KIBOGORA POLYTECHNIC

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF GENERAL NURSING

ASSSESSMENT OF KNOWLEDGE AND ATTITUDE ABOUT PREVENTION OF ANEMIA ON PREGNANCY ATTENDING KIBOGORA DISTRICT HOSPITAL

Case study: KIBOGORA DISTRICT HOSPITAL

Period: from 26th December 2021 to 30 February 2022

A Dissertation submitted to KIBOGORA POLYTECHNIC in the fulfillment of the requirement for the award of Bachelors Degree in General nursing.

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Kibogora, March 2022

DECLARATION

Declaration by the candidate

We are, UWURUKUNDO Gilbert and SEBANANI Modeste, we declare that this research is our own work; it is being submitted for the degree of Bachelor in General Nursing Science at KIBOGORA POLYTECHNIC, and it has not been submitted before for any other award in Higher Learning Institutions. All materials cited in this paper which are not own have been duly acknowledged.

STUDENT`S NAMES

UWURUKUNDO Gilbert **SEBANANI Modeste**

Date: Date:

Signature: …… Signature: ……

Declaration by the supervisor

I declare that this work has submitted for examination with my approval as KP supervisor

SUPERVISOR'S NAME

NGIRINSHUTI Vedaste

Date:

Signature: ……

DEDICATION

This report is dedicated:

To our Almighty God

To my parents, brothers, sisters and supporters, for their contribution in my studies

To all peoples who have Jesus as King and savior of their life

ACKNOWLEDGEMENT

This work would not complete without the support and guidance from various persons.

Appreciation to our God for his unspeakable miracle and to Jesus Christ and all angels for protecting us

We appreciate and acknowledge the government of Rwanda for its initiatives to deliver education for all

We thank KIBOGORA POLYTECHNIC with NGIRINSHUTI Vedaste our supervisor for the valuable comments, criticisms and suggestions

Also we thank lecturers for accepting teach us during our study

We express our appreciations to our parents and supporters for inspiring us work hard

We grateful to the administration and to other people of Kibogora DH, all clients to respond our questionnaire

To all we say, God bless

LIST OF ACRONYMS/ABREVIATION

- **RDHS:** Rwanda Demographic Health Survey
- **NHANES:** National Health and Nutritional Examination Surveys
- **WHO**: World Health Organization
- **CBC**: Complete Blood Cells
- **HB**: Hemoglobin
- **ID**: Iron Deficient
- **IFA**: Iron Folic Acid
- **LMP**: Last Menstruation Period
- **RN**: Registered Nurse
- **KP**: Kibogora Polytechnic

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ABSTRACT

Background: Anemia is a condition in which the concentration of hemoglobin or pack cell volume or number of red blood cells are below normal range

Objectives: General objective of the study assessment of knowledge and attitude about prevention of anemia on pregnancy women attending Kibogora district hospital

Methodology: this study is a cross-sectional research design, which is a population-based quantitative approach designed to assess the knowledge and attitude about prevention of anemia on pregnancy women attending Kibogora district hospital, the sampling will involve A convenient sampling method which is a non probability sampling technique, the questionnaires item will be used as the data collection instrument and data analysis will be performed by statistical package for social sciences result will be presented using frequent table.

Discussion of Findings: In our study, the research have found that majority has between 21-35 years with equal 72% are more who has knowledge on anemia prevention, most participant are farmer at 44%, most wealth index are in categories 3 ubudehe as evidenced by 60%,on the knowledge of anemia 80% understands anemia during pregnancy, 79% they get information of anemia from community health workers ,on the risk factor of anemia many respondent which is equal to 42% responded the risk factor of anemia during pregnancy is blood disorder and for preventive measures of anemia majority which equal to 50% answered balanced diet is the main preventive measures of anemia among pregnancy women because they get information from community health workers. On the attitude of anemia 50% of respondent started talking folic acid at 3-4 month of pregnancy and 75% they take it once daily on the effect of folic acid on pregnancy women many respondent 50% says it prevent from anemia, prevention of anemia many eat balanced diet as evidenced by 50%, 50% use green vegetables as food rich in folic acid

Conclusion and Recommendations: This evidence allow us to confirm that pregnancy women attending Kibogora district hospital have some knowledge and attitude about prevention of anemia

We recommend to health workers, to increase the knowledge of anemic clients through education or other channel of teaching which will help the client to acquire more knowledge on anemia.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter presents the background of the study, problem description, general objectives, specifics objectives and research questions, significance of the study, scope of the study and organization of the study.

1.1Background for the study

Anemia is a major social and health issue in Rwanda and Globally, as it results into severe health problems for both the mother and childGlobally, anemia affects 1.62 billion people (25%), among which 56 million are pregnant women (Balarajan, 2017)

The estimated prevalence of anemia in pregnancy differs widely between continents, being highest in Africa (55.8%) and Asia (41.6%) and lowest in Europe (18.7%) and North America (6.1%). In general, as pregnancy progresses, the prevalence of anemia increases (Gonzales, 2012)

Since anemia is associated with poor health outcomes, the prevalence of anemia is a significant public health indicator (WHO,2012), Even though anemia is primarily caused by iron deficiency, low oxygen-carrying capacity may result from other conditions such as chronic diseases, which remain a relevant health concern in the United States. However, studies examining current rates of anemia in the total US population and in more specific subgroups are limited. Data from five National Health and Nutrition Examination Surveys (NHANES) from 2003 to 2012 were analyzed to assess two outcomes: anemia and moderate-severe anemia, which were based upon serum hemoglobin levels (Hb) as per World Health Organization (WHO) definitions. Statistical analysis examined temporal trends and the prevalence of anemia among sexes, age groups, and races/ethnicities. The study estimated that an average of 5.6% of the U.S. population met the criteria for anemia and 1.5% for moderate-severe anemia during this 10-year period. High-risk groups such as pregnant women, elderly persons, women of reproductive age, non-Hispanic blacks, and Hispanics were identified, and relationships between multiple risk factors were examined. Rates of anemia in men increased monotonically with age, while that of women increased bimodality with peaks in age group 40–49 years and 80–85 years (WHO, 2012)

The effect of risk factors was observed to compound. For instance, the prevalence of anemia in black women aged 80–85 years was 35.6%, 6.4 times higher than the population average. Moreover, anemia is a growing problem because of the increased prevalence of anemia (4.0% to 7.1%) and moderate-severe anemia (1.0% to 1.9%), which nearly doubled from 2003–2004 to 2011–2012 on knowledge 76% have knowledge on anemia ,66% have attitude on anemia (WHO, 2012)

In Sub-Saharan Africa, iron and folate deficiencies are the most common causes of anemia in pregnant women. Anemia has a variety of converging contributing factors including nutritional, genetic, and infectious disease factors; however, iron deficiency is the cause of 75% of anemia cases. Iron deficiency anemia affects the development of the nation by decreasing the cognitive development of children and productivity of adults, on knowledge 56% have knowledge on anemia, and 46% have attitude on anemia (Deshpande, 2012)

The 2019-2020 RDHS also included measurement of hemoglobin level among women age 15-49 hemoglobin level among women were measured using procedures to those used for children except that capillary blood. Hemoglobin level were successfully measured for 99.7% of the women eligible for testing where 13% of women age 15-49 are anemic . Most of these women are mild anemic 9%, 4% are moderate anemic and less than 1% is severely anemic. Pregnancy women are 25% and women in the lowest wealth quintile 16% are at high risk than other women. (NISR and RDHS, 2020 page 31)

1.2 Problem Statement

Anemia is common hematological complication of pregnancy woman especially in first trimester. WHO estimated that a high frequency woman develop anemia during pregnancy (WHO, 2014)

Anemia is still public health problem that imposes substantial challenges on the healthcare systems as well as on the economy of most developing nations. This is because a significant proportion of persons who suffer from the anemia in worldwide (Thierry Harvey, 2016)There many potential negative consequences and risks of anemia for pregnancy women including increased fatigue, short term memory loss, decreased attention span and decreased work/daily life performances, increased pressure on the cardiovascular system due to insufficient hemoglobin and low oxygen saturation levels , low resistance to infections and a reduced tolerance to significant blood loss during labor. The presumed risks of anemia for the fetus increased risk of reduced hemoglobin level and therefore oxygen to the uterus, placenta and

the fetus during development, Anemia in neonates have been shown to have a statistically significant increment in both cognitive and behavioral abnormalities up to 10 years after iron repletion, even if mild or moderate anemia during pregnancy can be associated with unfavorable obstetric outcomes including preterm birth, low birth weight and fetal death (Thierry Harvey, 2016)

Due to different lifestyle and socioeconomic conditions, the prevalence of anemia during pregnancy is highly variable according world health organization review of nationally representative surveys from 1993 to 2016; anemia affects approximately 42% of pregnancy women worldwide, 52% in developing countries and 23% in developed countries. Although an estimated 1.6 billion individuals worldwide have anemia, it is generally assumed that 50% of cases of anemia are due to iron deficiency and about twice as many individual are estimated to be affected by iron deficiency anemia (Asmaa Zkik, 2017)

In Rwanda, demographical survey which was done in 2020 by national institute of statistics of Rwanda shows that women mild anemic are 9%, 4% are moderately and less than 1% is severely anemic. Pregnancy women are 25% and women in the lowest wealth quantile 16% are more likely to be anemic than other women (NISR and RDHS, 2020)

At Nyamasheke district there is no data available in this context, therefore this study will be done to assess the knowledge and attitude about prevention of anemia among pregnancy women attending Kibogora district hospital

1.3 Purpose of the study

This study was aimed at evaluating the knowledge and attitude about prevention of anemia among pregnancy women attending Kibogora district hospital

1.4 Specifics objectives of the study

- To find out the level of knowledge about prevention of anemia among pregnancy women attending Kibogora hospital
- To identify the preventive measures for intervention strategies to control anemia among pregnancy women attending Kibogora hospital.

1.5 Research Questions

- What is the level of knowledge and attitude about prevention of anemia among pregnancy women attending Kibogora hospital?

- What are the preventive measures for intervention strategies to control anemia among pregnancy women attending Kibogora hospital?

1.6 Significance of the study

This study is essential for me as a future nurse and just a health professional. In addition the study will scientifically help students and other health professionals who access to it.

1.6.1 Personal Interest

We want to conduct this study because we are interested to know the knowledge and attitude about prevention of anemia among pregnancy women attending Kibogora district hospital in order to improve anemic patients well being and to prevent complication also our study will help us to improve knowledge of anemia patients.

1.6.2 Social Interest

These research findings could be useful in the planning of anemia campaign against anemia, the study can enhance the community to take a part in anemia prevention

1.6.3 Scientific Interest

Finally this study will encourage other researcher to conduct more research about the cause of increasing numbers of anemia in pregnancy women and the socio economic impacts of anemia patients.

1.7. Scope of the study

1.7.1. In the time

Our research was conducted from December 2021 to February 2022

1.7.2. In domain

Our research was conducted in public health domain

1.7.3. In the space

Our research was conducted at Kibogora District Hospital located in Western province, Nyamasheke District, Kanjongo Sector, KibogoraCell.

CHAPTER TWO: LITERATURE REVIEW

2.0. Introduction

The purpose of this chapter of literature review in this study is to present the accumulated body of knowledge on prevention anemia and aspects of management for anemic patients. This chapter starts by presenting literature about Anemia. It presented a review of the empirical literature on the topic of knowledge and attitude on prevention of anemia among pregnancy women. It will tackle in a detailed way about women knowledge regarding anemia management and prevention (RoniPeleg, 2015)

2.1. Theoretical literature on anemia

2.1.1. Key words

Anemia is defined as a reduction in red blood cell (RBC) mass or blood hemoglobin below 11g/dl in concentration. In practice, anemia most commonly is defined by reduction in one or both of the following: Hemotocrit (HCT) and hemoglobin (HGB) (ClaudioSandoval, 2012)

Pregnancy: The state of carrying a developing embryo or fetus within the female body. This condition can be indicated by positive results on an over- the- counter urine test, and confirmed through a blood test, ultrasound, detection of fetal heart beat, or an X-ray, pregnancy lasts for about nine months ,measured from the date of the women last menstrual period(LMP). It is conventionally divided into three trimesters, each roughly three months long (Sarah Marshall et Al, 2020).

Women: an adult female person (as opposed to a Man) (Susheela Singh et Al, 2018)

Knowledge: according to online dictionary, knowledge is defined as familiarity awareness or understanding gained through experience or study (Cleveland, 2018).

2.2 Physiopathology of anemia

At a biological level, anemia develops because of an imbalance in erythrocyte loss relative to production; this can be due to ineffective or deficient erythropoiesis (e.g., from nutritional deficiencies, inflammation, or genetic Hemoglobin disorders) and/or excessive loss of erythrocytes (due to hemolysis, blood loss, or both). Anemia is frequently classified based on the biological mechanism of causation (e.g. hemolytic anemia, and anemia of inflammation (AI)) and/or the RBC morphology, displays a partial list of several common anemia and the biological mechanisms through which they develop and RBC parameters that characterize

their presentation and distinguish them from each other. Most anemia have a characteristic RBC appearance, which can provide insights to the diagnosis of anemia. However, as displays, multiple factors can cause a similar type of RBC morphology. Furthermore, as anemia may have multiple causes, even in the same individual, hematological manifestations of a particular cause can be masked by another. For example, the hallmark of anemia caused by vitamin B12 or folate deficiencies is macrocytic anemia. Concomitant ID, which causes microcytosis, may mask entirely the effects of the B12 or folate deficiency. Although indices exist in clinical practice for distinguishing anemia etiology based on RBC parameters (e.g.β-thalassemia both cause hypochromia and microcytosis), their reliability for discriminating between causes varies (Chaparro, 2019).

2.3. Type of anemia

2.3.1. Aplastic anemia

A plastic anemia is a condition that occurs when your body stops producing enough new blood cells. The condition leaves you fatigued and more prone to infections and uncontrolled bleeding. A rare and serious condition, a plastic anemia can develop at any age. It can occur suddenly, or it can come on slowly and worsen over time. It can be mild or severe. Treatment of a plastic anemia might include medications, blood transfusions or a steam cell transplant also known as a bone marrow transplant (Rick D et Al, 2021)

2.3.2 Iron deficient anemia

Iron deficiency anemia is a common type of anemia a condition in which blood lacks adequate healthy red blood cell. Red blood cells carry oxygen to the body tissue. As the name implies, iron deficiency anemia is due to insufficient iron. Without enough iron, our body can not produce enough of a substance in red blood cells that enables them to carry oxygen (hemoglobin). As a result, iron deficiency anemia may leave tired and short of breath. Usually correct iron deficiency anemia with iron supplementation (Balarajan, 2017)

2.3.3. Sickle cell anemia

Sickle cell anemia is one of a group of disorder known as sickle cell disease. Sickle cell anemia is an inherited red blood cell disorder in which there is no enough health red blood cells to carry oxygen throughout the body. Normally, the flexible, round red blood cell move easily through blood vessel. In sickle cell anemia, the red blood is shaped like sickles or crescent moons. These rigid sticky cells can get stuck in small blood vessel, which can slow or block blood flow and oxygen to parts of the body .there is no cure for most people with

sickle cell anemia but treatment can relieve pain and help prevent complication associated with the disease(Backes EP et Al, 2019)

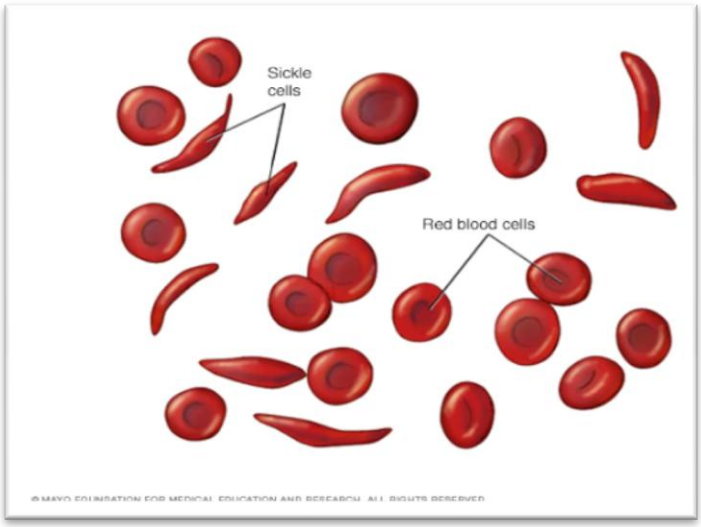

Figure 2.1 Sickle anemia

2.3.4. Thalassemia

Thalassemia is an inherited blood disorder that causes the body to have less hemoglobin than normal. Hemoglobin enables red blood cells to carry oxygen. Thalassemia can cause anemia, leaving the fatigued. The thalassemia needs treatment. But more severe forms might require regular blood transfusions. You can take steps to cope with fatigue, such as choosing a healthy diet and exercising regularly (Asmaa Zkik, 2017)

2.3. 5. Vitamin deficiency anemia

Vitamin deficiency anemia is a lack of healthy red blood cells caused by lower amounts of certain vitamins. Vitamins linked to vitamin deficiency anemia include folate, vitamin B-12 and vitamin C. Vitamin deficiency anemia can occur if there is not enough foods containing folate, vitamin B-12 or vitamin C, or it can occur if the body has trouble absorbing or processing these vitamins (Balarajan, 2017)

2.4 Cause of anemia during pregnancy

The causes of anemia truly comes down to how many red blood cells are being produced in the body and how healthy they are, a fall in hemoglobin levels during pregnancy is caused by a greater expansion of plasma volume compared with the increase I red blood cell volume. This disproportion between the rates of increase for, plasma and erythrocytes has the most distinction during the trimester, a lack of iron in the diet as a result of not eating enough iron

rich foods or the body's inability to absorb the iron being consumed. Naturally, pregnancy itself because the iron being produced is needed for the woman's body to increase her own blood volume. Without an iron supplement, there is not enough to feed the blood supply of the growing fetus. Heavy bleeding due to menstruation, an ulcer or polyp, or blood donation causes red blood cells to be destroyed faster than they can be replenished (Ali, 2019)

2.5 Risk factors of anemia during pregnancy

A diet consistently low in iron, vitamin B-12 and folate increases the risk of anemia, Having an intestinal disorder that affects the absorption of nutrients in the small intestine such as Crohn's disease and celiac disease, increase the risk of anemia, In general, women who haven't had menopause have a greater risk of iron deficiency anemia than do men and postmenopausal women. Menstruation causes the loss of red blood cells,If pregnant women and aren't taking a multivitamin with folic acid and iron, you're at risk of getting anemia, Cancer, kidney failure, diabetes or another chronic condition, those conditions could be at risk of anemia of chronic disease. These conditions can lead to a shortage of red blood cells. Slow, chronic blood loss from an ulcer or other source within the body can deplete the body's store of iron, leading to iron deficiency anemia, If the family has a history of an inherited anemia, such as sickle cell anemia, also might be at increased risk of the condition, A history of certain infections, blood diseases and autoimmune disorders increases the risk of anemia. Alcoholism, exposure to toxic chemicals, and the use of some medications can affect red blood cell production and lead to anemia(WHO, 2012)

2.6 Diagnosis of anemia

Figure 2.2: blood sample

Complete blood count (CBC): A CBC is used to count the number of blood cells in a sample of the blood. For anemia, interested in the levels of the red blood cells contained in the blood (hematocrit) and the haemoglobin in the blood, Normal adult hematocrit values vary among medical practices but are generally between 40% and 52% for men and 35% and 47% for women. Normal adult haemoglobin values are generally 14 to 18 grams per deciliter for men and 12 to 16 grams per deciliter for women, some of the red blood cells might also be examined for unusual size, shape and colour (Balarajan, 2017)

2.7. Management of anemia during pregnancy

Anaemia treatment depends on the cause. Treatment for this form of anaemia usually involves taking iron supplements and changing the diet. If the cause of iron deficiency is loss of blood, other than from menstruation the source of the bleeding must be located and the bleeding stopped. This might involve surgery, Treatment for folic acid and vitamin C deficiency involves dietary supplements and increasing these nutrients in the diet. If the digestive system has trouble absorbing vitamin B-12 from the food eaten, the body might need vitamin B-12 shots, there's no specific treatment for this type of anemia. If symptoms become severe, a blood transfusion or injections of a synthetic hormone normally produced by the kidneys (erythropoietin) might help stimulate red blood cell production and ease fatigue, Treatment for this anemia can include blood transfusions to boost levels of red blood cells need a bone marrow transplant if the bone marrow can't make healthy blood cells, Treatment of these various diseases can include medication, chemotherapy or bone marrow transplantation, Managing haemolytic anemia includes avoiding suspect medications, treating infections and taking drugs that suppress the immune system, which could be attacking your red blood cells, Treatment might include oxygen, pain relievers, and oral and intravenous fluids to reduce pain and prevent complications, might also recommend blood transfusions, folic acid supplements and antibiotics, Most forms of thalassemia are mild and require no treatment. More severe forms of thalassemia generally require blood transfusions, folic acid supplements and medication, removal of the spleen, or a blood and bone marrow stem cell transplant.(Backes EP et Al, 2019)

2.8. Complications of anemia during pregnancy

Left untreated, anaemia can cause many health problems, such as: Severe anaemia can make so tired, Pregnant women with folate deficiency anaemia may be more likely to have complications, such as premature birth, Anemia can lead to a rapid or irregular heartbeat (arrhythmia). In anaemic patient the heart must pump more blood to make up for the lack of oxygen in the blood. This can lead to an enlarged heart or heart failure, some inherited anemia, such as sickle cell anemia, can lead to life-threatening complications. Losing a lot of blood quickly results in acute, severe anemia and can be fatal ((Asmaa Zkik, 2017)

2.9. Prevention of anemia during pregnancy

Many types of anaemia can't be prevented. But you can avoid iron deficiency anemia and vitamin deficiency anemia by eating a diet that includes a variety of vitamins and minerals, including: Iron-rich foods include beef and other meats, beans, lentils, iron-fortified cereals, dark green leafy vegetables, and dried fruit, This nutrient, and its synthetic form folic acid, can be found in fruits and fruit juices, dark green leafy vegetables, green peas, kidney beans, peanuts, and enriched grain products, such as bread, cereal, pasta and rice, Foods rich in vitamin B-12 include meat, dairy products, and fortified cereal and soy products., Foods rich in vitamin C include citrus fruits and juices, peppers, broccoli, tomatoes, melons and strawberries (Ali, 2019)

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter entails the methods that were used in carrying out the study for accomplishment of the study objectives, in this chapter contain study design ,study population, sample size and sampling procedures, data collection instruments, data collection procedures, data analysis and ethical consideration

3.1. Study design

This study a cross-sectional research design and use of quantitative methods of enquiry were used. A cross-sectional design was appropriate since it allowed data to be collected at the same time. Quantitative methods enabled the collected data to be transformed into numerical data format hence making it easier for analysis and interpretation (Creswell 2006).

This design used because it gave sufficient data on assessment of knowledge and attitude about prevention of anemia among pregnancy woman attending Kibogora District Hospital. Data analyzed by using descriptive statistics and they presented in form of percentage and frequencies using tables.

3.2. Target population

Study population included all pregnancy mothers attending Kibogora district Hospital during data collection. The total populations are 60 pregnancy women

3.3. Sampling methods

A convenient sampling method was used for this study as we required for reaching the participants within the shortest possible time

3.3.1. Sample sizes

Sample size refers to the numbers of units or people that are chosen from which the researcher wish to gather inform ation or data. Sample sizes of people were selected based on the target population that attended Kibogora District Hospital who was selected for the study (Evans jket al., 2000)

N=71 Formula $n=N/1+N\ (e)^2$

N=Target population

n=Sample size

e=p value

$n=71/1+71*0.05^2=60.29=60$

3.3.3. Sampling technique

Non-probability sampling technique convenience has been used to select representative study units. Researcher chooses this sampling method because of a short period for data collection.

3.4. Data collection methods

3.4.1. Data collection instruments

The researcher collected data using Cross-sectional design with closed ended questions. Questionnaire developed in English and Kinyarwanda, This questionnaire was prepared and verified by our supervisor, after it had undergone a pilot test. It consisted of three sections, section one consists of questions on socio-demographic characteristics, section two consist of question on assessment of knowledge about prevention of anemia, section three consist question on attitude about prevention of anemia among pregnancy women. The test of instrument was Reliable and Valid.

3.4.2. Validity

Validity in research refers to how accurately a study answers the study question or the strength of the study conclusions. For outcome measures such as surveys or test, validity refers to the accuracy of measurement (J Grad Med Educ, 2019)

3.4.3. Reliability

Reliability refers to whether an assessment instrument gives the same results each time it is used in the same setting with the same type of subjects. Reliability essentially means consistent or dependable results. Reliability is a part of the assessment of validity (Gail M.Sullivan, MD, MPH, 2018)

Our questionnaire was prepared and verified by our supervisor. After it had undergone a pilot test in order to make sure that it is valid and reliable.

3.4.4. Administration of research instrument

Upon approval from Kibogora District Hospital and Kibogora Polytechnic, data collected over a period of two month from December 2021 to February 2022.

Questionnaires administered to the respondents in the morning before consultation and round ton those hospitalized when their concentration is high. The researchers introduced themselves and explain the study and its purpose to the respondents. The questionnaire

distributed to those willing to participate in the study for them to answer the questions. Then after completion, the researcher collected all filled questionnaire.

3.5. Data Analysis

Statistical package of social science (SPSS) version 20.0 used to analyze the quantitative data. Data were analyzed using descriptive statistics and they presented in form of percentage and frequencies using tables.

3.6. Ethical consideration

The ethical approval for this study has been obtained from Kibogora polytechnic Institutional Review Board (KP-IRB). However, participants were given information about the purpose of the study and signed the consent to participate in the study. The researcher maintained protection of human right during this study. In respect to right to self-determination, participants were included in the study only after them accepting to participate in the study. Confidentiality, anonymity of participants has been ensured. The results of this study were for academic purpose only. The participants were informed that they can withdraw any time from the study without any consequence or punishment.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS, INTERPRETATION AND SUMMARY

4.0 Introduction

This chapter includes the presentation analysis and the interpretation of all data collected during the research, the main purpose of this chapter is to assess the knowledge and attitude about prevention of anemia among pregnancy mothers attending Kibogora district hospital and it deals with presentation and discussions of major findings of the study and their understanding ,then the percentage are used as means of analyzing and interpretation of data in relation to the specific research objectives and questions of the study as follows

4.1 Data presentation and analysis

Table 4.1: Distribution of participant according to habitation site

n=60

Habitation site	**Frequency**	**Percentage**
Urban	6	10
Rural	54	90
Camp	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.1 above show that 90% of participant live in rural area and 10% in urban

Table 4.2: Distribution of participant by age

n=60

Age	**Frequency**	**Percentage**
<20	10	11
21-35	30	56
36 and above	20	33
Total	60	100

Source: primary data 2022

Table 4.2 above show that 21-35 years old 30(56%) are most participants, and above 35 years old 20(33%) then 10(11%) were in <20 years old

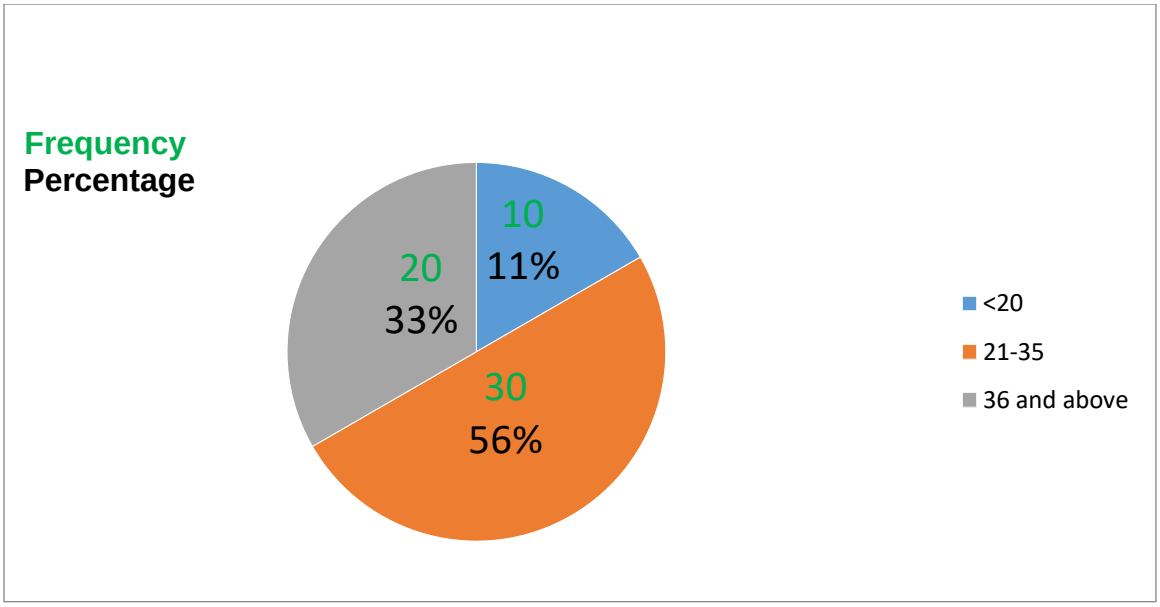

Figure 4.1 Pie diagram showing the partition of respondents according to their age

Table 4.3: distribution of participant according to education level

n=60

Educational level	**Frequency**	**Percentage**
No formal	0	0
Primary	34	76
Secondary	6	11
University	20	13
Total	**60**	**100**

Source: primary data, 2022

The table 4.3 above shows that most participants 34(76%) have primary education

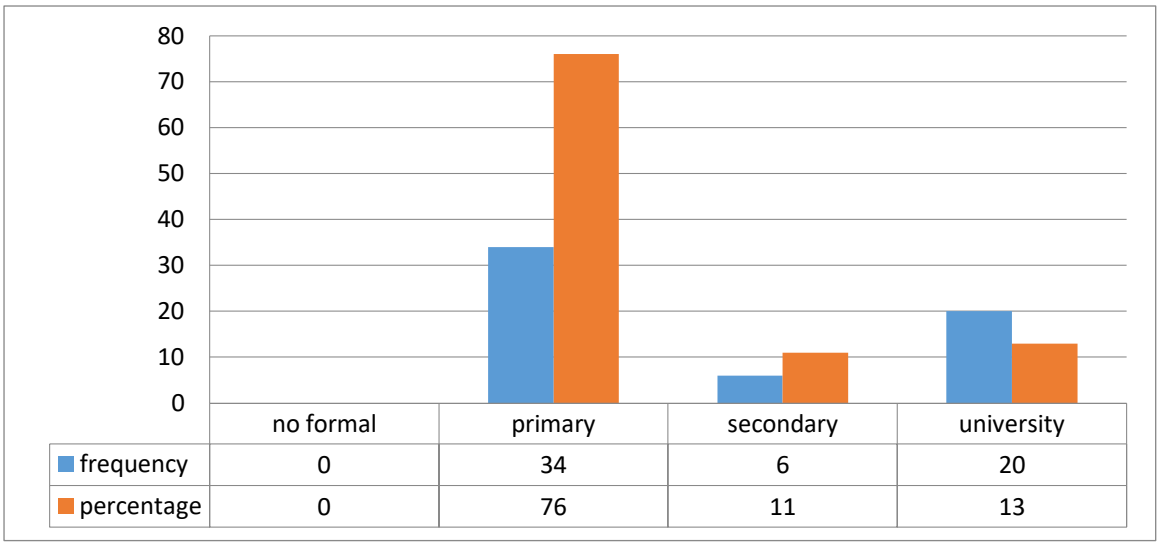

Figure 4.2 bar graph showing partition of respondents according level of education

Table 4.4: distribution of respondent according to occupation

n=60

Occupation level	**Frequency**	**Percentage**
Farmer	30	44
Public employee	15	29
Self employee	15	27
Total	**60**	**100**

Source: primary data, 2022

Table 4.4 above indicate that the most participants 30(44%) are the farmers, public employee are 15(29%) and then self employee are 15(27%)

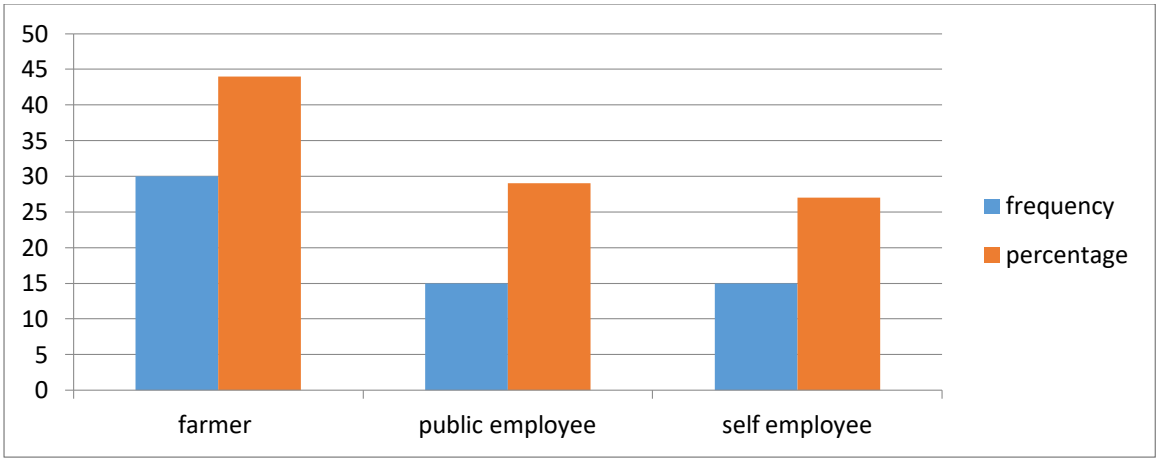

Figure 4.3 show partition of participants according to occupation

Table 4.5: distribution respondent according to marital status

n=60

Marital status	**Frequency**	**Percentage**
Single	2	4
Separated	0	0
Married	50	84
Divorce	8	12
Widow	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.5 above indicate majority of participants 84% are married during focus group discussion and data collection

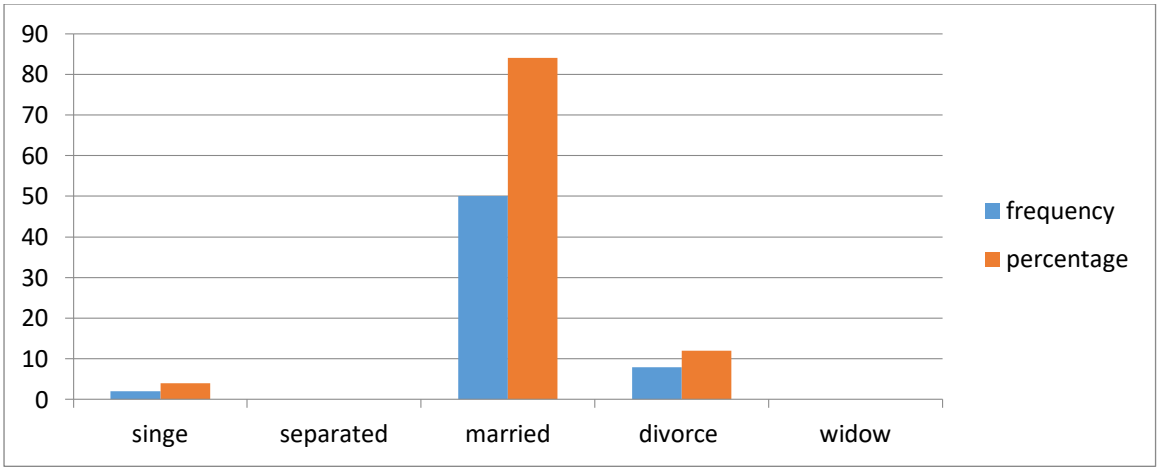

Figure 4.4 showing distribution of respondents according to marital status

Table 4.6: distribution according to wealth index

n=60

Wealth index	**Frequency**	**Percentage**
Class 1	16	27
Class 2	6	10
Class 3	36	60
Class 4	2	3
Total	**60**	**100**

Source: primary data, 2021

The table 4.6 above indicate the majority of participants 36(60%) are in class 3

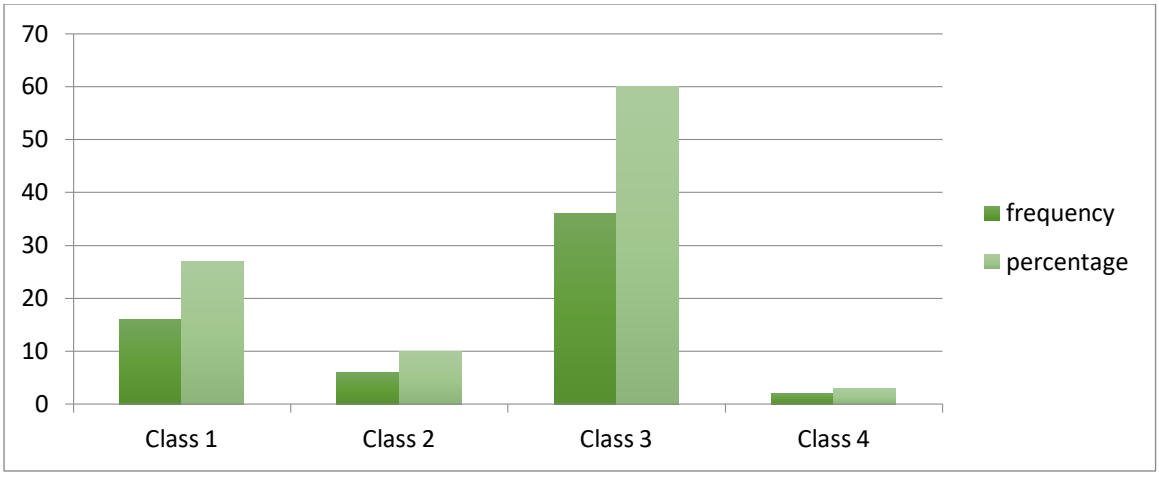

Figure 4.5 show partition of respondent according to wealth index

Table 4.7: distribution according to type of insurance

n=60

Type of insurance	**Frequency**	**Percentage**
CBHI(mutuelle de santé)	40	67
MMI	3	3
RSSB(RAMA)	10	17
RADIANT	2	3
OTHER	5	9
TOTAL	**60**	**100**

Source: primary data, 2022

The table 4.7 above indicates the majority of participant 67% using CBHI (mutuelle de santé)

Table 4.8: distribution of participants according to knowledge about anemia during pregnancy

n=60

Did you hear about anemia during pregnancy?	**Frequency**	**Percentage**
Yes	48	80
No	12	20
Total	**60**	**100**

Source: primary data, 2022

The table 4.8 above indicates that majority 80% answered yes means that they have information of on anemia during pregnancy.

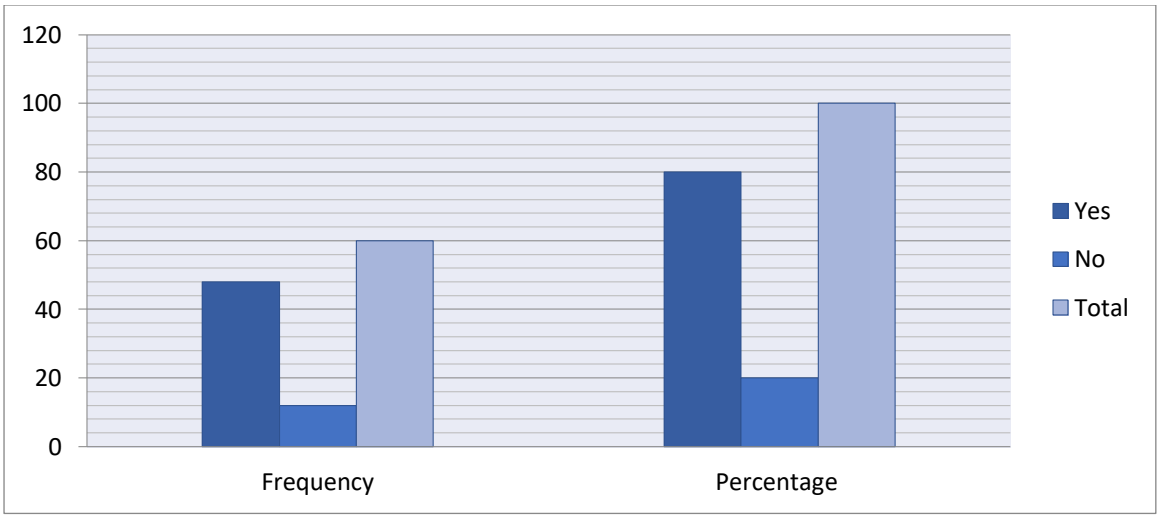

Figure 4.6 show distribution of respondents according to knowledge about anemia

Table 4.9: distribution of correspondent according to information about anemia

n=60

Where did you get Information about anemia?	**Frequency**	**Percentage**
Health center	20	21
Hospital	0	0
Radio	0	0
Television	0	0
Community health workers	40	79
Others	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.9 above shows the majority of respondent 79% gate information about anemia during pregnancy from community health workers and minority 21% gate information from health center

Table 4.10: distribution respondent according to the meaning of anemia during pregnancy

n=60

Meaning of anemia during pregnancy	**Frequency**	**Percentage**
It is deficiency of red blood cell or reduction of amount of hemoglobin they contain	36	67
It is a deficiency of white blood cell	0	0
It is decrease of blood	15	25
It is a diseases of blood during pregnancy	9	8
Total	**60**	**100**

Source: primary data, 2022

The table 4.10 above show that most respondent 36(67%) answered the meaning of anemia it is a deficiency of red blood cell or reduction of amount of hemoglobin they contain and 15(25%) answered it is decrease of blood while 9(8%) responded it is diseases of blood during pregnancy.

Table 4.11: distribution participants according to pregnant women are particularly considered to be the most vulnerable to anemia

n=60

Why pregnant women are particularly considered to be most vulnerable to anemia?	**Frequent**	**Percentage**
The pregnant mother should store more nutrients for herself and for her baby	40	71
Pregnant mother share foods with her fetus	10	15
Minors ailment during pregnancy can cause	1	2
Intake of balanced diet	8	10
There is a physiological chance during pregnancy	1	2
Others	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.11 above shows that the major respondents 40(71%) answered the pregnant mother should store nutrients for herself and her baby

Table 4.12: distribution of respondents according to the risk factor of anemia during pregnancy

n=60

Risk factor of anemia during pregnancy	**Frequency**	**Percentage**
Long term illness	20	28
HIV/AIDS	4	8
Trauma	2	4
Malaria	3	6
Gastrointestinal infection	1	2
Hemorrhoids	0	0
Blood disorder	25	42
Unknown causes	0	0
Use of alcohol and tobacco	5	10
I don't know	0	0
Others	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.12 above indicate many respondents are 25(42%) responded the risk factor of anemia during pregnancy is blood disorder.

Table 4.13: distribution of respondents according to complication of anemia during pregnancy

n=60

Complication of anemia during pregnancy	**Frequency**	**Percentage**
Abortion	5	9
Preterm labor	40	66
Intra –uterine growth restriction	15	25
Placenta abruption	0	0
Others	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.13: above indicate majority respondent 66% knows the main complication of anemia during pregnancy is preterm labor.

Table 4.14: distribution of respondents according to management of anemia during pregnancy

n=60

Management of anemia during pregnancy	**Frequency**	**Percentage**
To eat balanced diet	30	50
To administer iron	15	25
Blood transfusion	5	8
To do exercise	3	5
To consult health care provider	5	8
To sleep early	2	4
Others	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.14 above show majority of respondents on management of anemia during pregnancy is to eat balanced diet 30(50%)

Table 4.15: distribution of respondents according to the starting of folic acid

When you start taking folic acid?	Frequency	Percentage
Before pregnancy	0	0
1-3 month of pregnancy	15	25
3-4 month of pregnancy	30	50
6-9 moth of pregnancy	15	25
Total	**60**	**100**

Source: primary data 2022

The table 4.15 above indicate majority of respondent on when you start taking folic acid is between 3-4 month of pregnancy (50%) at 12 weeks of pregnancy

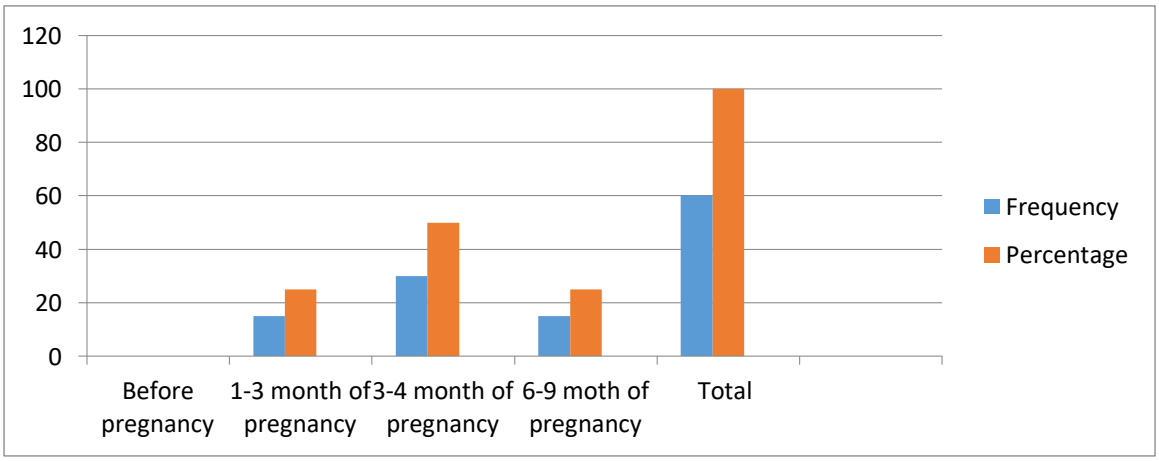

Figure 4.7 show partition of respondent according to time taking folic acid

Table 4.16: distribution of respondent on how are you supposed to take folic acid supplement

n=60

Time taking folic acid	Frequency	Percentage
Every day (single tablet a day	45	75
Twice a day	15	25
2-3 time a day	0	0
5-6 time a day	0	0
Total	**60**	**100**

Source: primary data 2022

The table 4.16 above indicate majority of participant taking folic acid every day (single tablet a day) 75%

Table 4.17: distribution of respondent according to effect of folic acid before and during pregnancy

n=60

Effect of folic acid before and during pregnancy	**Frequency**	**Percentage**
Maintain blood	16	26
Prevent birth defect	5	8
Protects from anemia	30	50
Good for body bone	0	0
Good for pregnancy	5	8
Growth and development of embryo	0	0
None	4	8
Total	**60**	**100**

Source: primary data 2022

Table 4.17 above indicate majority of participant 30(50%) know that effect of folic acid during pregnancy, protects from anemia

Table 4.18: distribution of respondent according to food rich in folic acid

n=60

Food rich in folic acid	**Frequency**	**Percentage**
Green vegetables	30	50
Fruits	10	15
Liver	10	15
Meat	6	12
I don’t know	4	8
Total	**60**	**100**

Source: primary data 2022

The table 4.18 above indicate majority of participant 30(50%) know that food rich in folic acid is green vegetables

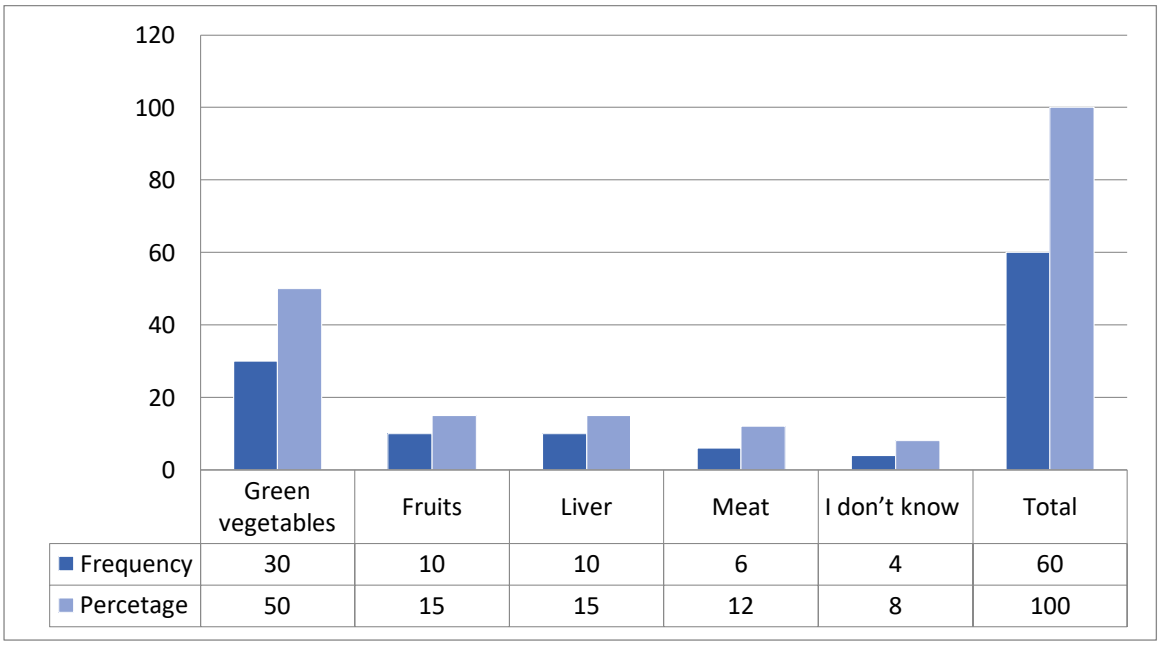

Figure 4.8 show reparation of respondent according to food rich in folic acid

Table 4.19: distribution of respondents according to preventive measure of anemia during pregnancy

n=60

Preventive measure of anemia among pregnancy women	**Frequency**	**Percentage**
Eat balanced diet	30	50
Early prenatal consultation	15	25
Nutritional education about foods rich in iron	10	16
Avoid injury which can cause bleeding	1	2
Routine screening for anemia in adolescent	5	8
In areas of high malaria use mosquito net	0	0
Others	0	0
Total	**60**	**100**

Source: primary data, 2022

The table 4.19 above indicates majority of respondents answered that balanced diet is the main preventive measures of anemia among pregnant women because they get information from community health workers

4.2 Discussions of findings

4.2.1 Discussion related to social demographic variables

The research has found that 90% of respondent live in rural area, most participant has between 21-35 years with equal 56%.The educational status most participant was primary as evidenced by 72% and 84% are married as supported by the research conducted in Bangladesh where the mean age was 20-26 years, among them which is equal 58% was married, a higher proportion of the subject 69% lived in Urban area, (kaniz fatema,2017).

4.2.2 Discussion related to the knowledge about prevention of anemia

Findings indicated that the majority of participants have information on anemia 48 participants equal to 80%. And 79% get information from community health workers.

On the risk factors of anemia 25 respondents equal to 42% recognize the risk factor of anemia during pregnancy as blood disorder and for preventive measures of anemia 30 respondents equal with 50% answered that balanced diet is the main preventive measures of anemia.

As supported to similar study conducted on assessment of knowledge on anemia during pregnancy among mothers monitoring and evaluation efforts in India, Participant's knowledge about anemia causes, prevention and treatments need to be addressed, as it was generally poor. If knowledge is lacking, this could be problematic for participants to make decisions based on sound information to reduce risk of anemia.

4.2.3 Discussion related to attitude on prevention of anemia

50% of respondent started talking folic acid at 3-4 month of pregnancy and 75% they take it once daily about the effect of folic acid 50% said that it prevents from anemia, by eating balanced diet as evidenced by 50% of respondents, 50% use green vegetables as food rich in folic acid, this findings are supported from report of WHO 2014 their findings mentioned some common foods in Pakistan which are sources of iron but none of them mentioned about the food source of foliate. To facilitate the process of health and nutrition education, it is important to establish a liaison between health care professionals and the community, Garnering community support and increasing support through the use of community health workers is particularly useful as they can be versed in preventive measures to address anemia and fill sector gap, thus a lack of solving a lack of human capacity problem by being able to

reach isolated areas. And these support our findings that the community health workers involve to identify the anemia among pregnancy mothers (WHO 2014)

4.3 Summary of findings

The findings of this research on an assessment of knowledge and attitude about prevention of anemia during pregnancy among mothers attending Kibogora district hospital 60 pregnancy mothers as sample size were conducted in this research. In these research 56% have between 21-35 years. The educational status of the participants majority of 72%, have primary level. On the Knowledge and attitude about prevention 48 participants equal 80% have information on anemia as 79% Get information from community health workers. On the risk factors 25 equal to 42% recognize the risks factors like blood disorder and for preventive measures of anemia 30 respondents equal to 50% answered that balanced diet is the main preventive measures of anemia among pregnancy women

CHAPTER FIVE: GENERAL CONCLUSION AND RECOMMANDATIONS

5.1 Conclusion

As conclusion about the research on the assessment of knowledge and attitude about prevention of anemia during pregnancy among mothers attending Kibogora district hospital the majority of pregnant women have information about anemia concerning its causes, risk factor, and its complication, many of them are aware about preventive measures as it is to eat balanced diet, about source of information they get them from community health workers

5.2 Recommendation

After founding the result and conclusion of this study we would like to address the following recommendation

To Authorities of Kibogora district hospital

- Encourage nurses and physician to provide health education on prevention of anemia to all clients especially pregnant women
- Strengthening the knowledge of patients with anemia on self –management by behavior change communication
- To updating and increasing the knowledge about anemia to community health workers

To pregnancy women attending Kibogora district hospital

- To put in practice the advice given by community health workers relating to information about anemia
- Consult the health services for any problem related to anemia
- To respect all visits during antenatal care and medical appointment

To the future researchers

Since this research project focused on the assessment of knowledge and attitude about prevention of anemia among pregnancy women attending Kibogora district hospital, Then we encourage the future researcher to make research on:

- The cause of increasing numbers of anemia among pregnancy women
- The socio economic impact on anemia patients according to their needs
- Assessment of knowledge among community health workers on the management of anemia

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APPENDICES

APPENDIX I: INFORMED CONSENT

Dear participant

Our names UWURUKUNDO Gilbert and SEBANANI Modeste, students at Kibogora polytechnic and we are currently undertaking a Bachelor's degree in Nursing science. As a partial fulfillment of degree in nursing science, we are required to undertake a research study in the area of our specialty, we are therefore carrying out a study to assessment of knowledge and attitude about prevention of anemia among pregnancy women attending Kibogora district hospital

We are kindly requesting you to participate in our study, the information obtained will be treated in confidentiality and the findings of the study will be used to improve the management of patient of anemic patients, we will conduct the interview in privacy and it will take 25-30 minutes. You are assured that your identity will not be revealed at any time during the study or when study is reported or published. The data collected will be coded.

Please feel free to make your decision for participation or none participation since this decision will not affect the care given to you or your family as well as the relationship with the health provider, your participation is voluntary and you are free to withdraw from the study at any time.

If your agree to participate please sign below, All the signed forms will be kept in locked cabinet only accessible to the investigator and will destroyed at the end of the study

If you need to talk with us our address is:

Our contact numbers are: UWURUKUNDO Gilbert: 0782360932

SEBANANI Modeste: 0782595802

Participants consent

I have read this consent Form and I voluntarily want to participate in this study

Participant's signature……Date……

Investigator's signature……..Date……

Thank your for your participation

APPENDIX II: QUESTIONNAIRE

SECTION 1: SOCIO- ECONOMIC AND DEMOGRAPHIC DATA

1. Date: …...../……../…..……. Respondent No.: ……

2. District: .....Sector: ……... Cell: ……. Village: ……..

NB: **tick only in a box by using this symbols** √

3. Habitation site

a) Urban ☐
b) rural ☐
c) camp ☐

4. Age of respondent

a) <20 ☐
b) 21-35 ☐
c) ≥36 ☐

5. Educational level

a) No formal ☐
b) Primary ☐
c) Secondary ☐
d) University ☐

6. Occupation

a) Farmer ☐
b) Self employee ☐
c) Public employee ☐

7. Marital status

a) Single ☐
b) Separated ☐
c) Married ☐
d) Divorced ☐
e) Widow ☐

8. Wealth index

a) Class I ☐
b) Class II ☐
c) Class III ☐
d) Class IV ☐

9. Type of insurance

1) CBHI ☐
2) MMI ☐
3) RAMA ☐
4) RADIANT ☐
5) Other ☐

SECTION 2: KNOWLEDGE AND ATTITUDE ABOUT PREVENTION OF ANEMIA

2.1 KNOWLEDGE ON PEVENTION OF ANEMIA

NB**: answer may be more than one**

10. Did you hear about anemia during pregnancy?

a. Yes ☐
b. No ☐

If Yes When? Date: ….....Month…….. Year…..……..

11. You said yes, where did you get information about anemia during pregnancy?

a. Health center ☐
b. Hospital ☐
c. Radio ☐
d. Media ☐
e. Television ☐
f. Community health workers ☐
g. other ☐

12. What does mean anemia during pregnancy?

a. It is a deficiency of red blood cells or reduction in the amount of hemoglobin they contain ☐
b. It is deficiency of white blood cells ☐
c. It is decrease of blood ☐
d. It is a disease of blood during pregnancy ☐

13. Explain briefly why pregnancy women are particularly considered to be most vulnerable to anemia?

a. A pregnancy mother should store more nutrients for herself and for her baby ☐
b. A pregnancy mother share foods with her fetus ☐
c. Minor ailments during pregnancy can cause low intake of balanced diet ☐
d. There is physiological chance during pregnancy ☐
e. Other ☐

14. What are the risk factors of anemia during pregnancy?

a. Long –term illness ☐
b. HIV/AIDS ☐
c. Trauma ☐
d. Anterpartum hemorrhage ☐
e. Malaria ☐
f. Hemorrhoids ☐
g. Blood disorder ☐
h. Unknown cause ☐
i. Use of alcohol and other drugs ☐
j. I don't know ☐
k. Other ☐

15. What are complications of anemia during pregnancy?

a. Abortion ☐
b. Preterm labor ☐
c. Intra uterine growth restriction ☐
d. Other ☐

2.2 ATTITUDE ON PREVENTION OF ANEMIA

16. What is (are) the management of anemia during pregnancy?

a. To eat balanced diet
b. To a folic acid ☐
c. To sleep early ☐
d. To do exercise ☐
e. To consult health provider ☐
f. Other ☐

17. If is folic acid, when you start taking folic acid?

a. Before pregnancy ☐
b. 1-3 month of pregnancy ☐
c. 3-4 month of pregnancy ☐
d. 6-9 month of pregnancy ☐

18. How frequently are you supposed to take your folic acid supplement?

a. Every day (single tablet a day) ☐
b. Twice a day ☐
c. 2-3 time a week ☐
d. 5-6 time a week ☐

19. State effect of folic acid intake before and during pregnancy?

a. Maintain blood ☐
b. Prevent birth defects ☐
c. Protects from anemia ☐
d. Good for body bones ☐
e. Good for pregnancy ☐
f. Growth and development of embryo ☐
g. None ☐

20. Which foods are rich in folic acid?

a. Green vegetables ☐
b. Fruits ☐
c. Liver ☐
d. Meat ☐
e. I don't know ☐

21. List down the preventive measures of anemia among pregnancy women?

a. Eating balanced diet ☐
b. Early prenatal consultation ☐
c. Nutrition education about foods rich in iron ☐
d. Avoid any injury which can cause bleeding ☐
e. Routine screening for anemia in adolescence ☐
f. In area of high malaria use mosquito net ☐
g. Other ☐

IBIBAZO BIGENDANYE NO KUREBA UBUMENYI KUKWIRINDA KUBURA AMARASO KUBABYEYI BATWITE BIVURIZA KUBITARO BY'AKARERE BYA KIBOGORA

IGICE I: IBIBAZO BISHINGIYE KWIRANGAMIMERERE Y'UWITABIRIYE UBUSHAKASHATSI

1. Itariki:...../...../..... Nonero iranga usubiza.....

2.Akarere:.....Umurenge:.....Akagari:.....Umudugudu :.....

Icyitonderwa: hitamo igisubizo cyiricyo ukoresheje aka kamenyetso √

3. Ubuturo

a) mumujyi ☐
b) mucyaro ☐
c) munkambi ☐

4. Imyaka yawe ihererereyehe muribi byiciro

a) <20 ☐
b) 21-35 ☐
c) 36 no hejuru yayo ☐

5. Wize kugera muwa kangahe?

a) Sinijyeze niga ☐
b) Amashuri abanza ☐
c) Amashuri yisumbuye ☐
d) Kaminuza ☐

6. Akazi ukora

a) Umuhinzi ☐
b) Akazi ka leta ☐
c) Uwikorera kugiti cye ☐
d) Nibindi ☐

7. Irangamimerere

a) Ingaragu ☐
b) Narashyingiwe ☐
c) Twaratandukanye ☐
d) Ndukupfakazi ☐

8. Ikiciro cy’ubudehe

a) Icyiciro 1 ☐
b) Icyiciro 2 ☐
c) Icyiciro 3 ☐
d) Icyiciro 4 ☐

9. Ubwishingizi

a) Mituwele ☐
b) MMI ☐
c) RAMA ☐
d) Radiyanti ☐
e) Izindi ☐

ICYICIRO 2: KUREBA UBUMENYI NIMYITWARE KUGUKUMIRA KUKUBURA AMARASO KUBAGORE BATWITE MUBABYEYI BIVURIZA KUBITARO BY'AKARERE BYA KIBOGORA

2.1 UBUMENYI KUGUKUMIRA KUKUBURA AMARASO

ICYITONDERWA: igisubizo gishobora kurenga kimwe

10. Waba warumvise kundwara yo kubura amaraso?

a. Yego ☐
b. Hoya

Nimba ari yego,wayumvise ryari? Itariki: …….Ukwezi: ……..Umwaka: …….

11. Niba aribyo nihe wakuye amakuru yo kundwara yo kubura amaraso kubagora batwite?

a. Ku kigo nderabuzima ☐
b. Kubitaro ☐
c. Kuri radiyo ☐
d. Kuri televiziyo ☐
e. Kubajyanama bubuzima ☐
f. Ahandi ☐

12. Kubura amaraso niki kubagora batwite?

a. Nukubura kwingirangingo yo mubwoko butukura cyangwa kugabanuka mungani yuduce tugize ingirangingo zitukura ☐
b. Nukubura kwingirangingo yo mubwoko bw'umweru ☐
c. Nukugabanuka kw' amaraso ☐
d. Nindwara y'amaraso mugihe utwite ☐

13. Sobanura byimbitse kuberiki abagore batwite ahanini aribo bafatwa nindwara yo kubura amaraso?

a. Abagore batwite bagomba kubika intungamubiri zabo nizuwobatwite ☐
b. Abagore batwite basangiza nuwobatwite ☐
c. Nihindagurika ry'umubiri kubagora batwite ☐
d. Nibindi ☐

14. Mpamvu zitera kubura amaraso kubagora batwite

a. Indwara y'igihe cyirecyire ☐
b. Ubana nagakoko gatera SIDA ☐
c. Gukomereka ☐
d. Kuvirakunda ☐
e. Malaria ☐
f. Kuzana amagara ☐
g. Gukoresha ibiyobyabwenge ☐
h. Ntabyonzi ☐
i. Nibindi ☐

15. Nizihe ngaruka zo kubura amaraso kumugora utwite?

a. Gukuramo inda ☐
b. Kubyara igihe kitageze ☐
c. Kugwingira kumwana ukuri munda ☐
d. Kwiyomora kwanyababyeyi igihe cy'itageze ☐
e. Nibindi ☐

2.2 IMYIFATIRE YO GUKUMIRA KUKUBURA AMARASO KUBAGORE BATWITE

16. Nigute twavura kubura amaraso kubagore batwite?

a. Kurya indyo yuzuye ☐
b. Kumuha inyongera maraso ☐
c. Kuryamakare ☐
d. Kugora imyitozo ngororamubiri ☐
e. Kwegera abajyanama b'ubuzima ☐

17. Nimba arinyongera maraso, niryari ushobora gufata inyongera maraso?

a. Mbere yo gutwita ☐
b. 1-3 ukwezi kugutwita ☐
c. 3-4 ukwezi kugutwita ☐
d. 6-9 ukezi kugutwita ☐

18. Ni kamgahe ukwiye gufata inyongeramaraso?

a. Rime kumunsi (ikinini kimwe) ☐
b. Kabiri kumunsi ☐
c. 2-3 inshuro mucyumweru ☐
d. 5-6 inshuro mucyumweru ☐

19. Vuga ingaruka yo gufata yinyongera maraso mbere cg mugihe cyo gutwita kubagore batwite?

a. kubungabunga amaraso ☐
b. irinda kubyara umwana ufite inenge ☐
c. irinda kukugira amaraso macye ☐
d. ninziza kumagufa yumubiri ☐
e. ninziza kugutwita ☐
f. ifasha mugukura kurusoro(umwana urimunda) ☐
g. Nta na kimwe ☐

20. Nibihe biribwa bibonekamo inyongeramaraso?

a. Imboga rwatsi ☐
b. Imbuto ☐
c. Umwijima ☐
d. Inyama ☐
e. Ntabwombizi ☐

21. Ingamba mukwirinda kubura amaraso kubagora batwite

a. Kurya indyo yuzuye ☐
b. Kwisuzumisha bihagije mbere yo kubyara ☐
c. Kwigisha gutegura indyo yuzuye ☐
d. Kwirinda icyagukomeretsa ☐
e. Kwipimisha indwara yo kubura amaraso kubangavu ☐
f. Gukoresha inzitiramibu ahantu hagaragara maraliya cyane ☐
g. nibindi ☐

APPENDIX III: Map of Nyamasheke district with localisation of our case study at Kibogora District Hospital