KNOWLEDGE AND PREVENTIVE PRACTICES OF ANAEMIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN IBADAN SOUTH EAST LOCAL GOVERNMENT AREA, OYO STATE

BY

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CERTIFICATION

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DEDICATION

This research work is dedicated to the Almighty God for seeing me through this programme.

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ABSTRACT

Anaemia remains a major public health problem affecting all age population but more common among pregnant women. The high prevalence of anaemia in developing countries has been attributed to conditions like nutritional deficiencies, parasitic infections and inherited disorders. Anaemia in pregnancy is the leading cause of increased maternal health complications as well as that of the foetus and infants. The outcome from anaemia in pregnancy stalls social-economic development in developing nations. This study was, therefore, designed to investigate the knowledge, attitude and preventive practices of anaemia among pregnant women attending antenatal care in Ibadan South East Local Government Area, Ibadan, Oyo State, Nigeria.

A descriptive cross-sectional design was adopted for this study. A four-stage sampling technique was used to select 305 pregnant women across five selected Primary Health Care centres and a Traditional birth home in Ibadan South East Local Government Area. A validated semi-structured questionnaire which included questions on socio-demographic characteristics, a 39-point knowledge scale for assessing knowledge of definition, risk factors, signs and symptoms, nutrition, effects and prevention of anaemia in pregnancy; a 13-point attitudinal scale for assessing the attitude regarding prevention of anaemia in pregnancy; and a 6-point practice scale was used for data collection. Knowledge scores ≤13, >13-26 and >26 points were categorised as poor, fair and good, respectively. Attitude scores ≤7 and >7 were categorised as negative and positive, respectively. Practice scores ≤4 and >4 were classified as poor and good practices, respectively. Data were analysed using descriptive statistics and inferential statistics such as ANOVA and Chi-square test with the level of significance set at $p=0.05$.

Respondents' age was 27.1±5.9 years, almost all (97.7%) were Yoruba, most (72.5%) had senior secondary school education and 79.7% were Muslim faithful. Respondents' knowledge score was 26.4±3.0, with the majority having good knowledge. Most (70.5%) of them responded correctly that low childbirth spacing increases the chance of a pregnant woman having anaemia, 75.1% correctly answered shortness of breath as one of the signs of anaemia in pregnancy, and almost all (99.7%) affirmed green leafy vegetables as a source of Iron. The attitudinal score was 9.5±0.9, 97.7% of the respondents had a positive attitude

towards the prevention of anaemia in pregnancy. Almost all (97.4%), were favourably disposed with the notion that anaemia in pregnancy is a serious problem. Also, almost all (99.0%), affirmed that they consume foods rich in iron and 97.4% indicated their interest in preventing anaemia. Most (82.0%) of the respondents, 82.0% signified to have taken folic acid in current pregnancy and 95.4% reported to have been taking three regular balanced diets daily.

Respondents had inadequate knowledge relating to nutrition, which reflects in their practice. Health promotion programmes on the importance of a healthy diet during pregnancy should be organized by stakeholders in the health sector in collaboration with nutritionists.

Keywords: Nutritional deficiencies, Anaemia, Maternal health complications, Preventive practices

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GLOSSARY OF ABBREVIATIONS

LGA- Local Government Area

WHO- World Health Organization

IUGR- Intra-Uterine Growth Retardation

LMIC- Low Middle Income Countries

IDA- Iron Deficiency Anaemia

PCV- Packed Cell Volume

IBSELGA– Ibadan South East Local Government Area

OPERATIONAL DEFINITION OF TERMS

Knowledge: awareness or familiarity gained by experience of a fact or situation.

Attitude: "a way of being, a position or tendencies to".

Practice: "are actions of the person in response to particular stimulus".

Anaemia: "a condition in which there is a deficiency of red cells or of haemoglobin in the blood, resulting in pallor and weariness".

Pregnancy: "the period from conception to birth when a woman carries a developing embryo or foetus in her body".

CHAPTER ONE

INTRODUCTION

1.1   Background to the study

Anaemia is a common disease of nutritional deficiency which is of public health concern and about a quarter (1.62 billion persons) of the world population are suffering from it. Out of this number, 56 million are pregnant women (Balarajan, Ramakrishnan, Ozaltin, Shankar & Subramanian, 2011; World Health Organisation [WHO], 2008). Anaemia is most dominant among pregnant women in sub-Saharan Africa (SSA) (57%), seconded by Southeast Asia (48%) and least prevalent in South America (24.1%) (WHO, 2008). Anaemia as a major public health issue affecting all age population is more common in pregnant women (Balarajan *et al.* 2011). More than half (56%) of pregnant women in Low and Middle-income countries (LMIC) have been recorded by the global data to have anaemia (Black, Victoria & Walker, 2013). Ghimire and Pandey (2013) reported iron deficiency to be the commonest anaemia drive globally, howbeit some conditions like deficiencies in folate, Vitamin A and B_{12}, parasitic infections, chronic inflammation, and inherited disorders (Thalassemia, sickle cell anaemia) are also known to cause anaemia. Anaemia in its grievous form is associated with shortness of breath, weakness, dizziness, fatigue, light-headedness and drowsiness (Pasricha, Flecknoe-Brown, & Allen, 2010).

According to World Health Organisation, anaemia in pregnancy is defined as "haemoglobin level less than 11g/dl and it is categorised into three levels of severity; mild anaemia (Hb level, 9 - 10.9g/dl), moderate anaemia (Hb level, 7 - 8.9g/dl) and severe anaemia (Hb level 7 - 4.5 g/dl)" (Nkegoum, Anchang, & Achid, 2009). The risk of suffering from anaemia is higher in pregnancy than in non-pregnant stage because increased iron quantity is required in pregnancy. Iron requirements seem to increase slowly from 0.8 mg in a day in the first month to about 10mg in a day in the concluding 6 weeks of pregnancy, although it is reduced in the first three months because of the seizure of menorrhoea (Tay, Agboli, & Walana, 2013). Anaemia in pregnancy can bring about maternal health complications as well as that of the foetus. Some of the maternal complications associated with pregnancy-related anaemia are cardiac failure, failing lactation, recurrent infections and foetal complications like Intra-Uterine Growth Retardation (IUGR), infections leading to preterm labour (Allen, 2006).

1.2   Statement of the problem

Oladapo (2000) reported that the physiologic changes in pregnant women in developing countries is escalated by malnutrition, causing micronutrient deficiencies such as anaemia, which can have devastating significances for mothers and foetus.

Anaemia in pregnancy has been recognised as one of the direct or indirect contributory risk factors to maternal death through prenatal haemorrhage, postnatal haemorrhage, cardiac failure and puerperal sepsis; and also increased death rate of infants developing nations (Prakash & Yada, 2015). Anaemia as a pointer of nutritional deficiencies, also contributes substantially to low birth weight, birth abnormalities, and premature labour. It has been known to be a significant driver of death and diseases among mothers, also causing infants' physical and cognitive losses, thus stalling social-economic development in developing countries (Okeke, 2011).

Even with anaemia been identified as a public health issue globally, no fast progress has been identified and it's recorded prevalence is till high globally (WHO,2014). Also, lower knowledge on anaemia in pregnant women has been reported to increase the risk five times. Therefore, the possible risk factors that suggests increasing prevalence of anaemia are knowledge and practice of anaemia in pregnant women (Nagraheni, Diaswadi & Ismail, 2003). Margwe & Lupindu (2018) reported that high prevalence of anaemia in pregnancy could be attributed unfavourable attitude towards preventive measures.

In addition, no study on anaemia in pregnancy has been carried out in Ibadan South East Local Government Area, and being an urban slum may likely increase the chances of pregnant women having anaemia.

1.3   Justification

According to the World Health Organisation (WHO), enormous factors, together with physiological vulnerability, pose pregnant women at danger of anaemia. "These factors need to be tackled in the country-specific targets for achieving the Sustainable Development goals in the near future and reducing anaemia by half in the coming 2025" (WHO, 2014).

Previous studies on anaemia in pregnancy employed laboratory procedures (these included collection of blood, urine and stool samples) to determine the prevalence of

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anaemia and were conducted in Local Government Areas (LGAs) excluding Ibadan South East LGA, - however, there is literature paucity on studies to investigate the knowledge and preventive practices on anaemia among pregnant women attending antenatal care in health facilities in the LGA. Fikir reported that studies with respect to the significance of steady mother care and health education promotion programmes that have the potency of playing a more important part in health care be carried out (Fikir, 2017)

Hence, conducting this study will assess the levels and offer more information on the knowledge of pregnant women on anaemia and the practices they adopt to prevent the condition. The study will also provide useful information to pregnant women, health workers and the scientific community on the development of interventions to prevent anaemia in pregnancy, reduce the risk factors, lifestyle modification to correct harmful practices and reinforce healthy practices if found inadequate.

1.4   Research Questions

1. What is the level of knowledge of respondents on anaemia in pregnancy?

2. What is the attitude of respondents regarding anaemia in pregnancy?

3. What are the preventive practices taken by respondents against anaemia in pregnancy?

1.5   Objectives of the study

1.5.1   Broad Objective

The broad objective of this study is to investigate the knowledge and preventive practices of anaemia among pregnant women attending Antenatal Care in health facilities in Ibadan South East Local Government Area, Oyo State.

1.5.2   Specific Objectives

The specific objectives for the study are to:

1. Assess the level of knowledge of the respondents on anaemia in pregnancy
2. Document the attitude of respondents as regards anaemia in pregnancy
3. Describe the preventive practices against anaemia in pregnancy among the respondents

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1.6   Research Hypotheses

The following null hypotheses were tested:

$H_0 1$: There is no significant association between socio-demographic characteristics (level of education, income, age, ethnicity, previous history of anaemia) and the knowledge of anaemia in pregnancy among respondents

$H_0 2$: There is no significant association between socio-demographic characteristics (level of education, income, age, ethnicity, previous history of anaemia) and attitude towards anaemia in pregnancy among respondents

$H_0 3$: There is no significant association between socio-demographic characteristics (level of education, income, age, ethnicity, previous history of anaemia) and preventive practices against anaemia in pregnancy among respondents.

2.1 Anaemia in pregnancy

Anaemia has been defined by the World Health Organization (WHO) as a "condition in which the number of red blood cells (RBCs) or their oxygen-carrying capacity is inadequate to meet physiologic demands in the body, in which the haemoglobin level may vary by age, sex, attitude, smoking, and pregnancy status" (Gogoi & Prusty, 2013). Anaemia in pregnancy can either be absolute or relative (Olujimi, Aniekan, Emem, Robert, Godwin, & Anyiekere (2014). Absolute anaemia entails a reduction in red cell mass. Production of red cells in the bone marrow, requires Vitamin B_{12}, Iron and folic acid, lack of any of the aforementioned leads to the development of anaemia (Van Den Broek, 2003). Relative anaemia occurs during pregnancy (Bolton, Street & Pace, 1983).

The World Health Organisation (WHO) recommended that when the sum of haemoglobin mass in the peripheral blood is 11g/dl, that is, Packed Cell Volume (PCV) 33% or lesser, then anaemia in pregnancy is evident. Nonetheless, it is mostly accepted in developing countries that anaemia is present when the haemoglobin concentration is lower than 10g/dl or PCV less than 30%. (Nkegoum et *al.,* 2009) According to the WHO, Anaemia ranges from mild to severe, and the WHO places the haemoglobin level for each of these anaemia in pregnancy degrees at 9.0 -10.9g/dl as mild anaemia; 7-8.9g/dl as moderate anaemia and <7.0g/dl as severe anaemia" (WHO, 2014).

2.1.1 Classification of anaemia

Anaemia has been classified into the following:

1. Kinetic:

Red cells usually remain relatively constant in number suggesting that cell production is equal to cell destruction. Consequently, if cell numbers decline, this must be due to either:

- A decline in the production of red cells.
- A rise in the destruction, loss, pooling or sequestration of red blood cells.

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2.   Morphological:

The characteristic and useful diagnostic guide is the size and haemoglobin content of the red cells. Thus, if red cell numbers are diminished in relation to haemoglobin content and red cell mass, then the red cells will be larger than the average (macrocytic anaemia). If haemoglobin and red cell mass are decreased to the number of red cells, the red cells will be smaller than normal and contain less haemoglobin (microcytic hypochromic anaemia). If red cell size is unchanged, the anaemia is termed (normocytic), and if the haemoglobin concentration of each cell is normal the additional term normochromic is applied (Woolf, 1998).

Anaemia in pregnancy can either be absolute or relative.

(i) Relative anaemia:

It occurs when the plasma volume increases than the mass of the red cell, thus leading to the physiological anaemia in pregnancy. (Bukar, Audu, Sadauki, Elnafaty & Mairiga, 2009)

(ii) Absolute anaemia:

Absolute anaemia is categorised by decreased red cell mass, involving "haemoglobinopathy" which is the increased destruction of red cell, a bacterial infection like urinary tract infection and malaria, bleeding or decreased production of the red cell (Geedhoed, Agadzi, Visser et al., 2006; Bukar et al., 2009).

2.1.2   Types of Anaemia developed during pregnancy

The following are the types of anaemia which developed during pregnancy:

1. Physiological anaemia or dilutional anaemia of pregnancy:
The plasma volume rises excessively to red cell mass. A reduction in the haematocrit and haemoglobin concentration usually steadies at 0.33L/L and 11g/dl respectively and serve a useful purpose by enhancing placental perfusion, thereby enabling oxygen and nutrient delivery to the foetus. During pregnancy, the plasma volume expands more significant than the mass of the red cell, thus, resulting in a reduction of haematocrit, the concentration of haemoglobin and red cell count. However, there is an increase in the sum of circulating haemoglobin which is linked to the red cell mass increment (Muguleta, Zelalem, Meseret, & Banlaku, 2013).

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2. Nutritional anaemia:

An absolute decrease in red cell mass is likely to be present when the concentration of haemoglobin is less than 10.4g/dl; however, because of variation in the magnitude of the hydria, a fixed dividing line between the normal and abnormal is challenging to place in pregnancy. Red cells remain normochromic and normocytic unless deficiency of iron or folate supervenes. Multiple factors lead to nutritional anaemia in pregnancy. In developing countries, some of these factors include lifestyle, low socioeconomic condition, illiteracy and lack of knowledge of good dietary habits. Anaemia in pregnancy has been linked with increased deaths rates and diseases of mothers and it adds to 20% of Africa's maternal mortality. Folate deficiency accounts for 95.0% of megaloblastic anaemia in pregnancy (Woolf, 1998). Iron deficiency anaemia (IDA) is a key health issue in pregnancy (WHO, 1997). Causes are due to deficiency of nutritional substances and it is needed for erythropoiesis like the metals, protein, and vitamins (iron, folate vitB12, vitB6, vitC and copper) (WHO, 1997).

Types of nutritional anaemia includes:

(i)   Iron deficiency anaemia

Iron is available in all human body cells, and its function includes carrying oxygen from the lungs to the tissue in the form of haemoglobin, a transporting channel for the electron in the form of cytochromes within the cells, an inherent part of enzyme reactions and also alleviates the use and storage of oxygen as myoglobin in the muscles. Presence of too little iron in the body can affect these functions, thereby causing anaemia (Williams, Evans & Newnham, 1997).

Iron Deficiency Anaemia (IDA) develops when there is no enough iron to produce adequate quantity of haemoglobin in the body. Low bioavailability of iron in food, inadequate intake of iron enhancers and foods rich in iron, and excessive consumption of iron inhibitors in the diet (such as tea, coffee; calcium-rich foods), can contribute to iron deficiency anaemia. Prevalence of Iron deficiency in women is higher than in men as a result of iron loss during menstruation and high demand for the iron of a growing foetus in pregnancies which is two times higher than the non-pregnant state demands. There is a significant growth in iron demand in pregnancy which ranges from 0.8mg daily in the first trimester to 7.5mg daily in the third trimester.

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Anaemia and IDA are often used interchangeably because iron deficiency has been contributing significantly to the onset of anaemia globally, and anaemia prevalence has commonly been used in place of IDA (WHO, 2001). Generally, it is thought that 50.0% of anaemia cases result from iron deficiency, but the proportion may vary with distinct areas based on local conditions and among different groups of population (WHO, 2001). Low iron consumption, poor uptake of iron from meals high in phytate or phenolic compounds, and life stages when iron requirements are exceptionally high (i.e. growth and pregnancy) have been discovered to be main risks for anaemia (Anorlu, Oluwole, & Abudu, 2006). Iron deficiency anaemia is usually found among women of reproductive age, young children, pregnant women and breastfeeding mother (Park, 2007).

(ii) Folate deficiency anaemia.

Folate is a type of vitamin B useful in new cells formation, including healthy red blood cells. Folate is a water-soluble vitamin which is used to synthesize & repair DNA. Extra folate is needed by women in pregnancy, and when there is a deficiency it leads to anaemia. Folate deficiency can contribute directly to birth defects such as neural tube abnormalities and preterm labour. Folate deficiency results from consumption of diets low in vegetables, fortified cereals and fresh fruits.

(iii) Thalassemia and Sickle cell anaemia

Thalassemia is a group of genetic conditions leading to impaired production of the globin chains and resulting in red cells with inadequate haemoglobin. Most studies available on the effect of thalassemia syndromes on pregnancy outcome are restricted to β-thalassemia major and intermediate, whereas studies are few on pregnancy in women with the thalassemia traits (Lucke, Pfister & Durken, 2005).

2.1.3 Causes of anaemia in pregnancy

Anaemia causes are found at several interacting levels (Balarajan et al., 2011). Reduced production of red blood cell/haemoglobin and increased loss of red blood cells/haemoglobin due to nutritional, genetic and infectious influences have been regarded as some of the primary causes of anaemia. Some vital risk factors for anaemia include folate, Vitamin B12 and iron (which is known as the most common risk factor) deficiencies, infections like malaria, hookworms and the human immunodeficiency virus (HIV), and Sickle cell disease which is a disorder in the structure or production of haemoglobin and the thalassemias (Goonewardene, Shehata & Hamad, 2012).

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During pregnancy anaemia is commonly caused by increased demand of iron for the growing foetus and placenta; and increased red blood cell mass (with expanded maternal blood volume in the third trimester), which is further aggravated with other factors such as childbearing at an early age, repeated pregnancies, short intervals between pregnancies and poor access to antenatal care and supplementation.

Many of the factors that trigger anaemia happen independently but more often dependently. These factors may be Pathological or Physiological haemodilution of pregnancy & an increased need for folic acid and iron e.g. multiple births. Pathological causes include loss of blood, increased depletion of red cells and reduced production of the red cell. Malnutrition (reduced intake), low storage, abnormal absorption and usage from Crohn's disease results in Nutritional deficiency; ileal resection; short inter pregnancy intervals, recurrent blood loss from chronic gastric or duodenal ulcer and hookworm infestation leading to depletion of iron storage; Haemoglobinopathies – sickle cell diseases and Thalassemias; Acquired Immunodeficiency Syndrome; Leukaemia. Major anaemia causes in sub-Saharan Africa has been said to include Malaria, Nutritional deficiency, parasitic infections and recent infections with HIV (Nwizu, Iliyasu, Ibrahim, & Galadanci, 2011).

Van Den Broek and Letsky (2000) also reported some factors that place women in danger of getting anaemia in pregnancy and they include several pregnancies, short childbirth spacing and fibroids or abnormal uterine flow which leads to heavy menstrual flow before pregnancy. Also, the age of adolescent primigravidas poses them at higher anaemia in pregnancy risk and more often than not poor nutritional conditions.

2.1.4 Symptoms of anaemia in pregnancy

Early symptoms of anaemia like light-headedness, fatigue, weakness, mild dyspnoea during exertion are usually nonspecific. Some other symptoms and signs include pallor of the eyelids, tongue, nail beds, and palms, spoon-shaped nails (koilonychias), and oedema. Tachycardia, hypotension and even congestive cardiac failure can occur in severe cases (Lopez, Cacoub, Macdougall & Peyrin-Biroulet, 2016).

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While mild cases of anaemia may present no symptoms, some symptoms are usually presented by the moderate to severe conditions:

• feeling excessively fatigued or weak

• pale look

• experiencing shortness of breath, heart palpitations, or chest pain

• light-headedness or dizziness

• cold hands and feet

• cravings for non-food items like dirt, clay, or corn starch

2.1.5 Consequences/ effects of anaemia in pregnancy

Cardiac failure, post-partum haemorrhage (PPH), infections (perpetual sepsis, urinary tract infections) which are examples of maternal complications and maternal mortality are some of the consequences or outcomes of anaemia in pregnancy. Foetal complications which includes increased perinatal mortality, intrauterine growth restriction (IUGR) is linked with significant neonatal, fetal and maternal morbidity and mortality (Mohammed & Emmanuel, 2013; Allen 2006). Permanent damage of children's cognitive ability which leads to short-term memory and decreased attention span has been linked to be an effect of mild forms of anaemia. Intelligent quotients (IQs) in children with anaemia are lesser than those without anaemia. Anaemia stalls the productivity of an individual and that of a nation. Tolentino and Friedman (2017) also reported IDA being a risk factor for premature birth leads to low birth weight and low neonatal health quality.

2.2 Prevalence of anaemia during pregnancy- Globally and Nigeria

Anaemia has been known to be part of the widely known problems which affects women in pregnancy. It is more prevalent among pregnant women although it occurs at all stages of life (Abriha, Yesuf, & Wassie, 2014).

Globally, to measure the effects of interventions and monitor the progress made towards reduction of anaemia during pregnancy as a goal, the prevalence of anaemia serves as a significant indicator. Studies on the prevalence of anaemia are also good tools to monitor how better reproductive health is becoming (WHO, 2008). Of the entire world's population, 24.8% are affected by anaemia, and 56.4 million (41.8%) of women have been estimated to have anaemia during pregnancy (McLean, Cogswell, Egli, Wojdyla, &

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de Benoist, 2006). In developing countries, there is a high incidence in malaria-endemic areas among first-time mothers and a high prevalence rate of anaemia which can be as high as 61%.

The most affected region is sub-Saharan Africa, with 17.2 million pregnant women estimated to have anaemia which tallies with about 30% of total world cases of anaemia (WHO, 2008). Prevalence of anaemia during pregnancy is highest in Africa at 57.1%, followed by South East Asia at 48.2%, East Mediterranean at 44.2%, West pacific at 30.7%, Europe at 25.1% and it is lowest in the Americas at 24.1% (De Benoist, McLean, Egli & Cogswell, 2008). Several studies carried out in different African settings has reported anaemia in pregnancy to have prevalence ranging from 41% to as high as 83% (Haggaz, Radi, & Adam, 2010). In pregnancy, anaemia plays a significant role on the health of both the foetus and that of the mother and 20% of maternal deaths in Africa have been ascribed to anaemia, with the predisposing factors noted to include grand multiparity, low socioeconomic status, malaria infestations, HIV infections, and inadequate child spacing among others (Harrison, 2001; Dutta 2008).

Melku, Addis, Alm & Enawgaw (2014) estimated the global prevalence of anaemia in pregnant women to be 51%. According to a study by WHO on the global prevalence of anaemia in 2011, percentage of people living with anaemia globally is 42.6% with that of pregnant women being 38.2%, and African region 84.5% with that of pregnant women is 46.3%.

In the developed countries, the incidence of anaemia in pregnancy ranges from 10-20% which is lesser compared to developing countries which have a wide range of 40-80%.

Prevalence of anaemia in pregnancy in Nigeria.

Across the six geographical zones in Nigeria, studies have it recorded that anaemia prevalence ranged from 23.7% -88.7%. A study conducted in Abeokuta, Nigeria on the prevalence of anaemia among pregnant women Abeokuta, revealed that 76.5% of the enrolled participants were anaemic at one pregnancy stage or the other. Among the studied pregnant women, a higher prevalence of anaemia (80.6%) was recorded among the primigravida than among the multigravidae (74.5%). In all the antenatal centres more anaemia was found in women in the 2nd trimester of pregnancy.

In a retrospective study conducted in eastern region of Nigeria by Esike, Anozie, Onoh, Sunday, Nwokpor and Umeora, (2016) on prevalence of anaemia in pregnancy at

booking, it was documented that according to the WHO's criterion of 11 g/dl to define anaemia, more of the pregnant women at booking, 283 (56.5%) were anaemic at booking with 196 (69.3%) of them being mildly anaemic and 87 (30.7%) being moderately anaemic. Two hundred and eighteen women (43.5%) of them were not anaemic. Onoh, Lawani, Ezeonu, Nkwo, Onoh and Ajah between February and July 2012 studied "Predictors of anaemia in pregnancy among pregnant women accessing antenatal care in a poor resource setting in South Eastern Nigeria" and identified HIV, obstetric haemorrhage, malaria parasitemia, primigravida and helminthiasis as some of the important predictors of anaemia in pregnancy.

In a study conducted by Okunade and Adegbesan-Omilabu (2014), a prevalence of 27.6% was recorded among the 500 enrolled women at the time of antenatal booking. There was a higher prevalence amongst the primigravidae (33.9%) than among the multigravidae (25.3%). However, using the Lawson definition of anaemia in pregnancy as haemoglobin of below 10 g/dl as the cut-off, 16% of the pregnant women were anaemic at booking with (14.9%) being mildly anaemic and (6.3%) moderately anaemic. However, the prevalence of anaemia reported in pregnant women showed inconsistency both locally and in other countries.

In a study, conducted by Olujimi et al., (2014) in an eastern state in Nigeria, it was reported that anaemia prevalence among pregnant women was 54.5%. The "WHO proposal of classification of anaemia's public health significance in populations based on the prevalence estimated from haemoglobin levels" is as followed:

Table 2.1: Prevalence of anaemia and its public health significance.

Category of public health significance	Prevalence of anaemia
Severe	> or= 40%
Moderate	20% to 39%
Mild	5.0% to 19.9%
Normal	<5.0%

Adapted from "countries categorized by public health significance of anaemia" WHO, 2010

2.3 Knowledge of Anaemia in pregnancy among pregnant women

According to WHO, "knowledge of prevention anaemia and good practices can prevent anaemia during pregnancy" (WHO, 2008). In a study conducted in India, it was reported that lower knowledge on anaemia in pregnant women increases the risk five times. Therefore, the possible risk factors that suggest increasing prevalence of anaemia are knowledge and practice of anaemia in pregnant women (Nagraheni, Diaswadi & Ismail, 2003). In another related study, Margwe and Lupindu (2018) found that about 35.0% of the respondents were able to define anaemia correctly, while high proportions (65.0%) of the respondents were unable to give the correct definition of anaemia. This figure denotes poor knowledge of anaemia among the respondents.

In a study finding by Dakar *et al.,* 2018, half of the respondents have Poor Knowledge and poor skills regarding prevention of anaemia during pregnancy. Factors which include level of education, residency, family type and previous anaemia history have been reported to significantly affect knowledge regarding prevention of anaemia in pregnancy.

A study by Yesufu, Olatona, Abiola and Ibrahim (2013) in Lagos, recorded that most (95%) of the respondents were aware of anaemia in pregnancy.

2.4 Attitude of pregnant women towards anaemia

Attitude is a "way of being, a position or tendencies to" Gumucio et al. 2011). "Attitudes are generally positive or negative views of a person about a place, thing or event" (Obi-keguna & Isidore, 2004).

Attitude as a measure of people's feeling about an issue is one of the factors that can influence anaemia intervention programme. High prevalence of anaemia in pregnant women could be as a result of unfavourable attitude towards preventive and control measures.(Margwe & Lupindu, 2018) Several studies have reported how a change in attitude as a product of educational intervention has resulted into changes in behaviour and practices and consequently success in intervention (Aiga, Nguyen, Nguyen, Nguyen & Nguyen, 2016; M'Cormack. & Drolet, 2012).

Margwe and Lipindu (2018) in a study conducted in Tanzania reported that pregnant women did not believe they are at risk of getting anaemia and practices according to anaemia control programme could help alleviate the risk. The study also showed that there was an association between favourable attitude and low level of anaemia.

In a study by Noronha, Khasawneh, Raman, and Seshan (2012), it was strongly recommended that pregnant women should take folic acid and iron supplementation for six months as well as engaging in child birth spacing practice by mother for anaemia prevention.

2.5   Prevention and treatment of anaemia

Having realistic, affordable balanced meal rich in iron and protein, alongside foods rich in vitamin C (e.g. orange juice); taking low-dose of oral iron at first prenatal visit serves as primary prevention of iron deficiency (Killip, Bennett & Chambers, 2007). Preventive measures include nutrition education about increase iron consumption through food-based strategies namely- food diversification, fortification of food with iron, iron supplementation; health services and sanitation amendments.

(i) Diet diversification-

With the diet diversification consumption of iron in the diet can be increased with adopting the following measures:

(a) Promoting consumption of iron rich foods like green leafy vegetables, lentils, eggs, nuts and seeds, beans, lean red meat, fruits like banana, melon.

Some common sources of iron are- Chickpea, Spinach, Amaranth, Onion Stalks, Mustard Leaves, Fenugreek Leaves, Mint, Lentil, and Soya bean, Bengal Gram, Gingerly Seeds, Black Gram Dal, Pumpkin, Water Melon, Mutton.

(b) By increasing the use of enhancers such as ascorbic acid (vitamin C) in the diet to enhance iron absorption. Some of the rich sources of vitamin C are guava, orange, lemon, cabbage, green leafy vegetables, bell peppers, kiwi, and melons.

(c) Addition of a little amount of meat, poultry, or fish will improve total iron content.

(d) To discourage the consumption of tea, coffee, chocolate, or herbal teas with meals as these substances prevents abortion of iron from the gut.

(ii) Food fortification

It is a process used in improving food nutritional quality through the addition of micronutrients to refined foods, thus providing a public health benefit with reduced risk to health. Iron fortified Iodized Salt (double fortified salt) has been approved as food

fortification to prevent IDA which is also a valid approach to promote population's haemoglobin level, encompassing pregnant women.

(iii) Supplementation

Intake of iron supplements in pregnancy is also known to have a protective effect against anaemia in pregnancy (Hess, Rosenberg, & Waters, 2001). Iron supplementation during pregnancy shields a woman from becoming anaemic because the essential amounts may not be provided from dietary intake during this period. Controlled trials of iron supplementation during pregnancy have steadily established a good impact on the iron status of mothers at delivery.

2.5.1 Barriers to successful preventive treatments of iron deficiency anaemia in pregnancy

1. Minimal uptake of Maternal Health Service.

Visits to antenatal care gives pregnant women the privilege to access advantageous interventions which include preventive treatments of IDA. These interventions are of help to both the mother and foetus. Yet, maximum utilization of antenatal services in developing countries is still poor; with indicators such as late antenatal visits or non-utilization of health service. There are instances of pregnant women not going for bookings (Chigbu, Onwere, Kamanu, Aluka, Okoro, & Adibe, 2009) and a wide range (60% to 90%) of antenatal care uptake rates of once during most recent pregnancy (Fatusi & Babalola, 2009). A study by Osungbade, Shaahu, and Uchendu, (2011) reported that a substantial amount of pregnant women made their first antenatal visit in the last trimester; this can prevent early detection and treatment of anaemia.

2. Partial implementation of preventive treatments.

Partial implementation of preventive treatments by health care workers especially in places with high prevalence of anaemia poses a threat to the accomplishment of routine folate and iron supplementation recommended by the WHO as a part of antenatal care package for pregnant women. Studies have harmoniously recorded no adherence to this recommendation at given antenatal visit. Van Eijk et al. reported in a study that not until the last trimester of pregnancy did 44% and 53% of pregnant women receive folate and iron supplementation, respectively (Van Eijk, Bles, & Odhiambo, 2006).

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3. Weak Infrastructure and Political Commitment.

Several factors which includes the need for structured conformity with specifications for purchase and quality control, technical and managerial capacity constraints, policies on micronutrient content labelling, and the need to support aspects associated with local processing and fortification activities with money are posing challenges towards the efforts of World Food Programme (WFP) in conquering deficiencies of micronutrient in low-income for deficit countries and nutritionally-vulnerable groups (Nutrition Service of the World Food Programme, 2006).

4. Management

Management of anaemia in pregnant women should become priority in practice. Compulsory screening of all pregnant women, dietary modifications and supplementation, coupled with blood transfusion and parenteral iron in severe anaemia have gone a long way in reducing maternal morbidity and mortality.

Improved perinatal outcome and a great reduction in maternal morbidity and mortality can be achieved by early detection and management of anaemia in pregnancy. Accurate and acceptable methods of discovering anaemia, measuring its danger and response to treatment can help in the successful management of anaemia in pregnancy (WHO, 1993). Early identification and treatment of infections in pregnancy improve the outcome for both mother and child.

2.6   Theoretical framework

Theory of Reasoned Action (TRA)

Martin Fishbein and Icek Ajzen (1975, 1980) developed the theory to explain voluntary behaviours of individuals. The components of the theory are Behavioural Intention (BI), Attitude (A), and Subjective Norm (SN). TRA suggests that a person's attitude about a behaviour and the subjective norms is directly linked with the behavioural intention of the person.

Attitude is "a complex mental state involving beliefs, feelings, values and dispositions to act in certain ways". It consists of beliefs about the outcomes of carrying out a behaviour multiplied by outcome costing.

Subjective norm refers to the belief that an important person or group of people will approve and support a particular behaviour.

Behavioural Intention refers to the motivational factors that influences a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed. It influenced by attitudes and subjective norms towards a behaviour.

Attitude towards Anaemia

Expectancies

- Early bookings for Antenatal Care
- Increased Iron intake
- Increased contraceptive uptake

External factors

- Demographic: Socioeconomic status, age, literacy level, parity
- Reference groups: family, spouse,peers, information from health workers
- Knowledge about Anaemia
- Individual personality

Behavioural intention

Likely to engage in Anaemia preventive practices

Behaviour

Likely to take preventive practices against Anaemia

Subjective norms

- Peer influence
- Spouse thinks early Antenatal bookings is good
- Information from healthworkers

Figure 2.1: Application of the Theory of Reasoned Action to knowledge and preventive practices of Anaemia in pregnancy.

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CHAPTER THREE

METHODOLOGY

3.1   Study design

This study adopted a descriptive cross-sectional design

3.2   Description of Study Area

The site for this research was Ibadan South East Local Government Area, Oyo State. The Local Government Area (LGA) was carved out of the defunct Ibadan Municipal Government (IMG) in 1991. The Local Government Area inherited the administrative headquarter of the defunct IMG at Mapo. It covers a land area of 58.251 square kilometres with 2010 estimated population of 301,775, using a growth rate of 3.2% from 2006 census. It has a population density of 5,181 persons per square kilometre. The LGA shares boundaries with Ibadan North Local Government Area to the North, Ibadan North East Local Government Area to the North East, Ona-Ara Local Government Area to the East, Oluyole Local Government Area to the South while Ibadan South West Local Government Area bounded it to the West. The LGA is a highly populous urban area located in the interior part of the metropolis and made of the indigenous people characterised by old buildings and urban slums. Yoruba ethnic group dominate the LGA being the centre of the metropolis, although the LGA host people from other ethnic groups. The residents are engaged in various economic activities ranging from trading, transportation business and civil service and the most practiced religion is Islam with few being Christians and Traditionalists. Ibadan South East Local Government Area is subdivided into 10 political wards namely Adesola, Asanke, Challenge, Ita-egbe, Mapo, Molete, Odinjo, Oja-oba, Oranyan, Owode, The LGA houses 19 Private hospitals, 17 Primary Health Centres and health posts and few traditional birth homes.

3.3   Study population

The target population for the study constitute pregnant women attending Antenatal Care in health facilities in the IBSELGA. Primigravid and multigravid pregnant women aged 15 to 49 years (women of reproductive age) attending antenatal care in selected health facilities during the study period were included in the study population.

3.4 Inclusion and exclusion criteria

a. Inclusion criteria

All pregnant women of reproductive age (15 to 49 years) attending Antenatal clinics in selected health facilities in IBSELGA and those who had no health challenge at the time of data collection were potential respondents.

b. Exclusion criteria

The study excluded pregnant women who were above 49 years of age, those who were critically ill and those who had a history of blood transfusion (within the previous two weeks).

3.5 Sample size determination

The Leslie Kish formula (Kish, 1965) for single proportion was used in determining the sample size for this study with reference to the results of a study previously conducted in South West geopolitical zone of Nigeria where the prevalence was calculated to be 27.6% (Okunade & Adegbesan-Omilabu, 2014)

The Leslie Kish formula is as follow:

$$N = \frac{Z^2 pq}{d^2}$$

N= Minimum sample size

Z= Standard normal deviation set at 1.96 normal interval

p= Proportion taken as 27.6%, prevalence of anaemia in pregnancy in a previously conducted study in South West region of Nigeria was found to be 27.6% (Okunade&Adegbesan-Omilabu, 2014)

q= Proportions without the variables being investigated

$$(q=1-p)$$

q= 1 – 0.276 = 0.724

d= Absolute deviation from true value (degree of accuracy) = 5%

Therefore, the sample size $N = \dfrac{(1.96)^2 \times 0.276 \times 0.724}{0.05^2}$

$$N = \frac{0.762}{0.0025}$$

$$N = 305$$

3.6   Sampling technique

A multi-stage sampling technique was employed for this study to select the sample.

Stage One: A total of seventeen (17) Primary Healthcare Centres (PHCs) in the 10 wards of the LGA were identified (Source: Extracted from the Records of Oyo State Ministry of Health, 2016)

Stage Two: From the list of the PHCs, five primary health care facilities were selected by balloting and a traditional birth home by snowballing in the LGA.

Stage Three: The population of pregnant women in the selected health facilities were determined and proportionate sampling technique was used in the selection of study participants in each facility.

Stage Four: Respondents in each facility were selected using simple random technique.

For the proportionate sampling technique used in selection of participants, the formula below was used:

$$n = \frac{x}{y} \times S$$

where n is the number of respondents to be selected from a particular health facility

x= number of pregnant women in a health facility

y= total number of pregnant women in all 6 selected health facilities

S= calculated sample size

Table 3.1: Primary Healthcare Centres in IBSELGA

S/No	Ward	Public Health Care Centres
1	Adesola	Orita-aperin PHC
2	Asanke	Elekuro Health Centre
3	Challenge	Balaro PHC, Felele PHC, Orita challenge PHC
4	Ita-Egbe	Agbongbon PHC, Lanioka Health Centre
5	Mapo	Mapo PHC
6	Molete	Boluwaji PHC, Eyin Grammar PHC, Molete PHC, Ori-aje Health Post
7	Odinjo	Odinjo PHC
8	Oja Oba	Omiyale Health Post
9	Oranyan	Oranmiyan PHC
10	Owode	Iyana court Health Centre, Owode Health Centre

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Table 3.2: Proportionate sampling procedure

Selected facility	Total number of pregnant women	Sample size determination	Number of respondents selected
Agbongbon PHC	200	$\frac{200}{770} \times 305 = 79.2$	79
Oranyan PHC	295	$\frac{295}{770} \times 305 = 116.8$	117
Adesola Orita-Aperin PHC	45	$\frac{45}{770} \times 305 = 17.8$	18
Odinjo PHC	92	$\frac{92}{770} \times 305 = 36.8$	37
Molete PHC	40	$\frac{40}{770} \times 305 = 15.8$	16
Abiwere traditional birth home	98	$\frac{98}{770} \times 305 = 37.6$	38
Total	770		305

3.7   Instrument for data collection

This study employed a quantitative data collection method. It involved the use of semi-structured interviewer-administered questionnaire in collecting information from respondents in the selected health facilities in the LGA. The questionnaire was developed from the specific objectives gotten from an extensive literature review.

The questionnaire was divided into four sections which are:

- Section A: Socio-demographic characteristics of respondents
- Section B: Knowledge of risk factors, signs and symptoms, nutrition, effects and prevention of anaemia in pregnancy among respondents. This section of the questionnaire contains a 39-point knowledge scale.
- Section C: Attitude of respondents as regards anaemia in pregnancy. This section contains a 13-point attitudinal scale.
- Section D: Preventive practices against anaemia in pregnancy among respondents. This section contains a 6-point practice scale.

3.8   Variables

The independent variables in this study are the socio-demographic characteristics of the respondents while the dependent variables are the knowledge, attitude and preventive practices against anaemia in pregnancy among pregnant women attending antenatal care in Ibadan South-East LGA (IBSELGA).

3.9   Recruitment and Training of Field Research Assistants

Four Research Assistants (RAs) were recruited and trained to help in the data collection exercise. The training focused on the following: objectives and nature of the study, instruments for data collection, sampling process, and data collection techniques, ways of establishing rapport with respondents and ethical issues that should be respected or taken into consideration during the study. The training method included lecture, discussion.

3.10   Validity and Reliability of instrument

a.   Validation of instrument

To ensure the validity of the instrument, extensive literature was reviewed to develop the instrument. The questionnaire was scrutinized by the researcher's supervisor and some frontline healthcare workers before administering to the respondents.

b.   Reliability of instrument

The instrument used for the data collection was pre-tested in Ibadan North-East Local Government Area, Oyo State among pregnant women attending antenatal care in some selected healthcare facilities. The questionnaire was administered among 31 (10% of the sample size) eligible respondents. The retrieved field-tested questionnaire was cleaned, entered into a computer IBM/Statistical Package for Social Sciences (IBM/SPSS) analysis software. The data were analysed using Cronbach Alpha Correlation Coefficient and a Correlation Coefficient of 0.793 was obtained.

3.11   Data collection procedure

Copies of the questionnaire were translated into the Yoruba language for better understanding by the respondents. The data was collected by the researcher with the help of four (4) research assistants (RAs) trained before the time of data collection. In each PHC and the traditional birth home, permission to conduct the study was sought from the Matron and the traditional birth attendant respectively. Data collection was done from 8 am to 12 noon on antenatal clinic days in selected health care facilities. The instrument for data collection was interviewer-administered, possible harms and benefits of taking part in the study were explained to the research respondents. Potential research respondents were given informed consent forms after adequate information about the study has been given.

3.12   Data management and analysis

Data collected using copies of the questionnaire were checked for errors and completeness before leaving the field. The compilation, cleaning and sorting of the copies of the administered questionnaire were carried out. Data was entered and analysed using IBM/Statistical Package for Social Sciences (IBM/SPSS) version 20. Overall knowledge scores of ≤ 13, $>13\text{-}26$, >26 were categorised as poor, fair and good, respectively. Attitudinal scores; ≤ 7 and >7 were categorized as positive and negative attitude respectively. Preventive practices scores; ≤ 4 and >4 were categorised as bad and good practices respectively.

The hypotheses were tested using Chi-square test statistic to investigate the association between the Socio-demographic characteristics of the respondents and the study dependent variables (Knowledge, Attitude and Preventive practices). The results obtained from the analysis were summed up and presented in tables and charts. Means and frequencies were used to describe socio-demographic data and other related information about anaemia in pregnancy.

3.13   Ethical Considerations

Ethical approval was obtained from the Oyo State Ethical Review Research Committee (Ref № of the approval: AD13/479/1438) and Ibadan South East LGA Primary Health Care Board before going to the field for data collection. Verbal and written consents were also obtained from potential respondents before starting the interview. The following ethical considerations were observed in the conduct of this study:

Informed Consent

The purpose and benefits of the research were adequately explained to the respondents and every respondent gave written and oral consents prior to enrolment for the study.

Confidentiality

To ensure confidentiality of research respondents, identifiers such as names and other information that link responses to each respondent were not included in the research instruments. The researcher stored the information elicited from respondents in the computer package for analysis, while copies of the completed questionnaire were securely kept.

Beneficence

This study will help in improving pregnant women's knowledge and attitude towards anaemia prevention.

Risk

There was no risk associated with this study

Voluntariness

Respondents were also intimated about the opportunity to take back their consent freely at any point in the course of the study.

CHAPTER FOUR

RESULTS

4.1   Respondents' Socio-demographic Characteristics

A total of 305 pregnant women attending antenatal care in Ibadan South East Local Government Area were interviewed, and the socio-demographic profile of the respondents are presented in Tables 4.1. The majority of the respondents (97.7%) were Yoruba and 96.7% were married. Most respondents, 72.5%, had Senior Secondary School as the highest level of education followed by those with tertiary education (14.1%) and 79.7% were Muslims.

The age of the respondents ranged from 15-49 years, with a mean age of 27.1±5.9 years. Most respondents (48.5%) fall between 27–38 years of age, followed by the respondents within the age range of 15 – 26 years (39.0%) and the respondents who fall within the age range of 39 – 49 years (12.5%). Artisans (44.6%) are the most common in terms of the respondents' occupation are, followed by traders (35.7%). On respondents'' average monthly income, more than half of the respondents (56.1%) receive between ₦5000 and ₦20000 in a month and this was followed by those who get less than ₦5000 in a month (11.5%). Most of the respondents (61.0%) are multigravida while the remaining percentages (39.0%) accounted for primigravida women. The majority (63.9%) of the respondents booked for antenatal clinic in their second trimester, while 24.3% and 11.8% had theirs first and third trimesters, respectively (See table 4.1 for more details).

Table 4.1a: Socio-demographic characteristics of the respondents N=305

Variables	Frequency(n)	Percent (%)
Age (in years)		
15-26	119	39.0
27-38	148	48.5
39-49	38	12.5
Marital status		
Single	10	3.3
Married	295	96.7
Level of Education		
No formal education	6	2.0
Primary	17	5.6
Junior Secondary	15	4.9
Senior Secondary	221	72.5
Tertiary	43	14.1
Vocational	3	1.0
Religion		
Christianity	62	20.3
Islam	243	79.7

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Table 4.1b: Socio-demographic characteristics of the respondents   **N=305**

Variables	Frequency (n)	Percent (%)
Occupation		
Artisan	136	44.6
Businesswoman	18	5.9
Teacher	11	3.6
Veterinary Doctor	1	0.3
Patent Medicine Vendor	17	5.6
Secretary	1	0.3
Caterer	2	0.7
Nurse	2	0.7
Banker	1	0.3
Trader	109	35.7
Not working	7	2.3
Average monthly income		
I cannot tell	38	12.5
>N5000	35	11.5
N5000-N20000	171	56.1
>N20000-N35000	30	9.8
>N35000-N50000	16	5.2
>N50000-N65000	4	1.3
>N65000-N80000	3	1.0
>N80000	8	2.6

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Table 4.1c: Socio-demographic characteristics of the respondents   **N=305**

Variables	Frequency (n)	Percent (%)
Current number of children		
None	125	41.0
1-4	173	56.7
>4	7	2.3
First pregnancy		
Yes	119	39.0
No	186	61.0
If No, pick the one that applies (n=186)		
2nd -5th pregnancy	183	60.0
6th $^-$ 9th pregnancy	5	1.6
Not applicable	117	38.4
Partner's occupation		
Artisan	91	29.8
Trader/ Business man	98	32.1
Engineer/Contractor/ Surveyor	37	12.1
Transporter	38	12.5
Civil servant/Policeman/Civil defence	9	3.0
Private sector staff/ Media man	13	4.3
Religious leader/ Farmer	3	1.0
Health professional/ Accountant	3	1.0
Teacher	2	0.7
Not working	1	0.3
Not applicable	10	3.3

Table 4.1d: Socio-demographic characteristics of the respondents   N=305

Variables	Frequency (n)	Percent (%)
First Antenatal booking		
1st trimester	74	24.3
2nd trimester	195	63.9
3rd trimester	36	11.8
Previous history of anaemia		
Yes	44	14.4
No	261	85.6
The person who influences health decision		
Spouse	189	62.0
Parents	67	22.0
Self	27	8.9
Others (friends, siblings, mother-in-law, Boss, Neighbor, Nurse, Grandmother)	22	7.1

Hausa
0.3%

Igbo
0.3%

Others
1.7%

Yoruba
97.7%

■ Yoruba ■ Igbo ■ Hausa ■ Others
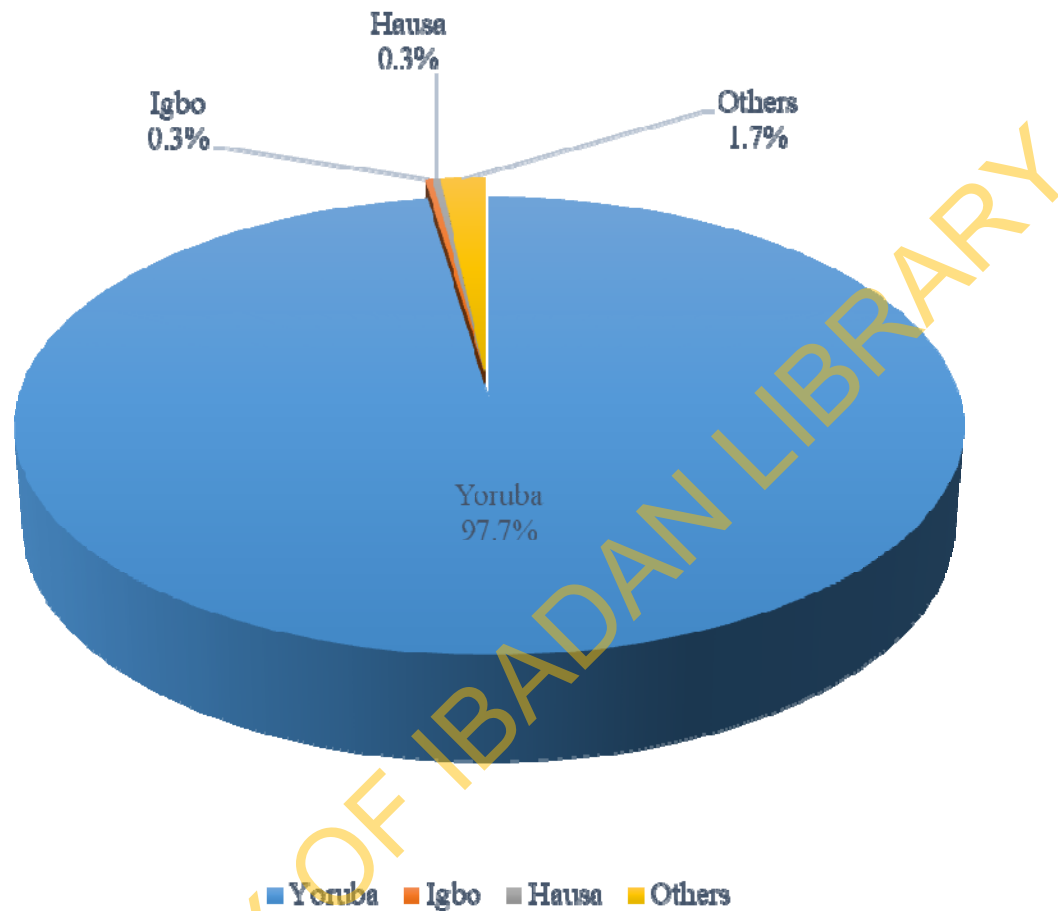
Figure 4.1: Ethnicity of the respondents
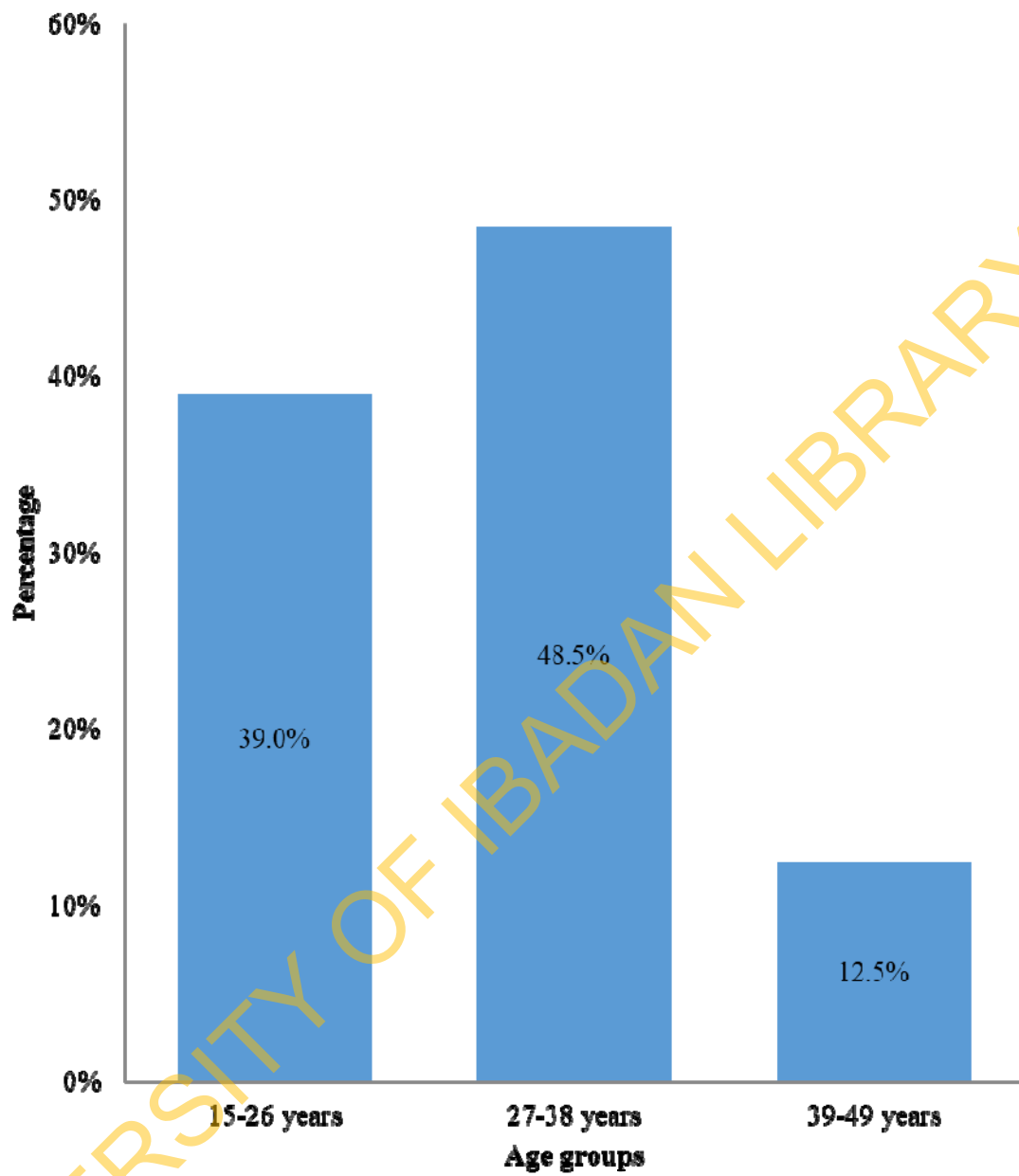
Figure 4.2: Age distribution of respondents

4.2   Source of information on Anaemia in pregnancy

The most common source of information on anaemia in pregnancy is through the healthcare workers (91.5%) followed by radio (9.8%). Majority of the respondents indicated that they had not heard about anaemia in pregnancy from Newspaper (99.3%), Television (97.0%), and Social media (99.7%) (Table 4.2).

Table 4.2: Respondents' source of information on anaemia in pregnancy

Source of information*	Yes	No
	n (%)	n (%)
Radio	30 (9.8)	275 (90.2)
Newspaper	2 (0.7)	303 (99.3)
Television	9 (3.0)	296 (97.0)
Healthcare workers	279 (91.5)	26 (8.5)
Friend	19 (6.2)	286 (93.8)
Relative	20 (6.6)	285 (93.4)
School	1 (0.3)	304 (99.7)
Social media	1 (0.3)	304 (99.7)

* Multiple responses

4.3   Knowledge of respondents on Anaemia in pregnancy

A few (11.8%) respondents were able to correctly state what anaemia in pregnancy was, that is, a decrease in the concentration of red blood cells or haemoglobin level in the blood. Others gave different responses such as a normal pregnancy process (4.6%), an indicator of nutritional deficiency (73.1%), inability of the heart to pump blood to peripheral parts of the body (5.6%) (Table 4.3).

Table 4.3: Respondents' knowledge of the definition of anaemia in pregnancy

N=305

Variable	Frequency (n)	Percent (%)
What do you understand by anaemia in pregnancy?		
Normal pregnancy process	14	4.6
An indicator of nutritional deficiency	223	73.1
The inability of the heart to pump blood to the peripheral parts of the body	17	5.6
It is a decrease in the concentration of red blood cells or haemoglobin level in the blood**	36	11.8
It results from a pregnant woman thinking too much	14	4.6
I don't know	1	0.3

** Correct response

4.4 Respondents' Knowledge of anaemia in pregnancy Risk factors

Respondents were asked if malaria is one of the causes of anaemia in pregnancy, majority, 78.4%, responded positively. Most (70.5%) of the respondents responded correctly when asked if low childbirth spacing increases the chance of a pregnant woman having anaemia. Eighty-one per cent of the respondents gave a positive response when asked if daily consumption of alcohol by a pregnant woman is a risk factor for anaemia in pregnancy. Respondents were asked if taking a balanced diet is a risk factor for anaemia in pregnancy, 90.8% responded correctly.

A majority (81.3%) of the respondents gave a positive response when asked if consumption of food deficient in iron predisposes a pregnant woman to anaemia, and 86.6% answered positively when asked if exposure to mosquito bites increases the likelihood of a pregnant woman having anaemia. Few (17.7%) of the respondents gave a correct response when asked if staying too long in the sun is a risk factor for anaemia in pregnancy. More than half (67.5%) of the respondents answered correctly when asked if consumption of chocolate increases the chance of a pregnant woman having anaemia and 78.0% gave correct response when asked if bleeding during pregnancy is not a risk factor for anaemia in pregnancy (Table 4.4).

The mean knowledge score for the questions asked on anaemia in pregnancy risk factors was 6.5±1.2. Respondents with good knowledge were 54.8%, while those with fair and poor knowledge were 44.3% and 1.0%, respectively.

Table 4.4: Respondents' Knowledge of anaemia in pregnancy Risk factors   N=305

Variable	Frequency (n)	Percent (%)
Taking balanced diets can be a risk factor for anaemia in pregnancy	277	90.8
Malaria is one of the causes of anaemia in pregnancy	239	78.4
Exposure to mosquito bites increases the likelihood of a pregnant woman having anaemia	264	86.6
Consumption of food deficient of Iron predispose a pregnant woman to have anaemia	248	81.3
Daily consumption of alcohol by a pregnant woman is a risk factor for anaemia	247	81.0
Bleeding during pregnancy is not a risk factor for anaemia in pregnancy	238	78.0
Low birth spacing can increase the chance of a pregnant woman having anaemia	215	70.5
Consumption of chocolate can increase the chance of a pregnant woman having anaemia	206	67.5
Staying too long in the sun is a risk factor for anaemia in pregnancy	54	17.7

4.5 Respondents' Knowledge of anaemia in pregnancy signs and symptoms

The knowledge of respondents on the signs and symptoms of anaemia in pregnancy is shown in table 4.5. Some of the signs and symptoms correctly answered by the respondents included fatigue (87.5%), fainting (43.9%), looking pale (85.2%), shortness of breath (75.1%), weakness (89.6%), pallor of the eye (85.6%), and pallor of the nail beds (60.7%).

The knowledge score for the questions asked on anaemia in pregnancy signs and symptoms is 5.3±1.4. Respondents with good knowledge were 47.5%, while those with fair and poor knowledge are 49.2% and 3.3%, respectively.

Table 4.5: Respondents' Knowledge of anaemia in pregnancy signs and symptoms

N=305

Variables	Frequency (n)	Percent (%)
Weakness can be a symptom of anaemia in a pregnant woman	274	89.8
Fatigue is a symptom of a pregnant woman having anaemia	267	87.5
The pallor of the eye is a sign of anaemia in a pregnant woman	261	85.6
A pregnant woman looking pale is a sign that she is likely to have anaemia	260	85.2
Shortness of breath is a symptom of anaemia in a pregnant woman	229	75.1
Fainting does not mean that a pregnant woman has anaemia	134	43.9
The pallor of the nail beds is not a sign of anaemia in a pregnant woman	185	60.7

4.6   Respondents' Knowledge of Nutrition

Respondents' knowledge of nutrition is presented in Table 4.6. The majority (93.1%) of the respondents answered correctly when asked if increased consumption of diets rich in iron prevents anaemia in pregnancy. The correctly answered source of iron that tops the list was Green leafy vegetables (99.7%), followed by plantain (88.2%), Snail (74.1%), rice (57.7%), water (15.4%), milk (3.3%). Respondents were asked if it is not necessary for a woman to take folic acid and iron supplements before conception, 41% of them responded correctly. The majority (87.5%) of the respondents correctly stated that the daily intake of iron and folic acid tablet is necessary during pregnancy. Only a few (26.9%) of the respondents know that drinking tea, coffee & milk can reduce iron absorption in the body.

The mean knowledge score for the questions asked on the nutrition is 6.1±1.2. Respondents with good knowledge were 3.6%, while the respondents with fair and poor knowledge were 89.8% and 6.6%, respectively.

Table 4.6: Respondents' knowledge of nutrition   **(N=305)**

Variables	Frequency (n)	Percent (%)
Green leafy vegetables are good sources of Iron	304	99.7
Alcohol is a good source of Iron	299	98.0
Increased consumption of a diet rich in iron prevent anaemia in pregnancy	284	93.1
Plantain is a good source of Iron	269	88.2
Daily intake of iron and folic acid tablet is necessary during pregnancy	267	87.5
Snail is a good source of Iron	226	74.1
Rice is a good source of Iron	176	57.7
It is not necessary for a woman to take folic acid and Iron supplements before conception	125	41.0
Drinking tea, coffee and milk with a meal can reduce iron absorption in the body	82	26.9
Water is a good source of Iron	47	15.4
Milk is a good source of Iron	10	3.3

4.7   Respondents' knowledge of anaemia in pregnancy's effects

Respondents were asked questions on the effect of anaemia in pregnancy. The correctly answered effects of anaemia in pregnancy by the majority of the respondents were infant mortality (85.9%), increases chance of preterm delivery (85.6%), maternal death (92.1%), predisposes a foetus stillbirth (89.2%), and underweight infant (77.7%). Slightly above half (54.8%) correctly stated failing lactation as an effect of anaemia in pregnancy.

The mean knowledge score for the questions asked on the effects of anaemia in pregnancy is 4.9±1.4. Respondents with good knowledge were 69.5%, while the respondents with fair and poor knowledge were 23.6% and 6.9%, respectively.

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Table 4.7: Respondents' knowledge of anaemia in pregnancy's effects   **N=305**

Variables	Frequency (n)	Percent (%)
Is maternal death one of the adverse effect of anaemia	281	92.1
Having anaemia can predispose a foetus to stillbirth	272	89.2
Anaemia can cause infant mortality	262	85.9
Anaemia can increase the chance of preterm delivery	261	85.6
An underweight infant is also an effect of anaemia	237	77.7
Failing lactation is a consequence of anaemia	167	54.8

4.8   Respondents' knowledge of anaemia in pregnancy prevention

Majority of the respondents answered correctly to questions asked on the prevention of anaemia in pregnancy. Their responses included regular medical check-up is necessary during pregnancy (95.7%), sleeping under the long-lasting insecticide-treated net is necessary to reduce the chances of mosquito bites (94.1%). Most (88.9%) of the respondents know that childbirth spacing can prevent anaemia. When asked the best spacing of childbirth to prevent anaemia, 73.8% of the respondents answered correctly. The majority of the respondents (96.7%) correctly answered the question if good nutrition increases the likelihood of preventing anaemia in pregnancy.

The mean knowledge score for the questions asked on the prevention of anaemia in pregnancy is 4.5±0.7. Respondents with good knowledge were 89.2%, while the respondents with fair and poor knowledge are 9.2% and 1.6% respectively.

The overall mean knowledge score of the respondents is 26.4±3.0. Respondents' overall knowledge of anaemia in pregnancy can be rated as good; 64.3% of the respondents had good knowledge while 35.7% had a fair knowledge (see details in Figure 4.4)

Table 4.8: Respondents' knowledge of anaemia in pregnancy prevention   **N=305**

Variables	Frequency (n)	Percent (%)
Good nutrition increases the likelihood of preventing anaemia in pregnancy	295	96.7
Regular medical checkup is necessary during pregnancy for the prevention of anaemia	292	95.7
Sleeping under the long-lasting insecticide-treated net is necessary during pregnancy to reduce chances of mosquito bites	287	94.1
Childbirth spacing can prevent anaemia in pregnancy	271	88.9
The best spacing of childbirth to prevent anaemia is ≥2 years	225	73.8

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	knowledge of risk factors	knowledge of signs and symptoms	knowledge of nutrition	knowledge of effects	knowledge of prevention
poor	1.0%	3.3%	6.6%	6.9%	1.6%
fair	44.3%	49.2%	89.8%	23.6%	9.2%
good	54.8%	47.5%	3.6%	69.5%	89.2%
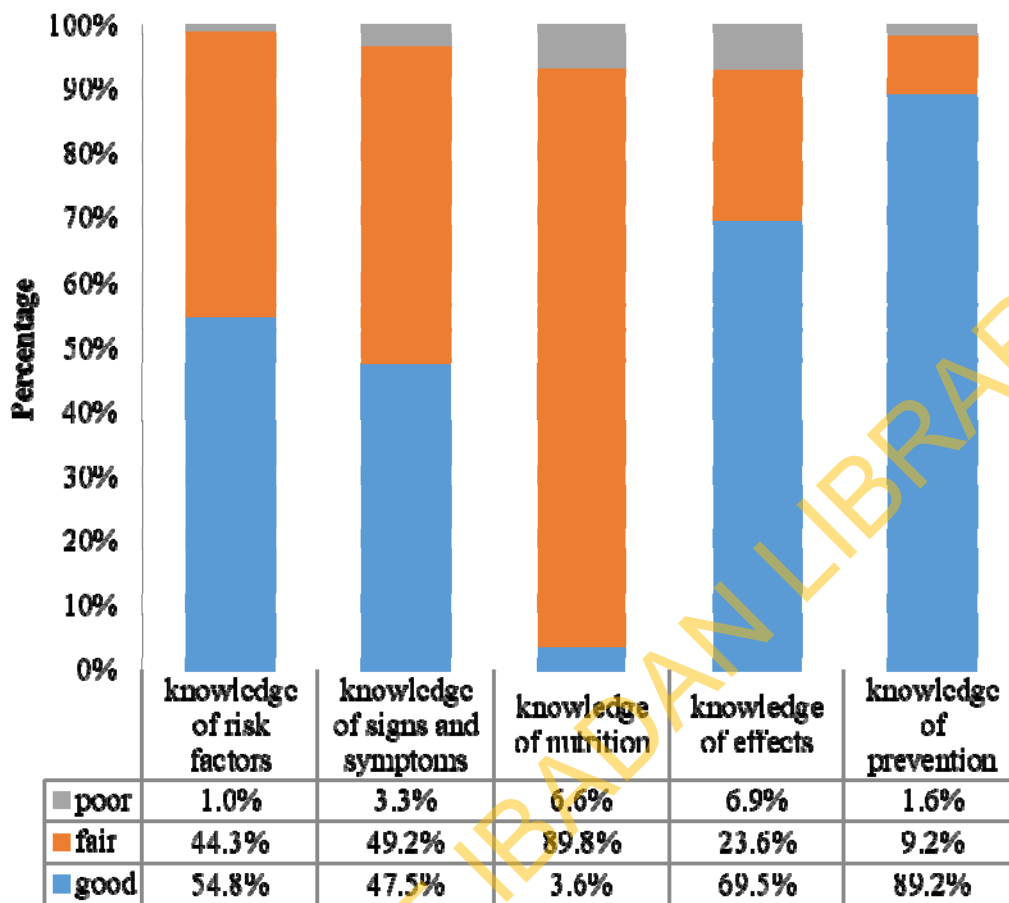
Figure 4.3: Respondents' level of knowledge on Anaemia in pregnancy
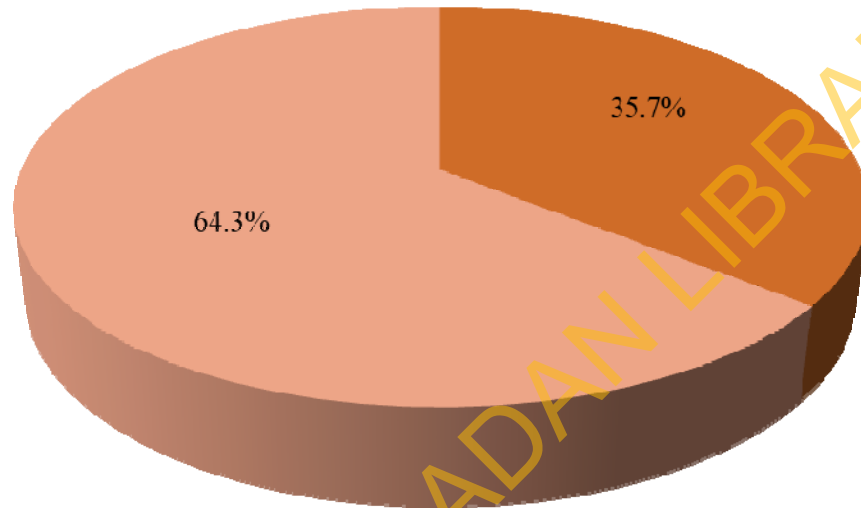
Figure 4.4: Overall knowledge of respondents on Anaemia in pregnancy.

4.9 Respondents' Attitude regarding prevention of anaemia in pregnancy

Majority (97.4%) of the respondents were favourably disposed with the notion that anaemia in pregnancy is a serious problem. Almost all (99.3%) did not support the notion that regular visits to antenatal clinic are not of benefit to the health of mother and foetus during pregnancy. Majority (96.7%) of the respondents believed that iron supplement or tablets can prevent anaemia. Most (94.8%) respondents consent with the notion that pregnant women should consume iron tablets in spite of a healthy diet. Very few (16.1%) of the respondents signified that their partners' approval influences their use of iron supplements. More than half (64.6%) of the respondents affirmed their plan to use contraceptives after delivery to achieve at least two years interval of pregnancy.

The majority (97.4%) of the respondents indicated their interest in preventing anaemia and up to 96.1% are favourably disposed with the notion that sleeping under insecticide-treated net by pregnant women should be recommended. Almost all (99.0%) of the respondents affirmed that they consume foods rich in iron while 97.4% believed that regular meals or feeding can prevent anaemia in pregnancy. More than half (78.7%) of the respondents opposed the notion that a pregnant woman cannot be affected with anaemia. A few (5.6%) of the respondents indicated that their friends can influence their will to prevent anaemia and 5.2% affirmed their willingness to take iron supplements on the approval of their religious leader.

The mean attitudinal score of the respondents regarding the prevention of anaemia in pregnancy is 9.5±0.9. Respondents with a positive attitude were 97.7%, while 2.3% had a negative attitude.

Table 4.9: Respondents' Attitude regarding prevention of anaemia in pregnancy

N=305

Variables	Agree n (%)	Disagree n (%)	Undecided n (%)
I consume foods rich in Iron	302 (99.0)	1 (0.3)	2 (0.7)
I am interested in preventing anaemia	297 (97.4)	7 (2.3)	1 (0.3)
In my opinion, I think anaemia in pregnancy is a serious problem	297 (97.4)	6 (2.0)	2 (0.7)
I believe that regular meals or feeding can prevent anaemia in pregnancy	297 (97.4)	7 (2.3)	1 (0.3)
I believe that Iron supplements or tablets can prevent anaemia	295 (96.7)	7 (2.3)	3 (1.0)
I think it should be recommended that pregnant woman must sleep under insecticide-treated nets for malaria prevention	293 (96.1)	8 (2.6)	4 (1.3)
I think pregnant women should consume iron tablets inspite of healthy diets	289 (94.8)	13 (4.3)	3 (1.0)
I plan to use contraceptives after delivery to achieve at least two years interval of pregnancy	197 (64.6)	77 (25.2)	31 (10.2)
I will only use iron supplements if my partner approves of it	49 (16.1)	243 (79.7)	13 (4.3)
I think a pregnant woman cannot be affected with anaemia	49 (16.1)	240 (78.7)	16 (5.2)
My decision to prevent anaemia is based on that of my friends	17 (5.6)	261 (85.6)	27 (8.9)
I will only take iron supplements if my religious leader approves it	16 (5.2)	280 (91.8)	9 (3.0)
I do not believe that regular visits to Antenatal clinic are of benefit to the health of mother and foetus during pregnancy	1(0.3)	303 (99.3)	1 (0.3)

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4.10   Preventive practices against anaemia in pregnancy

Respondents were asked if they have three regular balanced diets daily, the majority (95.4%) responded positively. The majority (94.1%) of the respondents indicated that they take an Iron supplement regularly. Eighty-two percent of the respondents signified that they have taken folic acid in the current pregnancy.

The majority (97.4%) reported that they include a green leafy vegetable in their diet daily. Almost all (99.0%) claimed that they have the habit of eating red meat, liver and fish. Less than half (45.9%) reported that they had been taking iron supplements before conception.

The mean preventive practice score of the respondents is 5.1±0.9. The respondents with a good practice were 95.4%, while the remaining 4.6% had poor preventive practices.

Table 4.10: Respondents' preventive practices against anaemia in pregnancy N=305

Variables	Yes n (%)	No n (%)
Have three regular balanced diets per day	291 (95.4)	14 (4.6)
Take iron supplements regularly	287 (94.1)	18 (5.9)
Have you taken folic acid in the current pregnancy	250 (82.0)	55 (18.0)
Include a green leafy vegetable in your diet daily	297 (97.4)	8 (2.6)
Develop the habit of eating red meat, liver, fish	302 (99.0)	3 (1.0)
Started taking iron supplements before conception	140 (45.9)	165 (54.1)

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4.11   Test of hypotheses

The following hypotheses were tested:

Hypothesis 1: There is no significant association between socio-demographic characteristics of respondents (age, level of education, ethnicity, average monthly income, previous history of anaemia) and knowledge of anaemia in pregnancy. The results below show a statistical association between respondents' knowledge on anaemia in pregnancy and age ($p= 0.032$), level of education ($p= 0.017$) and previous history of anaemia ($p= 0.009$). This means that the age, level of education and previous history of anaemia of the respondents have a significant association with their knowledge of anaemia in pregnancy. Therefore, the null hypothesis was rejected. (Table 4.11)

Table 4.11: Association between Socio-demographic characteristics of the respondents and knowledge of anaemia in pregnancy.

Variable	Knowledge of anaemia in pregnancy			X^2 value	df	p-value	Remark
	Fair	Good	Total				
Age (in years)							
15-26	53	66	119				
27-38	46	102	148	6.879	2	0.032	Significant
39-49	10	28	38				
Total	109	196	305				
Level of education							
No formal education	2	4	6				
Primary	3	14	17				
Junior Secondary	11	4	15				
Senior Secondary	80	141	221	13.926	5	0.017*	Significant
Tertiary	13	30	43				
Vocational	0	3	3				
Total	109	196	305				
Ethnicity							
Yoruba	107	191	298				
Igbo	0	1	1				
Hausa	0	1	1	6.381	5	0.284*	Not
Benue	0	2	2				Significant
Kogi	2	0	2				
Edo	0	1	1				
Total	109	196	305				
Average monthly income							
< ₦5000	16	19	35				
₦5000 and ₦20000	59	112	171				
>₦20000 and ₦35000	11	19	31				
>₦35000 and ₦50000	3	13	16	8.065	8	0.442*	Not
>₦50000 and ₦65000	0	4	4				Significant
>₦65000 and ₦80000	2	1	3				
₦80000 and above	3	5	8				
I cannot tell	15	22	37				
Total	109	196	305				
Previous history of anaemia							
Yes	8	36	44	6.900	1	0.009	Significant
No	101	160	261				
Total	109	196	305				

*Fisher's exact value

Hypothesis 2: There is no significant association between socio-demographic characteristics of respondents (age, level of education, ethnicity, average monthly income, previous history of anaemia) and attitude towards anaemia in pregnancy. The results below show no statistical association between respondents' attitude towards anaemia in pregnancy and age (p= 0.242), level of education (p= 0.857), ethnicity (p= 1.000), average monthly income (p=0.263) and previous history of anaemia (p= 0.267). This means that age, level of education, ethnicity, average monthly income and previous history of anaemia have no significant association with their attitude towards anaemia in pregnancy. Therefore, the researcher fails to reject the null hypothesis (Table 4.12).

Table 4.12: Association between socio-demographic characteristics of the respondents and attitude toward anaemia in pregnancy.

Variable	Knowledge of anaemia in pregnancy			X^2 value	df	p-value	Remark
	Negative	Positive	Total				
Age (in years)							
15-26	5	114	119				
27-38	2	146	148	3.410	2	0.242*	Not
39-49	0	38	38				Significant
Total	7	298	305				
Level of education							
No formal education	0	6	6				
Primary	0	17	17				
Junior Secondary	0	15	15				
Senior Secondary	7	214	221	2.723	5	0.857*	Not
Tertiary	0	43	43				Significant
Vocational	0	3	3				
Total	7	298	305				
Ethnicity							
Yoruba	7	291	298				
Igbo	0	1	1				
Hausa	0	1	1				
Benue	0	2	2	0.168	5	1.000*	Not
Kogi	0	2	2				Significant
Edo	0	1	1				
Total	7	291	305				
Average monthly income							
< ₦5000	1	34	35				
₦5000 and ₦20000	2	169	171				
>₦20000 and ₦35000	1	29	30				
>₦35000 and ₦50000	0	16	16	7.487	8	0.263*	Not
>₦50000 and ₦65000	0	4	4				Significant
>₦65000 and ₦80000	0	3	3				
₦80000 and above	0	8	8				
I cannot tell	3	35	38				
Total	7	298	305				
Previous history of anaemia							
Yes	2	42	44				
No	5	256	261	1.161	1	0.267*	Not
Total	7	298	305				Significant

*Fisher's exact value

Hypothesis 3: There is no significant association between socio-demographic characteristics of respondents (age, level of education, ethnicity, average monthly income, previous history of anaemia) and preventive practices of anaemia in pregnancy. The results below show no statistical association between respondents' preventive practices of anaemia in pregnancy and age ($p = 0.075$), level of education ($p = 0.632$), ethnicity ($p = 0.283$), average monthly income ($p = 0.994$), previous history of anaemia ($p = 1.000$). This means that age, level of education, ethnicity, average monthly income and previous history of anaemia have no significant association with their preventive practices of anaemia in pregnancy. Therefore, the researcher fails to reject the null hypothesis (Table 4.13)

Table 4.13: Association between Socio-demographic characteristics of the respondents and preventive practices of anaemia in pregnancy.

Variable	Knowledge of anaemia in pregnancy			X^2 value	df	p-value	Remark
	Bad	Good	Total				
Age (in years)							
15-26	8	111	119				
27-38	3	145	148	4.403	2	0.075*	Not
39-49	3	35	38				Significant
Total	14	291	305				
Level of education							
No formal education	0	6	6				
Primary	2	15	17				
Junior Secondary	0	15	15				
Senior Secondary	11	210	221	3.732	5	0.632*	Not
Tertiary	1	42	43				Significant
Vocational	0	3	3				
Total	14	291	305				
Ethnicity							
Yoruba	13	285	298				
Igbo	0	1	1				
Hausa	0	1	1	9.693	5	0.283*	Not
Benue	0	2	2				Significant
Kogi	1	1	2				
Edo	0	1	1				
Total	14	291	305				
Average monthly income							
< ₦5000	1	34	35				
₦5000 and ₦20000	10	161	171				
>₦20000 and ₦35000	1	29	30				
>₦35000 and ₦50000	0	16	16				
>₦50000 and ₦65000	0	4	4	2.562	8	0.994*	Not
>₦65000 and ₦80000	0	3	3				Significant
₦80000 and above	0	8	8				
I cannot tell	2	36	38				
Total	14	291	305				
Previous history of anaemia							
Yes	2	42	44	0.000 235	1	1.000*	Not Significant
No	5	256	261				
Total	7	298	305				

*Fisher's exact value

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Respondents' Socio-demographic Characteristics

With regard to highest level of education, virtually all the respondents reported that they had a formal education. This can be supported by the report of the national literacy survey by the National Bureau of Statistics (NBS) in 2010 that reported the literacy level of adult female to be 63.7%. The present study findings indicated that 14.4% of the respondents had a history of anaemia. This result is in accordance with a previous study carried out Saudi Arabia by Samia Abd Elhakeem Aboud et al., (2019) which stated that about 11.7% have a history of anaemia.

5.1.2 Respondents' knowledge about anaemia in pregnancy

Findings from this study show that some of the respondents have more than one source of information regarding anaemia in pregnancy. It also revealed the fact that virtually all respondents had obtained information about anaemia from health workers during antenatal visits. This finding is similar to that of Tashara et al. (2015) whose study revealed that a percentage above half of the respondent had knowledge of anaemia in pregnancy integrated by health workers. Findings from this present study show that very few of the respondents got their information of anaemia in pregnancy from television, radio, and newspapers. Contrary to this, a study conducted by Rachana and Ankush (2017), reported that more than half, 62.56% of the women got their knowledge of anaemia in pregnancy via Television or radio, 11.22% via newspaper and book while 26.20% via friends. The role of media in imparting knowledge regarding anaemia was found to be poor. This could be attributed to the difference in the use of mass media for health promotion programmes.

In this study, not up to half of the respondents possess good knowledge regarding anaemia signs and symptoms. Chang, Zeng et al. (2013) explained that poor knowledge of anaemia symptoms will obstruct the health care seeking behaviours of mothers by early sensing of mild symptoms and could lead to the procession of anaemia stages and its effects on maternal and child health.

It was clear from the study that very few of the respondents had good knowledge with respect to iron rich food and the essence of iron supplementation in pregnancy. This finding also agree with Shanthuni and Nivedita, 2016 who had indicated knowledge deficiency among antenatal mothers regarding iron rich foods and supplementation during pregnancy.

The respondents possessed a high knowledge level on effects of anaemia in pregnancy. This can be deduced from their responses about some of the effects of anaemia in pregnancy they responded to. Most of the respondents claimed that anaemia can cause maternal death and this is supported by WHO (2014) which reported maternal mortality as one of the effects of anaemia in pregnancy. A large percent of this present study respondents agrees with the fact that anaemia predisposes a foetus to stillbirth. This finding is similar to that of Shanthuni and Nivedita, (2016) which reported that 66.1% of the respondents answered correctly that foetus will be affected by severe anaemia.

As regard the knowledge of anaemia in pregnancy prevention, this study reported a high knowledge level among respondents. This study showed that there is an advancement than a study previously conducted by Daka et al. (2018) in West Shoa Zone, Ethiopia which reported just a little above half of mothers have adequate knowledge regarding prevention of anaemia in pregnancy. It is also well known by majority of this study respondents that birth spacing prevents anaemia in pregnancy. This is consistent with a study conducted by Oumer and Hussein, (2019).

Findings from this study shows that more than half (64.3%) of the respondents have overall good knowledge of anaemia in pregnancy, this could be compared with a research conducted by Yesufu et al, 2013 that observed 56.5% of the respondents to have a good knowledge regarding anaemia. This difference might be ascribed to study period and study sites.

Previous studies have shown an association between level of education and haemoglobin level (Shanthuni et al., 2016). This study also revealed that there is a significant association between age, level of education and knowledge level. On studying the association between selected socio-demographic characteristics of respondents and knowledge of anaemia using Chi-square test, the only significant characteristics were Age (p= 0.035) and level of education (p= 0.017).

5.1.3 Respondents' attitude towards prevention of anaemia.

Attitudes are people's perceptions, thoughts or opinion concerning a specific behaviour. The mean attitudinal score was 9.48±0.9 and this study show that almost all the respondents had a positive attitude towards preventing anaemia in pregnancy. This can be associated with considerable high level of knowledge which the respondents possessed and also with the information gotten from Health care workers; this can be backed up by a study conducted in Pakistan that gave an account of attitude of Pakistani women towards IFA supplements being shaped mainly by health care providers (Nisar et al. 2014). This result was also in agreement with a study by Ahamed, Kotb, & Hassanen, 2018 which found that about four fifth of the studied women had positive attitude toward anaemia respectively. Shahzad et al 2017, also documented that more than three-quarters of their study subject had positive attitude towards self-awareness of IDA anaemia as a disease. However, this is contrary to Margwe, et al., (2018) who had found that 38% of their studied women had unfavourable attitude toward IDA.

Shanthuni and Nivedita (2016) reported that only 32.6% of respondents agreed "that pregnant women should take iron supplements in spite of healthy diet". This is lower compared to this study, where the majority of respondents agreed with pregnant women taking iron supplements in spite of health diet. This conflict in results is due to social, cultural and educational differences between the study subjects (Samia Abd Elhakeem Aboud et al., 2019).

Findings from this present study also revealed respondents agreeing with consumption of iron supplements in preventing anaemia and more than half of the respondents agreed to the uptake of contraceptives after childbirth to prevent anaemia in pregnancy. This is buttressed by a study carried by Oumer and Hussein, (2019) which reported that most of its study respondents strongly agreed and agreed with consumption of iron tablets and on the use of family planning in order to prevent IDA.

5.1.4 Respondents' preventive practices against anaemia in pregnancy

As regards the preventive practices of anaemia in pregnancy, the present study showed a good practice among the studied women. This study revealed most of the respondents took iron supplement regularly. This is supported by Theng et al. (2017) which documented most (77.5%) of their studied subjects had consumed iron supplement. Even with the world suggestion on the uptake of iron tablet in pregnancy, Oumer and Hussein,

(2019) reported only few of their respondents (32%) took iron supplement regularly, this is contrary to this study findings.

In respect to good preventive practices, most of the respondents had three regular balanced diets per day and had green leafy vegetables added to their diet daily. This is similar to a finding by Oumer and Hussein (2019) where 79.4% of the respondents were reported to have had regular three times meal daily.

5.1.5 Implication of the study findings for health promotion and education

This study has recorded a low knowledge level in nutrition. A substantial amount of pregnant women identified rice, milk and water as good sources of iron. Majority of pregnant women do not know that drinking milk and coffee with a meal can reduce iron absorption in the body. Many of the pregnant women also reported that it is not necessary for a woman to take iron supplements before conception. Addressing this issue will involve stakeholders in nutrition and antenatal care specialists.

Information and communication have been known to be of utmost importance in health promotion for change in behaviour. Provision of appropriate and adequate Information, Education and Communication (IEC) materials can be used to tackle the low nutritional knowledge level and also to boost pregnant women's knowledge on anaemia in pregnancy. This can be achieved by health promoters in collaboration with key stakeholders in Nutrition and health sectors. Counselling as a health education strategy should also be employed by health workers for knowledge improvement in Nutrition.

5.2 Conclusion

According to the World Health Organization (WHO), there are enormous factors that make pregnant women at danger of anaemia together with the physiological susceptibility. There is a need to tackle the behavioural and other factors in the country-specific targets for the reduction of anaemia by half come 2025, thus achieving the sustainable development goals (WHO, 2014).

The intention of this research was to assess the knowledge, attitude and preventive practices of pregnant women regarding anaemia. This study has helped to reveal a high level of knowledge among women attending antenatal care in Ibadan South-east LGA, Oyo state. The pregnant women also have a positive attitudinal disposition regarding the prevention of anaemia and this, in turn, influence their practice to prevent anaemia in

pregnancy. With respondents displaying a high knowledge level on anaemia in pregnancy, the study still recorded a low level of knowledge on nutrition and this calls for an intervention.

5.3   Recommendations

In view of the findings of this study, the following recommendations are made.

1. The study revealed an average knowledge level on the risk factors of anaemia in pregnancy among the pregnant woman. This can be addressed by providing pregnant women with appropriate Information, Education and Communication materials that contain messages to improve their knowledge level. Promotion of training and retraining programmes for health workers to upgrade their level of knowledge which will, in turn, improve pregnant women's knowledge.

2. It was also deduced from the study that only very few of the respondents have good knowledge of nutrition to prevent anaemia in pregnancy. Pregnant women should be counselled on the importance of a healthy diet during pregnancy. Consumption of affordable and easily accessible fruits, legumes and green leafy vegetables should be encouraged and promoted among pregnant women.

3. From the study, it was found that majority of the respondents had their source of information on anaemia in pregnancy from health workers only when they go for antenatal visits in health facilities and very few got information via mass media or books. Promotion of awareness using social media, print media, and mass media will help improve overall knowledge on anaemia in pregnancy.

5.3.1   Suggestion for Further studies

-    Replication of the study in the same area, employing laboratory procedures to determine the actual prevalence of anaemia among pregnant women

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Knowledge and Preventive Practices of Anaemia among Pregnant Women attending Antenatal Care in Ibadan Southeast Local Government Area, Oyo State

Informed Consent Form

Introduction

You are invited to take part in a research study. Before you decide whether to participate, you need to understand why the research is being done and what it would involve. Please take the time to read or to listen as I read the following information. You may talk to others about the study if you wish. Please ask me if there is anything that is not clear, or if you would like more information. When all of your questions have been answered and you feel that you understand this study, you will be asked if you wish to participate in the study and if yes, to sign this 'Informed Consent Form'. You will be given a signed copy to keep.

Purpose of the Study and Study Requirements

Dear Respondent,

My name is **FAGOROYE MIRACLE OLUWATIMILEHIN**. I am a postgraduate student at the Department of Health Promotion and Education, Faculty of Public Health, University of Ibadan. The purpose of this study is to gather information about the Knowledge and Preventive Practices of Anaemia among Pregnant Women attending Antenatal Care in Ibadan Southeast Local Government Area, Oyo State

You have been invited to take part because you are a pregnant woman within the reproductive age group (15-49 years). If you agree to take part in the study, you will be asked to sign an informed consent form. You will also be asked to respond to questions about the knowledge and preventive practices of anaemia in pregnancy. You will complete the questionnaire within 30 minutes approximately. There are no risks associated with this study and your participation will not cost you anything other than your time of answering the questions in the questionnaire. **You should not write your name on the questionnaire.** All information collected will be treated as anonymous and will not be linked to you in any way. The information collected will be of benefit to

health administrators, doctors, nurses and potential pregnant women on how they can prevent anaemia in pregnancy.

Participation in this research study is entirely voluntary and you can withdraw at any time. If you choose to withdraw at any time, this will not affect you in any way but please note that some of the information that has been obtained about you before your withdrawal may be modified or used in reports and publications. These cannot be removed anymore, however, the researcher promises to make an effort in good faith to comply with your wishes as much as is practicable. The researcher will inform you of the outcome of the research through journal articles. Your willingness to complete the questionnaire implies you have given consent to participate in the study. Kindly append your signature in the section below as a form of written consent to participate in the study. Thank you for your cooperation.

Statement of the person obtaining informed consent:

I have fully explained this research to the respondent and have given sufficient information, including risks and benefits, to make an informed decision.

Date: …………………………………………….

Signature: ………………………………………..

Name:

……………………………………………………………………………………………..

Statement of the person giving consent:

I have read the description of the research and have had it translated into a language I understand. I have also talked it over with the researcher to my satisfaction. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research study to judge that I want to take part in it. I understand that I may freely stop being part of this study at any time. I have received a copy of this consent form and additional information sheet to keep for myself.

Date: ………………………………………….

Signature: ………………………………………..

Detail contact information including a contact address, telephone, fax, e-mail and any other contact information of researcher, institutional HREC and head of the institution:

If you have any question about participation in this research, you can contact the Researcher: Miss Fagoroye Miracle, Department of Health Promotion, Faculty of Public Health, College of Medicine, University of Ibadan, Phone №: 07038457569, e-mail: fagoroyet@gmail.com

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APPENDIX II

QUESTIONNAIRE

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TOPIC: Knowledge and Preventive practices of anaemia among pregnant women attending Antenatal Care in Ibadan South East Local Government Area, Oyo State.

My name is Fagoroye Miracle. I am a postgraduate student of the University of Ibadan presently conducting a research titled "Knowledge and Preventive practices of Anaemia among pregnant women attending Antenatal Care in Ibadan South East Local Government Area, Ibadan, Oyo State". In filling this questionnaire, your honest answers will be appreciated.

Local Government Area _____ Serial number _____

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS

Instruction: Kindly respond appropriately to the following by marking or writing as appropriate in the space provided.

1. Which ethnic group do you belong to? 1= Yoruba [ ] 2= Igbo [ ] 3= Hausa [ ]   4= others (specify) _____

2. Marital Status: 1= Single [ ] 2= Married [ ] 3=Separated [ ] 4= Cohabiting [ ] 5= Others (specify) _____

3. What is your highest level of education: 1=No formal education [ ] 2=Primary [ ] 3=Junior Secondary [ ] 4=Senior Secondary [ ] 5 =Tertiary [ ] 6=Vocational [ ] 7= Others (specify)_____

4. Religion: 1=Christianity [ ] 2=Islam [ ] 3=Traditional [ ] 4=Others (specify) _____

5. How old are you as at your last birthday (in years)? _____

6. Occupation: _____

7. Average monthly income: _____

8. How many children do you currently have? _____

9. Is this your first pregnancy? 1= Yes [ ]   2= No [ ]

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10. If no, pick the one that apply below)

1= 2nd pregnancy 2= 3rd pregnancy 3= 4th pregnancy 4= 5th pregnancy

11. Partner's occupation _____

12. When did you have your first booking for Antenatal care? 1=1st Trimester [ ] 2=2nd trimester [ ] 3=3rd trimester [ ]

13. Previous history of anaemia? 1= Yes   2= No [ ]

14. Who influences your health decision the most? 1= Spouse [ ] 2= Mother [ ] 3= Friends [ ] 4= Siblings [ ] 5= Father [ ] 6= Other (specify) _____ ____

Section B: Knowledge about anaemia in pregnancy

15. What is/are your source(s) of information on anaemia in pregnancy?

Source of information	Yes	No
Radio		
Newspaper		
Television		
Health Care Worker		
Friend		
Relative		
School		
Social media		

16. What do you understand by anaemia in pregnancy? 1=Normal pregnancy process [ ] 2= An indicator of nutritional deficiency [ ] 3=Punishment from the gods [ ] 4= Is the inability of the heart to pump blood to the peripheral part of the body. 5= It is a decrease in concentration of red blood cells or haemoglobin level in the blood.

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Knowledge of anaemia risk factors

Instruction: Kindly go through the questions given below and tick against appropriate answer.

S/No	Statement	Yes	No
17	Is malaria one of the causes of anaemia in pregnancy		
18	Does low birth spacing increase the chance of a pregnant woman having anaemia?		
19	Is daily consumption of alcohol by a pregnant woman a risk factor for anaemia?		
20	Can taking balanced diets can be a risk factor for anaemia in pregnancy		
21	Does consumption of foods deficient of iron predispose a pregnant woman to anaemia?		
22	Can exposure to mosquito bites increase the likelihood of a pregnant woman having anaemia		
23	Is staying too long in the sun a risk factor for anaemia in pregnancy		
24	Does the consumption of chocolate increase the chance of a pregnant woman having anaemia		
25	Bleeding during pregnancy is not a risk factor for anaemia in pregnancy		

Knowledge of anaemia in pregnancy signs and symptoms

S/No	Statement	Yes	No
26	Is fatigue a symptom of a pregnant woman having anaemia?		
27	Fainting does not mean that a pregnant woman has anaemia?		
28	A pregnant woman looking pale is a sign that she is likely to have anaemia		
29	Is shortness of breath a symptom of anaemia in a pregnant woman?		
30	Weakness can be a symptom of anaemia in a pregnant woman?		
31	The pallor of eyes is a sign of anaemia in a pregnant woman?		
32	The pallor of nail beds is not a sign of anaemia in a pregnant woman?		

Knowledge of Nutrition

33. Does increased consumption of diets rich in iron prevents anaemia in pregnancy?
    1=Yes [ ] 2=No [ ]

S/No	Which of the following is/are good source(s) of Iron	Yes	No
34	Water		
35	Milk		
36	Rice		
37	Green leafy vegetable		
38	Snail		
39	Plantain		
40	Alcohol		

41. It is not necessary for a woman to take Folic acid and iron supplements before conception? 1=Yes [ ] 2= No [ ]

42. Daily intake of iron and folic acid tablet is necessary during pregnancy? 1=Yes [ ] 2=No [ ]

43. Do you know drinking tea, coffee & milk with meal can reduce iron absorption in the body? 1=Yes [ ] 2= No [ ]

Knowledge of effects of Anaemia

44. Anaemia can cause infant mortality? 1=Yes [ ] 2=No [ ]

45. Anaemia can increase the chance of preterm delivery? 1=Yes [ ] 2=No [ ]

46. Is maternal death one of the adverse effect of anaemia? 1=Yes [ ] 2=No [ ]

47. Having anaemia can predispose a foetus to stillbirth? 1=Yes [ ] 2=No [ ]

48. Failing lactation is a consequence of anaemia? 1=Yes [ ] 2=No [ ]

49. An underweight infant is also an effect of anaemia? 1=Yes [ ] 2=No [ ]

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Knowledge of anaemia in pregnancy prevention

50. Is regular medical check-up is necessary during pregnancy for the prevention of anaemia? 1=Yes [ ] 2=No [ ]

51. Do you know that child birth spacing can prevent anaemia? 1=Yes [ ] 2=No [ ]

52. Which is the best spacing of childbirth to prevent anaemia? 1= ≥2 years 2= <2 years

53. Is sleeping under long-lasting insecticide-treated net is necessary during pregnancy to reduce chances of mosquito bites? 1=Yes [ ] 2=No [ ]

54. Does good nutrition increase the likelihood of preventing anaemia in pregnancy? 1=Yes [ ] 2= No [ ]

Section C: Attitude of pregnant women regarding prevention of anaemia

Instruction: - Kindly go through the questions given below and tick (√) against appropriate answer.

S/No	Statement	Agree	Disagree	Undecided
55	In my opinion I think anaemia in pregnancy is a serious problem			
56	I do not believe that regular visits to Antenatal clinic is of benefit to health of mother and foetus during pregnancy			
57	I believe that iron supplement or iron tablets can prevent anaemia			
58	I think pregnant women should consume iron tablets in spite of healthy diet			
59	I will only use iron supplements if my partner approves of it			
60	I plan to use contraceptives after delivery to achieve at least two year interval of pregnancy			
61	I am interested in preventing anaemia			
62	I think it should be recommended that pregnant woman must sleep under insecticide treated nets for malaria prevention			
63	I consume foods rich in Iron			
64	I believe that regular meals or feeding can prevent anaemia in pregnancy			

65	I think a pregnant woman cannot be affected with anaemia			
66	My will to prevent anaemia is based on that of my friends			
67	I will only take iron supplements if my religious leader approves it			

Section D: Preventive practices against anaemia in pregnancy

Instruction: - Kindly go through the questions given below and tick (√) against appropriate answer.

S/No	Statement	Yes	No
68	Have three regular balanced diet per day?		
69	Take Iron supplements regularly?		
70	Have you taken Folic acid supplements in current pregnancy?		
71	Do you include green leafy vegetable in your diet daily		
72	Do you have the habit of Eating red meat, liver, chicken, Fish		
73	I started taking Iron supplement before conception		

Thank you for your time.

Yoruba version of Informed Consent form

ÌWÉ ÌBÉÈRÈ LÓRII ÌMỌ̀ ÀTI ÌSESÍ TÍ Ó LE DÈNÀ ÀÌSÀN AITO ẸJẸ LAARIN AWỌN ALABOYUN TI O Ń GBA ITỌJU SIWAJU KIWỌN TO BIMỌ NÍ AGBÈGBÈ ÌJỌBA ÌBÍLẸ ÌBÀDÀN SOUTH-EAST, ÌBÀDÀN ÌPÍNLẸ ỌYO.

<u>ÌWÉ IGBÀSẸ LÓWÓỌ OLÙKÓPA</u>

<u>Ifaara</u>

A pe yin lati kopa ninu iwadii yii. Ṣaaju ki ẹ to pinnu boya o yẹ ki ẹ kopa, ẹ nilo lati ni oye idi ti a fi n ṣe iwadi naa ati ohun ti ẹ ni lati se. Ẹ jọwọ, ẹ gbiyanju lati ka tabi gbọ bi mo ṣe ń ka alaye lorii iwadi wọnyi. Ẹ le sọ fun awọn elomiiran nipa iwadi naa ti ẹ ba fẹ. Ẹ jọwọ, ẹ beere lọwọ mi ti ohunkohun bawa ti ko ba ye yin, tabi ti ẹ ba fẹ alaye diẹ sii. Nigbati gbogbo awọn ibeere rẹ ba ti jẹ didahun ti o si daju pe ẹ loye kikun nipa iwadi yii, ao beere lọwọ yin ti ẹ ba fẹ kopa ninu iwadi naa ati lati fowo si "ìwé igbàsẹ lọ́wọ́ọ olùkópa". A o si fun yin ni iwe ti ẹ o fowo si lati tọju.

<u>Idi ti a fi ńse Iwadii Naa</u>

Ẹyin olùkópa mi ọwọn,

Orukọ mi ni **FAGOROYE Miracle Oluwatimilehin.** Mo jẹ akẹẹkọ́ làtí ile ìwé giga Yunifàsitìi tí Ile Ibadan, Koleeji tí a tín sètọjú alaisan pélu oogun òyìnbó, ní abala tí óhún rísí ètò ìlera àwọn ará ìlú, ẹka tí àtí n risi eto nípa idanilẹkọọ ati igbega eto ilera**.** Mo nse ìwadìí yìí gẹgẹ bi akẹẹkọ lati gba iwe erii yunifasitii ti ipele giga, Mo si tun nse ìwadìí yìí lóríi ìmọ̀ àti ìsesí tí ó le dènà ÀÌSÀN aito ẹjẹ laarin awọn alaboyun ti o ń gba itọju siwaju kiwọn to bimo ní agbègbè Ìjọba Ìbílẹ Ìbàdàn South-East, Ìbàdàn Ìpínlẹ Ọyo.

Ẹ se àkíyèsí wípé a peyin láto kópa nínúu iwadi yìí nitori pe ẹ jẹ alaboyun obirin ti o wa ni ipo ọmọ bíbí (ti ọjọ ori wọn wa ni ọdun mẹẹdogun si mọkandinlaadota). Ti o ba gba lati kopa ninu iwadi yii, ao beere lọwọ rẹ lati fowo si iwe igbasẹ lọwọ olukopa. A yoo tun beere lọwọ rẹ lati dahun si awọn ibeere nipa ìmọ̀ àti ìsesí tí ó le dènà ÀÌSÀN aito ẹjẹ laarin awọn alaboyun. Didahun si awọn ibeere yi ko ni gbayin ni akoko pupọ ju ogun tabi ogbọn iseju lọ, ko si ni ko ipanilara kankan bayin yato si ti akoko ti e ma fi dahun si awọn ibeere ti a ma biyin niinu iwe ibeere yii. **E jọwọ e ma ko orukọ yin si iwe ibeere yii** nitoripe ati fi ohunka idanimọ si ara awọn iwe ibeere kookan lati dabobo idanimọ rẹ.

Gbogbo àlàyé tí ẹba si se fún mi ninu iwadi yi ni yìí o wa ni ipamọ larin emi àtí ẹyìín, mi ko sini se afihan rẹ fún ẹnikẹni. Ìwadìíi yìí yóó ṣe ìrànlọwọ fún awọn eleto ilera, onitọju ati onisegun oyinbo lori ona ti wọn yi o fi se iranlọwọ fun awọn awọn alaboyun lati dènà ÀÌSÀN aito ẹjẹ.

Ẹ se àkíyèsí wípé kíkópa nínúu iwadi yìí jẹ tí èyí tí óti okàn yín wá, àti wípé ẹ le yẹra kuro nínúu iwadìí yìí ní gbogbo ìgbà tí ó bá wù yín láìsí ìsòro kankan sugbọn ẹni lati se akiyesi pe diẹ ninu awọn alaye ti a ti gba nipa yin ṣaaju ki ẹ to yan lati yẹra kuro le ti yipada tabi di mimu lo ninu awọn ijabọ ati awọn atẹjade sugbọn oniwadii yio fi imọ ṣhọkan pẹlu yin lorii ohun ti ẹ fẹ ki o she. Oniwadi naa yoo sọ fun yin nipa abajade iwadi naa nipa sisẹ iwe ijabo. Gbigba lati dahun awọn iwe ibeere tumọsi gbigba lati kopa ninu iwadi naa. Ẹ jọwọ fi ọwọ si iwe ibuwọlu ni abala ti o wa ni isalẹ ibi iwe igbasẹ lọwọ olukopa ki o le daju pe ẹ ti gba lati kopa ninu iwadi naa. Mo mọ ríri ìrànlọwọ yín nípa gbígbà láti kópa nínúu ìwadìí yìí pẹlú dídáhùn si ìwadìí yìí.

Gbólóhùn eniyan ti o ń gba aṣẹ lọwọ olukopa ninu iwadi

Mo ti ṣalaye iwadi yii ni kikun fun awọn olukopa ati wipe mo ti salaye to koju osuwọn fun wọn nipa awọn ewu ati awọn anfani ti o wa nibi siselati ṣe ipinnu alaye.

Ọjọ Ibuwọluwe ……………………………

Ibuwọluwe ………………………………..

Orukọ Olubuwọluwe ………………………

Gbólóhùn eniyan ti o ń fun oluwadii ni aṣẹ

Mo ti ka alaye ati ijuwe ti iwadii yii ni, wọn si ti tumọ ẹ si ede ti mo gbọ. Mo ti sọrọ pẹlu oluwadi nipa iwadi naa, atiwipe alaye ti mo gba titẹmilọrun . O ye mi pe kikopa mi jẹ atinuwa. Mo ti mọ nipa idii, awọn ọna ati awọn anfani ti o wa fun iwadi yii debi pe mo le se idajọ pe mo fẹ lati kopa ninu rẹ. O ye mi wipe mo le dawọ duro ti iwadi yi ba ń lọ lọwọ nigbakugba. Mo ti gba ẹda iwe igbasẹ yii ati iwe alaye ni afikun lati tọju fun ara mi.

Ọjọ Ibuwọluwe ……………………………

Ibuwọluwe ………………………………..

Orukọ Olubuwọluwe …………………………

Alaye lori erọ ibanisọrọ pẹlu adirẹsi olubasọrọ, tẹlifoonu, Faksi, imeeli ati eyikeyi alaye olubasọrọ miiran ti iwadi (awọn), Igbimọ ti o fi ontẹ tẹ iwe iwadii yii ati olori igbimọ.

Ti eba ni ibeere kankan nipa ise iwadi yi ni igbakugba, e le kan si Omidan Fagoroye Miracle, ni ẹka tí àtí n risi eto nípa idanilẹkọọ ati igbega eto ilera ní abala tí óhún rísí ètò ìlera àwọn ará ìlú, Koleeji tí a tín sètọjú alaisan pélu oogun òyìnbó ni Yunifàsitìi tí Ile Ibadan.

Ẹrọ ibanisọrọni: 07038457569 Ẹrọ ayelujara: fagoroyet@gmail.com

ÌWÉ ÌBÉÈRÈ

KOKO-ỌRỌ: **ÌMỌ̀ ÀTI ÌSESÍ TÍ Ó LE DÈNÀ ÀÌSÀN AITO ỆJẸ LAARIN AWỌN ALABOYUN TI O Ń GBA ITỌJU SIWAJU KIWỌN TO BIMỌ NÍ AGBÈGBÈ ÌJỌBA ÌBÍLẸ ÌBÀDÀN SOUTH-EAST, ÌBÀDÀN ÌPÍNLẸ ỌYO.**

Orukọ mi ni Fagoroye Miracle. Mo jẹ́ akẹ̀ẹ́kọ́ làtí ile ìwé giga Yunifàsitìi tí Ile Ibadan ti o ń se iwadìí lóríi **"I**mọ̀ àti ìsesí tí ó le dènà ÀÌSÀN aito ẹjẹ laarin awọn alaboyun ti o ń gba itọju siwaju kiwọn to bimọ ní agbègbè Ìjọba Ìbílẹ Ìbàdàn South-East, Ìbàdàn Ìpínlẹ Ọyo. Ẹ jọwọ, ẹ dahun si awọn ibeere yii pẹlu ootọ'nu ati ifọkansin.

Agbegbe Ijoba Ibile _____   Nọmba idanimọ fun iwe ibeere_____

ABALA A (APA KINI): SOCIO-DEMOGRAPHIC CHARACTERISTICS (Àlàyé lori eto igbesiaye olùkópa)

Ẹkọ: Fi inu rere dahun ni ibamu pẹlu atẹle atẹle nipa sişamisi tabi kikọ bi o ṣe yẹ ni aaye ti a pese.

1. Kíni Eya tí ẹ tíwa?: 1 = Yoruba ( ) 2 = Igbo ( ) 3 = Hausa ( ) 4 = Awọn miiran _____

2. Kíni ipo igbeyawo yìín? : 1 = Mi o i tí fe oko ( ) 2 = Mo ti ṣe igbeyawo ( ) 3 = Mo tí fi oko mi sile ( ) 4 = Moti kuro nile ọkọ ( ) Oko mi tí ku ( )

3. Kíni ipéle tí ẹ ka ìwé de? 1= Mi o ka iwe Kankan rara   [ ]   2 = ile ìwé alakobere [ ] 3 = Ile ìwé girama [ ] 4 = Ile iwe giga agba [ ] 5= Ile ẹkosẹ 6 = Isẹ miiran: (ẹ dárúkọ ẹ̀ ni pàtó)

4. Kíni ẹsìn tí ẹ n sìn? 1 Kìrìstíẹnì [ ] 2Mùsùlùmí [ ] 3Ẹlẹsìn ìbílẹ   [   ] 4 Ẹlẹsìn miran: (ẹ dárúkọ ẹ̀ ni pàtó) _____

5. Ọmọ ọdún mélo ni ẹ jẹ̀ ní ìgbà tí ẹ se ojọ ìbí yín kẹhìn (ní ọdún)? _____

4. Kini isẹ ti ẹ ń ṣe? _____

7. Kíni gbèdéke àpapọ owó ọyà yìín lósoosù? _____

5. Melo ni awọn ọmọ ti ẹbi?_____

9. Ṣe oyun alakọkọ yin niyi? 1 = Bẹ́ẹ̀ni [   ] 2 = Bẹ́ẹ̀kọ́ [   ]

10 Ti kii ba ṣe bẹ, ẹ mu ọkan ti o jẹ ninu awọn idahun isalẹ yi)

 (a)Oyun keji (b) Oyun kẹta (c) nọmba miran: (ẹ dárúkọ ẹ̀ ni pàtó) _____

11. Kini iṣẹ ti ọkọ yin ń ṣe?:_____

12. Nigbawo ni ẹ fi orukọ silẹ ni ile-iwosan funt itoju-siwaju ibimọ? 1 = oṣu mẹta-akoko [ ]

   2 = oṣu mẹta-ẹẹkeji [ ] 3 = oṣu mẹta-ẹẹkẹta [ ]

13. Njẹ e ti ni aarun aito ejẹ ri?: 1 = Bẹ́ẹ̀ni [   ] 2 = Bẹ́ẹ̀kọ́ [   ]

14. Tani o ni ipa julọ lori awọn ipinnu eto ilera yin? 1 = Ọkọ ( ) 2 = Iya ( ) 3 = Awọn ọrẹ ( )

   4 = arakunri/arabinrin ( ) 5 = Baba ( ) 6 = Awọn ẹbi ( ) 7 = Ẹlomiiran (ẹ dárúkọ ẹ̀ ni pàtó) _____

ABALA B (APA KEJI): ÌBÉÈRÈ LORÍÍ ÌMÒ NÍPA ÀÌSÀN AITO ẸJẸ NINU OYUN

(KNOWLEDGE ABOUT ANAEMIA)

15. Nibo ni awon orisun alaye re nipa àìsàn aito ejẹ ninu oyun?

Orisun alaye	Bẹ́ẹ̀ni	Bẹ́ẹ̀kọ́
Redio		
Iwe iroyin		
Tẹlifisiọnu		
Awọn osise eto ilera		
Ọrẹ		
Awon molebi		
Ile iwe		
Ero ayelujara		

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16. Kini o loye nipa nipa àìsàn aito ẹjẹ ninu oyun? 1 = O jẹ ilana ti oyun fin dagba [ ] 2 = Itọka aijẹhunkan asaralore [ ] 3 = ijiya lati ọdọ awọn orisa [ ] 4 = Ikuna okan lati pin ẹjẹ si gbogbo orikerike ara. 5 = aito awọn eroja atejẹse (sẹẹli ẹjẹ pupa ati Imogulobin ninu ẹjẹ). [ ] 6 = Emi ko mọ [ ]

Ìmò Nípa Awọn Okùnfà ti O Lewu Lorii Àìsàn Aito Ẹjẹ

Ilana: - ejọwọ fi arabalẹ dahun awọn ibeere ti o wa ni isalẹ yii pẹlu fifi ami si (√) si idahun ti o yẹ. Idahun ti o tọ ati e yi ti o yẹ ni ami kọọkan lori.

Òhùnkà	Ìbéèrè	Bẹẹni	Bẹẹkọ
17	Nje aarun ibà jẹ okan laraa okunfa àìsàn aito ẹjẹ ninu oyun?		
18	Njẹ kikuna lati fi alafo si aarin awọn ọmọ bibi le se okunfa ki àìsàn aito ẹjẹ ninu oyun?		
19	Njẹ mimu oti lojoojumọ jẹ nkan ti o le fa a àìsàn aito ẹjẹ?		
20	Njẹ jijẹ ohunjẹ ti o peye jẹ nkan ti o lewu fun àìsàn aito ejẹ?		
21	Njẹ jijẹ awọn ohunjẹ ti koni eroja atejẹse le mu ki àìsàn aito ẹjẹ mu ni?		
22	Ki efon jẹ oloyun lemu ki àìsàn aito ẹjẹ mu oloyun?		
23	Nje diduro pipẹ ninu oorun le se okunfa ewu fun àìsàn aito ẹjẹ		
24	Njẹ jijẹ awọn didun le ṣe alekun okunfa ewu fun àìsàn aito ẹjẹ ?		
25	Eje yiya ninu oyun ko le se okun fa aisan aito eje		

Ìmò Nípa Awọn Ami Ati Awọn Apẹẹrẹ Àìsàn Aito Ẹjẹ

Òhùnkà	Ìbéèrè	Bẹẹni	Bẹẹkọ
26	Aarẹ ara jẹ ami aisan kan ti alaboyun ti o ba ni aisan aito ẹjẹ ma ń ni?		
27	Ki alaboyun daku ko tumọ si pe alaboyun ni aisan aito ẹjẹ?		
28	Ki alaboyun se funfun jẹ aami wipe o ti ni aisan aito ẹjẹ?		
29	Ki alaboyun ma lee mi dada jẹ aami aisan aito ẹjẹ lara alaboyun?		
30	Ki o ma rẹ alaboyun le jẹ aami wipe alaboyun naa ti ni aisan aito ẹjẹ?		
31	Ki awọ oju alaboyun shaa jẹ aami wipe alaboyun naa ti ni aisan aito ẹjẹ?		
32	Ki awọ abe eekanna alaboyun shaa jẹ aami wipe alaboyun naa ti ni aisan aito ẹjẹ?		

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Ìmò Nípa Ohunjẹ

33. Sise alekun jijẹ awọn ohunjẹ ti oni eroja atejẹse le dena ki àìsàn aito ẹjẹ mu ni? 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

Òhùnkà	Ewo ninu awon wonyi ni o je orisun eroja atejẹse ti o dara?	Bẹẹni	Bẹẹkọ
34	Omi		
35	Miliki		
36	Iresi		
37	Awọn ẹfọ ewebe		
38	Igbin		
39	Ọgẹdẹ dodo		
40	Oti lile		

41. Ko se dandan ki obinrin o lo ogun eroja atejese ki o to l'oyun? 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

42. Lilo awon ogun atejeseje pon dandan ninu oyun? 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

43. Nje o mope mimu "tea", "coffee" ati miliki le din eroja atejese ku ninu ara? 1 = Bẹẹni [   ]

    2 = Bẹẹkọ [   ]

Imọ Nipa Awọn Ipa Ti Àìsàn Aito Ẹjẹ Ń Ko Ninu Ara

44. Àìsàn aito ẹjẹ le seku pa ọmọ ọwọ? 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

45. Àìsàn aito ẹjẹ le fa ki ọmọ wa laipe ọjọ 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

46. Iya ọmọ le ku latari àìsàn aito ẹjẹ 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

47. Àìsàn aito ẹjẹ le fa ki oloyun bi abiku? 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

48. Àìsàn aito ẹjẹ le fa ki omi ọmu ma jade? 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

49. Àìsàn aito ẹjẹ le fa ki ọmọ kere? 1 = Bẹẹni [   ] 2 = Bẹẹkọ [   ]

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Imọ Nipa Idena Àìsàn Aito Ẹjẹ

50. Njẹ ṣise ayẹwo ilera deede se pataki lakoko oyun lati deena àìsàn aito ẹjẹ? 1 = Bẹ́ẹ̀ni [
]

   2 = Bẹ́ẹ̀kọ́ [   ]

51. Njẹ o mọ pe fifi alafo si iye ohunka ọmọ bibi le dena àìsàn aito ẹjẹ? 1 = Bẹ́ẹ̀ni [   ]

   2 = Bẹ́ẹ̀kọ́ [   ]

52. Ewo ni o dara ju fun aye fifisile laarin ọmọ bibi? 1 = Lati odun meji sile 2= Ju odun meji lo

53. Njẹ sisùn labẹ awọn to ń pa ẹfọń se koko lakoko oyun lati se adinku ki ẹfọn jẹ oloyun?

   1 = Bẹ́ẹ̀ni [   ] 2 = Bẹ́ẹ̀kọ́ [   ]

54. Se jije ohun ti o dara le se aleekun didena aiasan aito eje? 1 = Bẹ́ẹ̀ni [   ] 2 = Bẹ́ẹ̀kọ́ [
]

ABALA D (APA KETA): ÌBÉÈRÈ LORÍÍ ÌHUWASI NÍPA ÀÌSÀN AITO ẸJẸ

(ATTITUDE TOWARDS ANAEMIA)

Ilana: - ẹjọwọ fi arabalẹ dahun awọn ibeere ti o wa ni isalẹ yii pẹlu fifi ami si (√) si idahun ti o yẹ pelu esi M**o faramọ gidi. Ko daju pé mo faramọ ati Mi o faramọ**.

Òhùńkà	Ìbéèrè	Mo faramọ gidi	Ko daju pé mo faramọ	Mi o faramọ
55	Mo lero pe àìsàn aito ẹjẹ jẹ iṣoro buburu ni agbegbe mi			
56	Mi o gbagbọ pe lilọ si ile-iwosan fun itọju siwaju ibimọ (Antenatal) ni anfani fun ilera iya ati ọmọ inu oyun			
57	Mo nigbagbọ pe afikun eroja atẹjẹse olohujẹ ati oni tabulẹti le ṣe idena fun àìsàn aito ẹjẹ			
58	Mo lero pe awọn alaboyun yẹ ki o malo oogun eroja atẹjẹse oni tabulẹti ni afikun ohunjẹ afaralokun ti wọn jẹ			
59	Mo ma lo oogun eroja atẹjẹse oni tabulẹti ti oko mi ba fi owo si nikan			
60	Mo gbero lati se ifetosomọbibi lẹhin ti moba bimọ tan lati fi o kere ju alafo ọdun meji si oyun nini miran			
61	Mo nifẹ si didena àìsàn aito ẹjẹ			
62	Mo lero pe o yẹ ki awọn eleto ilera ma gba awọn alaboyun niyanju sisùn labẹ àwọn to ń pa ẹfọń ki aisan iba ma ba muwọn			
63	Mi o ki ń jẹ awọn ounjẹ ti o ni eroja atẹjẹse			
64	Mo nigbagbọ pe jijẹhun deede ati lasiko le dena àìsàn aito ẹjẹ			
65	Mo lero pe àìsàn aito ẹjẹ o lee mu eyikeyi alaboyun			
66	Eroungba mi lati dena àìsàn aito ẹjẹ da le lori ti awon ore mi			
67	Mo ma lo oogun eroja atẹjẹse oni tabulẹti ti olori esin mi ba fi owo si			

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ABALA IPIN E (APA KERIN): ÌBÉÈRÈ LORÍI ÌSESÍ TÍ Ó LE DÈNÀ ÀÌSÀN AITO ẸJẸ NINU OYUN

(PREVENTIVE PRACTICES AGAINST ANAEMIA IN PREGNANCY)

Ilana: - ẹjọwọ fi arabalẹ dahun awọn ibeere ti o wa ni isalẹ yii pẹlu fifi ami si (√) si idahun ti o yẹ

Òhùńkà	Ìbéèrè	Béèni	Béèkó
68	Mo ma n je ounje ti o pe ni emeta lojumọ		
69	Mo ń lo oogun eroja atejẹse nigbagbogbo?		
70	Nje o ti lo ogun eroja atejese ninu oyun yin?		
71	Mo ń fi ẹfọ ewebe sinu ounjẹ mi lojumọ?		
72	Nje o feran lati ma je eran, edo, eran adiye, eja?		
73	Mo tin lo awon ogun eroja atejese ki n to loyun?		

ẸSE ADUPẸ FUN DIDAHUN SII AWỌN IBEERE WA WỌN YII

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CODING GUIDE FOR KNOWLEDGE AND PREVENTIVE PRACTICES OF ANAEMIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN IBADAN SOUTH EAST LOCAL GOVERNMENT AREA, OYO STATE

SOCIO-DEMOGRAPHIC CHARCTERISTICS

S/NO	VARIABLE	CODE
1	**Ethnicity**	
	Yoruba	1
	Igbo	2
	Hausa	3
	Benue	4
	Kogi	5
	Edo	6
2	**Marital Status**	
	Single	1
	Married	2
	Separated	3
	Cohabiting	4
3	**Highest level of education**	
	No formal education	1
	Primary	2
	Junior Secondary	3
	Senior Secondary	4
	Tertiary	5
	Vocational	6
4	**Religion**	
	Christianity	1
	Islam	2
	Traditional	3
5	**Age**	Actual figure
6	**Occupation**	
	Artisan	1
	Business woman	2
	Trader	3
	Student	4
	Teacher	5
	Civil servant	6
	Veterinary doctor	7
	Patent medicine vendor	8
	Secretary	9
	Caterer	10
	Nurse	11
	Banker	12
	Corp member	13

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	Not working	14
7	Average monthly income	
	< 5000	1
	5000-20000	2
	>20000-35000	3
	>35000-50000	4
	>50000-65000	5
	>65000-80000	6
	>80000	7
	I cannot tell	8
8	**Number of children**	
	None	1
	One	2
	Two	3
	Three	4
	Four	5
	Five	6
	Six	7
	Seven	8
	Eight	9
9	**First pregnancy**	
	Yes	1
	No	2
10	Pick one that applies	
	2nd pregnancy	1
	3rd pregnancy	2
	4th pregnancy	3
	5th pregnancy	4
	6th pregnancy	5
	7th pregnancy	6
	8th pregnancy	7
	9th pregnancy	8
	Not applicable	88
11	**Partner's occupation**	
	Artisan	1
	Trader	2
	Business man	3
	Engineer	4
	Transporter	5
	Civil servant	6
	Company worker	7
	Surveyor	8
	Religious leader	9
	Pharmacist	10
	Student	11
	Hotel staff	12

	Contractor		13
	Patent medicine vendor		14
	Policeman		15
	Civil defense		16
	Film producer		17
	Private sector staff		18
	Teacher		19
	Farmer		20
	Accountant		21
	Medical doctor		22
	Media man		23
	Not applicable		24
12	**First antenatal booking**		
	1st trimester		1
	2nd trimester		2
	3rd trimester		3
13	**Previous history of anaemia**		
	Yes		1
	No		2
14	**Influences health decision the most**		
	Spouse		1
	Mother		2
	Friends		3
	Siblings		4
	Father		5
	Mother-in-law		6
	Self		7
	Boss		8
	Neighbor		9
	Nurse		10
	Grandmother		11
15	**Source of information on anaemia in pregnancy**		
	Radio		
	Newspaper		For all variables
	Television		1=Yes
	Health care worker		2= No
	Friend		
	Relative		
	Husband		
	School		
	Social media		

Knowledge of anaemia in pregnancy

S/NO	VARIABLE	CODE
16	**What do you understand by anaemia in pregnancy?**	
	Normal pregnancy process	1
	An indicator of nutritional deficiency	2
	Punishment from the gods	3
	The inability of the heart to pump blood to the peripheral parts of the body	4
	It is a decrease in concentration of red blood cells or haemoglobin level in the blood	5
	It results from a pregnant woman thinking too much	6
	I don't know	7

Knowledge of anaemia risk factors

S/NO	VARIABLE	CODE
17 – 25	Is malaria one of the causes of anaemia in pregnancy	
	Does low birth spacing increase the chance of a pregnant woman having anaemia	
	Is daily consumption of alcohol by a pregnant woman a risk factor for anaemia	
	Can taking balanced diets be a risk factor for anaemia in pregnancy	For all variables
	Does consumption of food deficient of Iron predispose a pregnant woman to having anaemia	1= Yes 2= No
	Can exposure to mosquito bites increase the likelihood of a pregnant woman having anaemia	
	Staying too long in the sun is a risk factor for anaemia in pregnancy	
	Does consumption of chocolate increase the chance of a pregnant woman having anaemia	
	Bleeding during pregnancy is not a risk factor for anaemia in pregnancy	

Knowledge of anaemia in pregnancy signs and symptoms

S/NO	VARIABLE	CODE
26-32	Is fatigue a symptom of a pregnant woman having anaemia Fainting does not mean that a pregnant woman has anaemia A pregnant woman looking pale is a sign that she is likely to have anaemia Is shortness of breath a symptom of anaemia in a pregnant woman Weakness can be a symptom of anaemia in a pregnant woman The pallor of the eye is a sign of anaemia in a pregnant woman The pallor of the nail beds is not a sign of anaemia in a pregnant woman	For all variables 1=Yes 2=No

Knowledge of Nutrition

S/NO	VARIABLE	CODE
33-43	Does increased consumption of diet rich in iron prevent anaemia in pregnancy Water is a good source of Iron Milk is a good source of Iron Rice is a good source of Iron Green leafy vegetables are good sources of Iron Snail is a good source of Iron Plantain is a good source of Iron Alcohol is a good source of Iron It is not necessary for a woman to take folic acid and Iron supplements before conception	For all variables 1= Yes 2=No
	Do you know that drinking tea, coffee and milk with meal can reduce iron absorption in the body Daily intake of iron and folic acid tablet is necessary during pregnancy	

Knowledge of anaemia in pregnancy effects

S/NO	VARIABLE	CODE
44-49	Anaemia can cause infant mortality Anaemia can increase the chance of preterm delivery Is maternal death one of the adverse effect of anaemia Having anaemia can predispose a foetus to stillbirth Failing lactation is a consequence of anaemia An underweight infant is also an effect of anaemia	For all variables 1= Yes 2= No

Knowledge of anaemia in pregnancy prevention

S/NO	VARIABLE	CODE
50-54	Is regular medical checkup necessary during pregnancy for the prevention of anaemia Do you know that childbirth spacing can prevent anaemia in pregnancy Which is the best spacing of childbirth to prevent anaemia - ≥2 years - <2 years Is sleeping under longlasting insecticide-treated net necessary during pregnancy to reduce chances of mosquito bites Does good nutrition increase the likelihood of preventing anaemia in pregnancy	For all variables 1=Yes 2= No

Attitude regarding prevention of anaemia in pregnancy

S/NO	VARIABLE	CODE
55-67	In my opinion, I think anaemia in pregnancy is a serious problem	
	I do not believe that regular visits to Antenatal clinic is of benefit to health of mother and foetus during pregnancy	
	I believe that iron supplements or tablets can prevent anaemia	
	I think pregnant women should consume iron tablets inspite of healthy diets	
	I will only use iron supplements if my partner approves of it	
	I plan to use contraceptives after delivery to achieve at least two years interval of pregnancy	For all variables
	I am interested in preventing anaemia	1=Agree
	I think it should be recommended that pregnant woman must sleep under insecticide treated nets for malaria prevention	2= Disagree 3= Undecided
	I consume foods rich in iron	
	I believe that regular meals or feeding can prevent anaemia in pregnancy	
	I think a pregnant woman cannot be affected with anaemia	
	My will to prevent anaemia is based on that of my friends	
	I will only take iron supplements if my religious leader approves it	

Preventive practices against anaemia in pregnancy

S/NO	VARIABLE	CODE
68-73	Have three regular balanced diets per day	
	Take iron supplements regularly	For all variables
	Have you taken folic acid in current pregnancy	1=Yes
	Do you include green leafy vegetable in your diet daily	2=No
	Do you have the habit of eating red meat, liver, fish	
	I started taking iron supplements before conception	

APPENDIX VI

MINISTRY OF HEALTH
DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION
PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. ....
All communications should be addressed to
the Honorable Commissioner quoting
Our Ref. No. AD 13/479/ *1438*   12 September, 2019

The Principal Investigator,
Department of Health Promotion and Education,
Faculty of Public Health,
College of Medicine,
University of Ibadan,
Ibadan.

Attention: Fagoroye Miracle

ETHICS APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE

This is to acknowledge that your Research Proposal titled: "Knowledge and Preventive Practices of Anaemia among Pregnant Women Attending Antenatal Care in Ibadan South East Local Government Area, Ibadan, Oyo State." has been reviewed by the Oyo State Ethics Review Committee.

2.   The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3.   Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of findings as this will help in policy making in the health sector.

4.   Wishing you all the best.

Dr. Abbas Gbolahan
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethics Review Committee

APPENDIX VII

IBADAN SOUTH EAST LOCAL GOVERNMENT MAPO HILL IBADAN
IBADAN SOUTH LOCAL COUNCIL DEVELOPMENT AREA (LCDA), SCOUT CAMP, IBADAN.

All Correspondence should be addressed
to the Chairman quoting

Local Council Development Area Secretariat,
Scout Camp, Ibadan,
Oyo State, Nigeria.

Our Ref:........IBSLCDA/0016/162................

Your Ref:...

Date 4th of October, 2019

The H.O.D,
Health Promotion and Education,
University of Ibadan,
Ibadan.

6 WEEKS (SIX WEEKS) ON KNOWLEDGE AND PREVENTIVE PRACTICES OF ANAEMIA AMONG PREGNANT WOMEN

I am directed to refer to your application dated 30th September, 2019 on the above subject and to inform you of the acceptance of FAGOROYE MIRACLE O., Matric No. 204592 of Department of Health Promotion and Education of your institution to undergo (6) Weeks Research Programme in the primary health care centres within the Local Council Development Area with effect from 8th October, 2019 to 15th November, 2019.

Please be informed that no financial remuneration is attached.

Mr. Adeniyi A.A.
for: Chairman
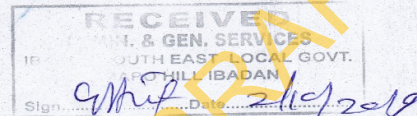Ibadan South Local Council Development Area
Scout Camp,

DEPARTMENT OF
HEALTH PROMOTION AND EDUCATION
FACULTY OF PUBLIC HEALTH, COLLEGE OF MEDICINE
UNIVERSITY OF IBADAN

Tel: +234 8108955615 | E-mail: healthpromed@yahoo.com | www.comui.edu.ng

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Our Ref. HPE/SF.   30th September, 2019

The Head
Local Government Administration
Ibadan South East LGA
Ibadan
Oyo State.

LETTER OF INTRODUCTION

Re: FAGOROYE Miracle Oiuwatimilehin - Matric No. 204592

This is to certify that the bearer FAGOROYE Miracle O. is an MPH (Health Promotion and Education) student, in the Department of Health Promotion and Education, Faculty of Public Health, University of Ibadan.

The student is to carry out a research which focuses on: **"KNOWLEDGE AND PREVENTIVE PRACTICES OF ANAEMIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN IBADAN SOUTH EAST LOCAL GOVERNMENT AREA, IBADAN, OYO STATE."** She intends to carry out her research work among the Pregnant women in Local Government Area.

Kindly accord her all necessary assistance she may require.

Thank you.

Dr. O.E. Oyewole
Ag. Head of Department

Cc: The HLGA
Ibaddan South LCDA
South Camp
Ibadan.

HEAD
DEPARTMENT OF HEALTH
PROMOTION & EDUCATION
COLLEGE OF MEDICINE
UNIVERSITY OF IBADAN
IBADAN. NIGERIA

Dr O. E. Oyewole
Acting Head

Vision: To be a world-class department for academic excellence, geared towards meeting societal needs.
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Yetunde O. John-Akinola
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Our Ref. HPE/SF.   30th September, 2019

The Head
Local Government Administration
Ibadan South East LGA
Ibadan
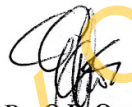Oyo State.

LETTER OF INTRODUCTION

Re: FAGOROYE Miracle Oluwatimilehin - Matric No. 204592

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Kindly accord her all necessary assistance she may require.

Thank you.

Dr. O.E. Oyewole
Ag. Head of Department

Cc: The HLGA
      Ibaddan South LCDA
      South Camp
      Ibadan.

HEAD
DEPARTMENT OF HEALTH
PROMOTION & EDUCATION
COLLEGE OF MEDICINE
UNIVERSITY OF IBADAN
IBADAN. NIGERIA

In charge, Oranyan PHC
Please, allow the
bearer to carry out
her research program
In your facility.

Copy
In charge
Agbongbon PHC
Odinjo PHC

Dr O. E. Oyewole
Acting Head

Vision: To be a world-class department for academic excellence, geared towards meeting societal needs.
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APPENDIX VIId

IBSLCDA/0016/162

4th of October, 2019

The H.O.D,
Health Promotion and Education,
University of Ibadan,
Ibadan.

6 WEEKS (SIX WEEKS) ON KNOWLEDGE AND PREVENTIVE PRACTICES OF ANAEMIA AMONG PREGNANT WOMEN

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Please be informed that no financial remuneration is attached.

Mr. Adeniyi A.A.
for: Chairman
Ibadan South LCDA
Scout Camp,
<u>Our Ref. No: IBSLCDA/0016/162^A</u>
Ibadan: 4th October, 2019

<u>Copy to:</u>
FAGOROYE MIRACLE O.
University of Ibadan
Ibadan.

Above for your information and you are to report for duty at Primary Health Care Centre of this Local Government with immediate effect.

Mr. Adeniyi A.A.
for: Chairman
Ibadan South LCDA

<u>Copy to:</u>
The Matrons,
Primary Health Care Centres,
Ibadan South L.C.D.A

Above is for your information and necessary action please.

Mr. Adeniyi A.A.
for: Chairman,
Ibadan South L.C.D.A.