where the age, occupation and educational status of the respondents was captured. The second section addressed knowledge on what anaemia is and the possible causes of anaemia. The last section of the questionnaire addressed the state of health and general wellbeing to access the health effects of anaemia.

### **1.3.6 Method of Data Analysis**

The data obtained was analysed using the statistical package for social sciences (SPSS) software version 22. And the information gotten was presented in form of tables, graphs or charts.

## **1.4 Result and Discussion**

The questionnaire was administered in English to those who gave their consent. The responses of the subject were analyzed using SPSS Version 22 Edition. Chi-Square test was used to determine if the responses of the subject was significant or insignificant in relation to their Age and their Education Status. However the result of the Chi-square test shows that the p-values are greater than 0.05 in all the responses of the participant in relation to both their age and Education status, this implies there was no significant difference in all the responses. Anemia among pregnant women poses a real health threat worldwide, especially in developing countries (Mbuke, 2000). The current study aimed to assess the cause and effect of anemia by accessing the knowledge and responses of pregnant women attending antenatal in specialist hospital, Yola Adamawa State. The responses were drawn from the subject as to if anemia is caused by iron or other nutrient deficient based on the participant age; if anemia can result to death of offspring based on the participant age; if anemia can result to mothers death during labour based on the participant age; if anemia can lead to reduce body mass based on the participant age; if anemia is caused by inadequate intake of iron and other nutrients based on educational status of the respondent; if anemia can result to the death of offspring based on the educational status of the respondent; if anemia can result to mothers' death during labour based on the educational status of the respondent and; and if anemia can lead to reduce body mass based on the educational status of the respondent as shown in table 1, 2, 3,4,5,6,7 and 8 respectively.

Table 1: Shows the responses of the subject on if Anemia is caused by inadequate intake of iron and other nutrients in relation to their age.

Age	Strongly Disagree (%)	Disagree (%)	Neutral Response (%)	Agree (%)	Strongly Agree (%)
15-30	0	4	8	24	19
31-above	0	3	9	12	21
Total	0	7	17	36	40

Source: Research Survey, 2018

The finding of this study revealed that most the participant across the age groups has a satisfactory knowledge as to anemia is caused by iron or other nutrient deficient. Based on their responses in relation to age (Table 1 above), in the age group 15-30; 24% and 19% agrees and strongly agrees respectively that anemia is caused by iron or other nutrient deficient. In the age group 31-above; 12% and 21% agrees and strongly agrees respectively that anemia is caused by iron or other nutrient deficient. This finding is related to the finding of WHO (2001) who investigated that anemia is caused by iron deficient.

Table 2: Shows the responses of the subject on if Anemia can result to the death of offspring in relation to their age.

Age	Strongly Disagree (%)	Disagree (%)	Neutral Response (%)	Agree (%)	Strongly Agree (%)
15-30	0	0	6	15	34
31-above	0	3	5	19	18
Total	0	3	11	34	52

Source: Research Survey, 2018

The finding of this study showed that most the participant across the age groups has a satisfactory knowledge as to anemia can result to death of the offspring. Based on their responses in relation to age (Table 2 above), in the age group 15-30; 15% and 34% agrees and strongly agrees respectively that anemia can caused death of the offspring. In the age group 31-above; 19% and 18% agrees and strongly agrees respectively that anemia can result to the death of the offspring. This finding is related to the finding of Chestman et al. (1991) who investigated that anemia caused the death of offspring.

Table 3: Shows the responses of the subject on if Anemia can result to mothers death during labour in relation to their age.

Age	Strongly Disagree		Neutral Response	Strongly Agree	
	(%)	(%)		(%)	(%)
15-30	0	3	12	15	25
31-above	0	3	9	10	23
Total	0	6	21	25	48

Source: Research Survey, 2018

The finding of this study revealed that most the participant across the age groups has a satisfactory knowledge as to anemia can result to death of the mothers during labour. Based on their responses in relation to age (Table 3 above), in the age group 15-30; 15% and 25% agrees and strongly agrees respectively that anemia can caused death of the mothers during labour. In the age group 31-above; 10% and 23% agrees and strongly agrees respectively that anemia can result to the death of the mother during labour. This finding is related to the finding of WHO (2002) who investigated that anemia caused the death of mothers.

Table 4: Shows the responses of the subject on if Anemia can lead to reduce body mass in relation to age.

Age	Strongly Disagree		Neutral Response	Strongly Agree	
	(%)	(%)		(%)	(%)
15-30	0	5	9	28	13
31-above	0	1	3	27	14
Total	0	6	12	55	27

Source: Research Survey, 2018

The finding of this study showed that most the participant across the age groups has a satisfactory knowledge as to anemia can lead to reduce body mass. Based on their responses in relation to age (Table 4 above), in the age group 15-30; 28% and 13% agrees and strongly agrees respectively that anemia can lead to reduce body mass. In the age group 31-above; 27% and 14% agrees and strongly agrees respectively that anemia can lead to reduce body mass. This finding is related to the finding of Chestman et al. (1991) who investigated that anemia can lead to reduce body mass.

Table 5: Shows the responses of the subject on if Anemia is caused by inadequate intake of iron and other nutrients in relation to their Educational status.

<b>Education Status</b>	<b>Strongly Disagree (%)</b>	<b>Disagree (%)</b>	<b>Neutral Response (%)</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>
Primary	0	2	6	10	7
Secondary	0	2	7	19	22
Tertiary	0	3	4	7	11
Total	0	7	17	36	40

Source: Research Survey, 2018

The finding of this study revealed that most the participant across the educational status has a satisfactory knowledge as to anemia is caused by iron or other nutrient deficient. Based on their responses in relation to educational status (Table 5 above), those in primary; 10% and 7% agrees and strongly agrees respectively that anemia is caused by iron or other nutrient deficient. Those in secondary; 19% and 22% agrees and strongly agrees respectively that anemia is caused by iron or other nutrient deficient. Those in Tertiary; 7% and 11% agrees and strongly agrees respectively that anemia is caused by iron or other nutrient deficient. However, Mishra et al. (2012) reported that educational qualification is a key determinant which affects the knowledge of women regarding nutrition and anemia.

Table 6: Shows the responses of the subject on if Anemia can result to the death of offspring in relation to their Educational status.

<b>Education Status</b>	<b>Strongly Disagree (%)</b>	<b>Disagree (%)</b>	<b>Neutral Response (%)</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>
Primary	0	4	5	8	8
Secondary	0	2	9	21	18
Tertiary	0	4	7	4	10
Total	0	10	21	33	36

Source: Research Survey, 2018

The finding of this study showed that most the participant across the educational status has a satisfactory knowledge as to anemia can result to death of the offspring. Based on their responses in relation to educational status (Table 6 above), those in primary; 8% and 8% agrees and strongly agrees respectively

that anemia can result to death of the offspring. Those in secondary; 21% and 18% agrees and strongly agrees respectively that anemia can result to death of the offspring. Those in Tertiary; 4% and 10% agrees and strongly agrees respectively that anemia can result to death of the offspring. This finding is related to the finding of Chestman et al. (1991) who investigated that anemia can result to death of the offspring.

Table 7: Shows the responses of the subject on if Anemia can result to mothers' death during labour in relation to their Educational status.

<b>Education Status</b>	<b>Strongly Disagree (%)</b>	<b>Disagree (%)</b>	<b>Neutral Response (%)</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>
Primary	0	0	0	9	16
Secondary	0	2	7	14	27
Tertiary	0	1	4	11	9
Total	0	3	11	34	52

Source: Research Survey, 2018

The finding of this study revealed that most the participant across the educational status has a satisfactory knowledge as to anemia can result to death of the mother during labour. Based on their responses in relation to educational status (Table 7 above), those in primary; 9% and 16% agrees and strongly agrees respectively that anemia can result to death of mother during labour. Those in secondary; 14% and 27% agrees and strongly agrees respectively that anemia can result to death of the mother during labour. Those in Tertiary; 11% and 9% agrees and strongly agrees respectively that anemia can result to death of the mother during labour. However, Pushpa et al. (2012) reported that the lower the education levels of the women, the higher the probability of suffering from anaemia during pregnancy.

Table 8: Shows the responses of the subject on if Anemia can lead to reduce body mass in relation to their Education status.

<b>Education Status</b>	<b>Strongly Disagree (%)</b>	<b>Disagree (%)</b>	<b>Neutral Response (%)</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>
Primary	0	0	5	7	13
Secondary	0	4	12	15	19
Tertiary	0	2	4	3	16
Total	0	6	21	25	48

Source: Research Survey, 2018

The finding of this study revealed that most the participant across the educational status has a satisfactory knowledge as to anemia can lead to reduce body mass. Based on their responses in relation to educational status (Table 8 above), those in primary; 7% and 13% agrees and strongly agrees respectively that anemia can lead to reduce body mass. Those in secondary; 15% and 19% agrees and strongly agrees respectively that anemia can lead to reduce body mass. Those in Tertiary; 3% and 16% agrees and strongly agrees respectively that anemia can lead to reduce body mass. This finding is related to the finding of Chestman et al. (1991) who investigated that anemia can lead to reduce body mass.

### **1.5 Conclusion**

The result of this study revealed a satisfactory knowledge of causes and effect of anemia among pregnant women such that across the two age groups both of them have a satisfactory knowledge. More so in regard to educational background all the categories have a satisfactory knowledge. This satisfactory knowledge all round could be due to the fact that this is an hospital based research and all the participant have been visiting hospital periodically and most have several awareness/counselling from nurses or other health workers regarding issues related to causes and effects of anemia.

### **1.6 Recommendation**

The following recommendations were drawn

1. All pregnant women should ensure constant visitation of antenatal as to continue getting knowledge on issues related to pregnancy.
2. Nurses and community workers should ensure all pregnant women visiting antenatal has knowledge on pregnant related issues.
3. More attention should be given to pregnant women especially in the rural areas on awareness campaign related to pregnancy risk factors.
4. More health personnel expert should be recruited and ensure all communities including rural areas are given attention.

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