PREVALENCE OF MATERNAL ANEMIA AMONG PREGNANT WOMEN ATTENDING IN SAHARDIID MCH AT IBRAHIM KODBUR, HARGEISA, SOMALILAND.

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In partial fulfill of the requirements for the requirements for a ward of Bachelor Degree in Health officer.

DECLARATION

We hereby declare that the disquisition entitled *prevalence of maternal anemia during pregnant women attending in SAHARDIID MCH at Ibrahim kodbur, Hargeisa, Somaliland* is our original work and it has not been presented for the award of any degree Gollis University.

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Date of Comprehensive Examination: ____________
DEDICATION

We dedicate this graduation thesis to our beloved fathers who taught us that the best kind of knowledge to have is that which is learned for own sake, and mothers who taught us that even the largest task can be accomplished if it’s done one step at a time. All members of our family have been extremely supportive in terms of financial, spiritual and moral edifications throughout the time we are busy writing this thesis.
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<th>Abbreviation</th>
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<tr>
<td>APGAR</td>
<td>Activity, Pulse, Grimace, Appearance, and Respiration</td>
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<td>Fe</td>
<td>Iron</td>
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<td>Hb</td>
<td>Hemoglobin</td>
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<td>HIV</td>
<td>human immunodeficiency virus</td>
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<td>IDA</td>
<td>iron deficiency anemia</td>
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<td>IDP</td>
<td>Internally Displaced People</td>
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<td>IUGR</td>
<td>Intrauterine Growth Restriction</td>
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<td>MCH</td>
<td>Mother &amp; Child Health</td>
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<td>MOH</td>
<td>Ministry of health</td>
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<td>PPH</td>
<td>post-partum hemorrhage</td>
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<td>RBC</td>
<td>Red Blood Cells</td>
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<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>ANC</td>
<td>Antenatal Care</td>
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ABSTRACT

Introduction Anemia is one of the most commonly encountered medical disorders during pregnancy. Anemia is a global public health problem which has an eminence impact on pregnant mother. The effect of anemia during pregnancy on maternal and neonatal life ranges from varying degrees of morbidity to mortality.

Objectives, the aim of this study is to determine the prevalence of anemia among pregnant women receiving antenatal care, also to find out common complications of anemia in pregnant mothers.

Methodology This study design was retrospective cross-sectional study deseing, and it was carried out at Sahardiid MCH. The study population was all pregnant mothers who randomly selected from Sahardiid MCH. The sampling method of the study was nonprobability sampling. The sampling procedure was non-probability purposive/judgmental sampling. The collection of data in this study involved secondary data with use of checklist to gather information from the listed documentary files of antenatal care in Sahardiid MCH. the Data was processed by using SPSS v20 and the result is analyzed by using tables and charts. The researcher undertook to observe all relevant ethical and legal considerations. And also got consent from the principle of Sahardiid MCH before the study, also Permission to carry out was obtained from GOLLIS UNIVERSITY department of health science. No names were used or indicated on the checklist. The process of research was a minefield of ethical and legal issues.

Results 84.5% among pregnant mothers had HB level less than 11mg/dl were the remaining 14.9% had HB level more than 11mg/dl, and pregnant women who attended ANC only one time during their pregnancy were 45.8%, were 25.3% mothers attended ANC 2 times during their pregnancy and remaining 28.9% attended 3 times during their pregnancy period. This means antenatal care services were low due to poor attendance of antenatal care.

Conclusion Prevalence of anemia in pregnancy is quite high, and in this study 84.5% were anemic because of limited or late-term antenatal care visits.
CHAPTER ONE
INTRODUCTION

1.1. Background

Anemia in pregnancy is defined as a hemoglobin concentration of less than 110 g/L (less than 11 g/dl) in venous blood. It affects more than 56 million women globally, two-thirds of them being from Asia. Although more prevalent in less-resourced countries, women from developed countries are also affected. Women from both rural and urban areas are vulnerable. (23)

Anemia is a global public health problem which has an eminence impact on pregnant mother. The effect of anemia during pregnancy on maternal and neonatal life ranges from varying degrees of morbidity to mortality. As many studies elucidated, severe anemia (Hg <7 g/L) during pregnancy has been associated with major maternal and fetal complications. Anemia is multifactorial in etiology; the disease is thought to be mainly caused by iron deficiency in developing countries. In sub-Saharan Africa where iron deficiency is common, the prevalence of anemia has often been used as a proxy for iron deficiency anemia (IDA) Other micronutrient deficiency (vitamins A and B12, riboflavin, and folic acid) has also been a cause of anemia during pregnancy. Likewise, Infectious diseases such as malaria, helminths infestations, and HIV are also implicated with high prevalence of anemia in sub-Saharan Africa. (20)

There are over 400 different types of anemia, but some are more prevalent in pregnancy. The most commonly experienced types of anemia during pregnancy are Iron-deficiency anemia, Folate-deficiency anemia, Vitamin B12 deficiency anemia. (6)

Anemia is a significant public health problem in developing countries, particularly in pregnant women. It may complicate pregnancy, sometimes resulting in tragic outcomes. There is a lack of information on the magnitude of anemia among pregnant women in Southeast Ethiopia. (21)

Anemia is one of the most commonly encountered medical disorders during pregnancy. It is estimated that globally two billion people suffer from anemia or iron deficiency. According to world Health Organization estimates, up to 56% of all women living in
developing countries are anemic according to WHO, hemoglobin level below 11gm/dl in pregnant women constitutes anemia and hemoglobin below 7gm/dl is severe anemia. The Center for Disease Control and Prevention (1990) defines anemia as less than 11gm/dl in the first and third trimester and less than 10.5gm/dl in second trimester. (22)

Anemia impairs health and wellbeing in women and increases the risk of maternal and neonatal adverse outcomes. Anemia affects half billion women of reproductive age worldwide. In 2011, 29% (496 million) of non-pregnant women and 38% (32.4 million) of pregnant women aged 15 – 49 years were anemic. The prevalence of anemia was highest in south Asia and central and west Africa. While the causes of anemia are variable, it is estimated that half of cases are due to iron deficiency. In some settings, considerable reductions in the prevalence of anemia have been achieved; however, overall, progress has been insufficient. Further actions are required to reach the World Health Assembly target of a 50% reduction of anemia in women of reproductive age by 2025. (24)

A high proportion of women in both developed and developing countries become anemic during pregnancy. Estimates from the World Health Organization report that from 35% to 75% (56% on average) of pregnant women in developing countries, and 18% of women from industrialized countries are anemic. However, many of these women were already anemic at the time of conception, with an estimated prevalence of anemia of 43% in non-pregnant women in developing countries and of 12% in women in wealthier regions. Many women are anemic in the postpartum period because of blood loss during delivery. Although a similar benefit could be obtained if women were supplemented during lactation, pregnancy is a time when iron absorption is particularly efficient and when there is usually more opportunity to provide, encourage, and monitor the use of supplements. (32)

It is estimated that about 2,150 million people are deficient. About 90% of all anemias have an iron deficient component. In the developing world, nearly half the population is iron deficient. Iron deficiency anemia is much common in women than in men. The main cause is the increased need for iron which is a direct consequence of menstruation and pregnancy the loss of iron involved in a normal pregnancy (iron content of fetus, 400mg), delivery (iron content in placenta, uterus and blood loss,325mg) and lactation (iron content of milk during 6 months of lactation ,175mg) may total to approximately 900mg This requires an
extra demand of approximately 2mg Fe/day for a period of 460 days. It is obvious that pregnancy greatly increases a woman's requirement for iron. (33)

A recent national study has shown that Somali women are suffering from shocking levels of anemia. Anemia in Somalia is caused by a range of factors including frequent exposure to diseases which are often untreated, and the consumption of predominantly cereal based diets, which are missing key vitamins and minerals. (34)

There is also quality of life issues associated with maternal anemia that are comparable to those seen in individuals with serious chronic diseases, such as difficulty in concentration, cognition, disturbed mother–infant interactions, and depression, as providers we seem to have a problem with pregnancy associated anemia as we do not consider it to be an abnormality until it becomes quite severe. (36)

### 1.1. Statement of The Problem
Globally, anemia is prevalent in most developing countries and considered of public health significance. The WHO (2008) has estimated the worldwide prevalence of anemia by regions and population groups. Women are most vulnerable to anemia. The proportion of women is highest in the Africa region where 57% of pregnant women (17 million) are anemic. (1)

Anemia has been a very important nutritional disorder in the world. India has reported high prevalence of anemia in pregnancy. In one of the studies conducted on a large population, it was estimated that 87% of the Indian pregnant women are anemic the incidence of low birth weight babies was significantly more in mothers who were anemic in their third trimester. Preterm deliveries occurred more frequently in mothers who were anemic in their second and third trimesters. (8)

Anemia during pregnancy is a major cause of morbidity and mortality of pregnant women in developing countries and has both maternal and fetal consequences. It is estimated that anemia causes more than 115,000 maternal and 591,000 perinatal deaths globally per year. (3)

Anemia in pregnancy is a common problem in most developing countries and a major cause of morbidity and mortality especially in malaria endemic areas. In pregnancy, anemia has
a significant impact on the health of the foetus as well as that of the mother. 20% of maternal deaths in Africa have been attributed to anemia. (2)

Studies in eastern neighboring countries of Iran, have reported a 90-percent prevalence for anemia during pregnancy (10). Iron deficiency anemia during pregnancy was reported 80% in India where 16% percent of maternal mortalities have been related to anemia. On the other hand, the World Health Organization (WHO) has re-port ed the prevalence of anemia in pregnant women of Eastern Mediterranean countries to be 44.2%. In this report, the prevalence of anemia in Iranian pregnant women was surprisingly more than 40%. (5)

The prevalence’s of anemia varies according to the socio-economic status, dietary deficiencies, Cultural taboos, infections, multiple pregnancies, low contraceptive prevalence, anemia is the second leading cause of maternal death accounting 12.8%. About 20% of maternal deaths are caused by anemia. (4)

Prevalence of anemia in South Asian countries is among the highest in the world. WHO estimates that even among the South Asian countries, India has the highest prevalence of anemia. What is even more important is the fact that about half of the global maternal deaths due to anemia occur in South Asian countries; India contributes to about 80 per cent of the maternal deaths due to anemia in South Asia. Women with anemia have substantial reduction in work capacity and may find it difficult to cope with household chores and child care. They are more susceptible to infections and recovery from infections may be prolonged. Premature births are more common in women with anemia. They deliver infants with lower birth weight and perinatal mortality is higher in these babies. They may not be able to bear blood loss prior to or during labour. (9)

Anemia affects about half of all pregnant women in Africa, contributing substantially to maternal mortality, productivity losses and the diminished health and mental capacity of the next generation. (11)

A high proportion of women in both industrialized and developing countries become anemic during pregnancy. Estimates from the World Health Organization report that from 35% to 75% (56% on average) of pregnant women in developing countries, and 18% of women from industrialized countries are anemic. However, many of these women were
already anemic at the time of conception, with an estimated prevalence of anemia of 43% in nonpregnant women in developing countries and of 12% in women in wealthier regions. The prevalence of iron deficiency is far greater than the prevalence of anemia and iron deficiency often develops during the later stages of pregnancy even in women who enter pregnancy with relatively adequate iron stores. There is also a dearth of information on the rates and severity of infection of anemic pregnant women or iron-deficient anemic pregnant women. An association between maternal anemia and lower infant Apgar scores was reported in some studies. (18)

World Health Organization (WHO) reported that the prevalence of anemia during pregnancy in developing countries exceeds 50%. In pregnancy, anemia is mainly nutritional due to dietary deficiency of iron and folates but impaired absorption, chronic blood loss, increased requirement, concurrent medical disorders and malaria are other contributing factors for anemia. (13,16,17)

In Somaliland anemia among pregnant women has been reported for the last decade every ¼ (one of four) women who become pregnant gets anemia or at risk of the factors which predispose to have an anemia. Ministry of Somaliland had just implemented an integration health care system which composes different kinds of health care including primary health care for all the regions, nutritional supplementation feeding program which is based on selective approach, health education and promotion, practicing of proper sanitation and Deforming in order to destroy and make preventive barriers for the risk factors. Recently small studies demonstrated causal – relationship between severe anemia and uterine atony which is the main cause of PPH accounting for about 90% in most studies In the case of Hargeisa 26% of rural women in Somaliland are anemic while others are at risk to develop anemia. 11% of urban women in Hargeisa particularly those who live in slum areas are anemic because of poor socio-economic level the aim of this study was to assess the prevalence and predictors of maternal anemia. (13)
1.2. Objectives

1.2.1. General Objectives
To determine prevalence of maternal anemia among pregnant women attending in Sahardiid MCH at Ibrahim kodbur, Hargeisa, Somaliland.

1.2.2. Specific Objectives
- To determine the prevalence of anemia among pregnant women receiving antenatal care.
- To find out the common complications of maternal anemia

1.3. Research Questions
- What is the prevalence of anemia among pregnant women receiving antenatal care?
- What is the common complications of maternal anemia?

1.4. Significant of The Study
The rationale behind this research proposal is to identify the prevalence of anemia in pregnant women and also will help to find out the magnitude of maternal anemia. It will also serve as a future reference for researchers. This study will also be beneficial to the MOH to know more about the magnitude of this problem. The study’s goal is designed to help mothers for the improvement of their health to overcome this problem. The finding of this study will return a benefit to the society considering that preventing of maternal anemia plays an important role of the overall health. Thus, mothers that apply the recommended approach of this study will be able to improve their health for better. Moreover, this research will provide recommendations on how to prevent maternal anemia. This study will provide brief description to the most common type of anemia which affect pregnant mothers in order to focus it, rather seeking the cause. This study also gives attention to non-pregnant women and make them aware during their pregnancy.

1.5. Scope of The Study

1.5.1. Geographical scope:
This study was done in Sahardiid MCH in Ibrahim Kod bur District, Hargeisa, Somaliland

1.5.2. Time of scope:
This research was done from May 2017 to August 2017
CHAPTER TWO: LITERATURE REVIEW

Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. It occurs at all stages of the life cycle, but is more prevalent in pregnant women. (26)

Anemia in pregnancy is one of the most common and widespread public health problems affecting 24.8% of the population today especially in the developing countries it is also an important contributor to maternal mortality/morbidity, anemia is the most frequent maternal complication of pregnancy. (25)

WHO (1992) report showed prevalence in pregnant women across the world as 50% with 55-60% in developing countries. Li et al (1993) reported prevalence of iron deficiency anemia to be 34% in Chinese pregnant mothers. Singh K et al 53 (1998) from their cross-sectional study in Singapore reported that iron deficiency is the most common cause of anemia in pregnancy responsible for 81.3% cases. Faruk Ahmed (2000) reported that among the rural population of Bangladesh prevalence of anemia was 49% in pregnant women. WH0 in 2001 estimated prevalence of 52% in pregnant females. (29)

In 2002, the WHO estimated that maternal anemia resulting from iron deficiency was one of the ten most important factors contributing to the global burden of diseases and that it increases morbidity and mortality in pregnancy, it effects one-quarter of the world’s population and is concern treated in pregnancy. (27)

Killip S et al (2007) reported that the prevalence of iron deficiency anemia was 9 to 12% in white women and 20% in black and Mexican-American women. Verma A et al99 (2008) from their 7 years study of maternal mortality in Himachal Pradesh, North India showed that anemia was an important cause of death responsible for 15.4% cases. Zhang Q et al (2009) reported that anemia in pregnancy is associated with increased risk of preterm premature rupture of membranes. (29)

Approximately 95% of anemia cases during pregnancy are caused by iron deficiency. Inadequate dietary intake, normal menstrual blood loss, or recent pregnancy are the most
common reasons for low iron reserves in pregnant women. During late pregnancy, especially during the last trimester, the rapidly-growing placenta and fetus increase maternal iron requirements. (10)

The susceptibility of women with severe anemia to preeclampsia has been linked to deficiency of micronutrients and antioxidants. The reduction in serum levels of calcium, magnesium and zinc during pregnancy have been linked to the development of preeclampsia. Severe anemia in pregnancy requires urgent medical treatment and Hb less than 4g/dl is an emergency carrying a risk of congestive cardiac failure, sepsis and death. Maternal anemia causes a substantial reduction in oxygen carrying capacity and hence impairment of oxygen delivery to placenta and fetus. This later resulted in a significant impact to perinatal health IUGR. (12)

Mild anemia is normal during pregnancy due to an increase in blood volume. More severe anemia, however, can put the baby at higher risk for anemia later in infancy. In addition, if the mother is significantly anemic during the first two trimesters, she is at greater risk for having a pre-term delivery or low-birth-weight baby. Being anemic also burdens the mother by increasing the risk of blood loss during labor and making it more difficult to fight infections. (14)

Anemia is prevalent in a remote setting where the accessibility to antenatal care services is difficult. It is not uncommon to see women at time of labor with uncorrected moderate to severe anemia. They are often unbooked and seeking hospital only when severe obstetric complications have already developed. (15)

Severe maternal anemia is strongly associated with maternal mortality and is typically confounded by multiple underlying conditions. Lower hemoglobin levels are described in the literature for specific populations, including African Americans people and women in Greenland (0.6 g/dl). Further research on pregnant populations has been undertaken since these studies were acknowledged by WHO. (19)

Anemia in pregnant women reduces a woman’s ability to survive bleeding during and after childbirth (i.e., post-partum hemorrhage (PPH)) and may result in premature and/or lower birthweight babies with a higher risk of death. Anemia prevalence is highest among
pregnant women, infants, and young children due to the high iron demands of growth and pregnancy. (7)

Anemia is one of the leading indirect causes of maternal mortality and it is the most common and intractable nutritional problem globally. Although easily preventable and treatable, it is one of the most serious threats to the health of mother and also a factor in maternal mortality. In pregnant women, anemia also known to be an important factor in maternal death, the poor cognitive development of children, and decreased work capacity of the mother. It also decreases the health and energy of approximately 500 million women and leads to approximately 50,000 deaths in every year. The prevalence of anemia during pregnancy is quite high (42%) globally and above 57.1% in Africa, signifying it as a severe public health problem in the region. In Ethiopia, even if the situation seems better, it is estimated that above 22% of women during pregnancy were found anemic. The prevalence of anemia among pregnant women in particular ranged from as low as 16.6% in the north to a modest (33.2%) level in the south and high up to 43.9% in the eastern parts of the country. Having too many under five children or too frequent birth is among the key predictors of anemia in Ethiopia. (28)

The most vulnerable groups in the population are children and pregnant women, while others such as the non-pregnant women and the elderly are next affected. The World Health Organization (WHO) estimated that 56% of all pregnant women in developing countries are anemic. In Southern Asia, the prevalence of anemia in pregnancy is about 75%, 5% of pregnant women suffer from severe anemia in the worst affected parts of the world. Worldwide, it is estimated that about 20% of maternal deaths are caused by anemia; in addition, anemia contributes partly to 50% of all maternal deaths. Similar situation is found in sub-Saharan Africa where anemia is reportedly accounted for about 20% of all maternal deaths. (30)

Anemia affects around 38.2% and 22% of pregnant women at a global and national level respectively. In developing countries, women start pregnancy with already depleted body stores of iron and other vitamins with significant variation of anemia within and between regions. This is mainly due to poor nutritional intake, repeated infections, menstrual blood
loss and frequent pregnancies. It is also associated with socioeconomic conditions, lifestyles, and health-seeking behaviors across different cultures. (31)

During pregnancy, a woman’s body changes in many ways due to the effect of hormones. Normal physiologic changes in pregnancy affect the hemoglobin (Hb), and there is a relative or absolute reduction in Hb concentration. The most common true anemias during pregnancy are iron deficiency anemia (approximately 75%) and folate deficiency megaloblastic anemia, which are more common in women who have inadequate diets and who are not receiving prenatal iron and folate supplements. (37)

Plasma volume increases over the course of pregnancy by about 50%. Dilutional anemia is caused by the rise in plasma volume, then hemoglobin concentration, hematocrit and red cell count fall. However, there is a rise in total circulating hemoglobin directly related to the increase in red cell mass. Pregnancy creates a demand for about 1000 mg of additional iron. Serum iron falls during pregnancy whilst transferrin and total iron binding capacity rise. (35)

The plasma volume increases by 40% to 50%, whereas the red cell volume goes up by only 15% to 20%, which causes a situation that is described as “physiological anemia of pregnancy” (normal hemoglobin, 12 g/dl; hematocrit, 35). Because of this apparent hemodilution, blood viscosity decreases by approximately 20%. (39)

The increase of RBC mass during pregnancy is accomplished by a complex interaction of several hormonal and physiologic factors, but in general it follows the erythropoietin production. In normal pregnancy, the erythropoietin level begins to rise slowly at 15 weeks, but the effects of this stimulation on RBC mass are delayed until 18–20 weeks. (36)

The platelet count tends to fall progressively during normal pregnancy, although it usually remains within normal limits. Venous stasis in the lower limbs is associated with venodilation and decreased flow, which is more marked on the left. This is due to compression of the left iliac vein by the left iliac artery and the ovarian artery. On the right, the iliac artery does not cross the vein. (38)
Maternal knowledge of anemia was associated with the use of iron supplements during pregnancy in both urban and rural areas. In the present study, 85.7% of mothers in urban slums and 84.0% of mothers from rural areas used iron supplementation during their last pregnancy. Women in Afar and Somali regions are less likely to seek antenatal health care services during pregnancy than the reference category, Oromo Region in this case. In some communities like the Afar, husbands are not willing to send their wives to be assisted by male health practitioners. The nomadic way of life and the strong traditional practice of using traditional birth attendants are identified as the responsible factors for low utilization of antenatal care (40).

Poor maternal nutrition during pregnancy could have adverse consequences on the developing fetus and the health of mother. Iron deficiency is the most common and widespread nutritional deficiency in the world and is the only nutritional deficiency that is prevalent in virtually all developed countries. It is also the most common cause of anemia, which is characterized by low concentrations of hemoglobin. (41)

Anemia is one of the most prevalent nutritional deficiency problems affecting pregnant women. The prevalence of anemia in pregnancy varies considerably because of differences in socioeconomic conditions, lifestyles, and health-seeking behaviors across different cultures. The World Health Organization (WHO) estimates that 52% of pregnant women in developing countries are anemic compared with 23% in the developed world. (28)

Nutritional deficiencies are the most common cause anemia in pregnant women according to nutritional surveys in corporation with UNICEF indicated that most of women in rural areas in Hargeisa area are at risk for anemia, while thousands were suffering other nutritional problems. 41% of rural females in reproductive age group have no access nutritional supplementation. (13)
CHAPTER THREE

3.1. Introduction
This chapter will discuss Study design, Study area, Study population, Sampling method, Sampling procedure, Data collection methods, Inclusion and exclusion criteria, Data analysis, Ethical consideration, Limitation of the study, Definition of operational terms, Validity and reliability of the study.

3.2. Study Design
This study design was retrospective cross-sectional study desiring to assess the prevalence of maternal anemia in pregnant women attending Sahardiid MCH, Ibrahim kod bur, Hargeisa city, Somaliland. We identified and reviewed HB level records of all laboratory confirmed cases by the MCH the study was observational study which is cross sectional. we used this study design because of large low socio-economic population attending at Sahardiid MCH.

3.3. Study Area
This study was carried out at Sahardiid MCH. Sahardiid MCH is located Jig jiga yar Village in Ibrahim kod-bur sub-district Hargeisa, Capital. The population of Jig jiga yar village estimated roughly around 10000 and 2000 households, in distance of around 16sqkms and it locate northwest of Hargeisa, it is the corner village next to Hero-Awr village., Hargeisa, Somaliland. The MCH provides services 450 mothers of low social economic community.

3.4. Study Population
The study population was all pregnant mothers who were randomly selected from Sahardiid MCH especially those who were attended antenatal care in Sahardiid MCH and also the catchment population.

3.5. Sampling Method
The sampling method of the study was nonprobability sampling, because the study was taking at targeted place (Sahardiid MCH). by using nonrandom technique. This method is selected because of the relationship between large low-socioeconomic population (state house) and the MCH.

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Sample size was consisting of (N) which was total of catchment population in Sahardiid MCH. And this study was determined by using Slovene’s formula as shown below

\[ \text{Sample size} = \frac{N}{(1 + Ne^2)} \]

Where

N= stand for total of catchment population

e= tend for marginal error

therefore, sample size calculation was:

\[ n = \frac{450}{1 + 450(0.0025)} = 212 \]

The sampling procedure was non-probability purposive/judgmental sampling so it was appropriate for the study.

3.7. Data collection method
The collection of data in this study involved secondary data with use of checklist to gather information from the listed documentary files of antenatal care in Sahardiid MCH. since were used retrospective study its used checklist instead of questioner.

3.8. Inclusion and Exclusion Criteria

3.8.1. Inclusion criteria
- All pregnant mothers who listed documentary files of antenatal care in Sahardiid MCH. their variables include age, number of parity, number of gravidae, attendance of antenatal care and level of HB

3.8.2. Exclusion criteria
All population who were not included in reproductive age group, absent in documentary files of ANC in Sahardiid MCH and Pregnant women who were not attended ANC service in Sahardiid MCH.

3.9. Data Analysis
The purpose of study was to assess prevalence of maternal anemia in Sahardiid MCH, the Data was processed by using SPSS v20 and the result is analyzed by using graphics, tables and charts. Numerical data was encoded by using bars, pie charts with percentages, which visually communicate a quantitative message.
3.10. Ethical consideration
The researchers undertook to observe all relevant ethical and legal considerations that were applicable to scientific research. And also got consent from the principle of Sahardiid MCH before the study, also Permission to carry out was obtained from GOLLIS UNIVERSITY department of health science. Data is then collected respecting the rights of the MCH and avoiding by writing names on study tool. No names were used or indicated on the checklist. The process of research was a minefield of ethical and legal issues.

3.11. Limitation of the study
During the research, number of limitation were encountered some constrains one such problems the fact that the time for the data collection process was limited; a longer duration of time was needed. And also, there was less time to characterize in an arranged way. Another limitation was that there were no previous researches done at this area.

3.12. Operational definitions
Anemia: refers to a condition in which the hemoglobin content of the blood is lower than normal.
Maternal anemia is defined as a hemoglobin concentration of less than 110 g/L (less than 11 g/dL) in venous blood.
Antenatal care: refers to the medical care that women receive when they are pregnant.
Antenatal care visit: is the routine health control of presumed healthy pregnant women without symptoms (screening), in order to diagnose diseases or complicating obstetric conditions without symptoms, and to provide information about lifestyle.
Gravida: a woman's status regarding pregnancy; usually followed by a roman numeral designating the number of times the woman has been pregnant
Parity: the number of liveborn children a woman has delivered.
Maternal and Child health: is a comprehensive service which focuses on the improvement of public health delivery systems for women, children and their families through advocacy, education, and research.
Gestational age: described how far along the pregnancy is. It is measured in weeks, from the first day of the woman's last menstrual cycle to the current date.
**Tradition birth attendance:** a person who assists the mother during childbirth and who initially acquired her skills by delivering babies herself or by working with other TBAs”.

**APGAR Score:** refers to a measure of the physical condition of a newborn infant. It is obtained by adding points for heart rate, respiratory effort, muscle tone, response to stimulation, and skin coloration; a score of ten represents the best possible condition.

**Nutritional deficiency** refers to the low concentration of hemoglobin due to poor diet

**Physiological condition of maternal anemia** refers to the condition in which there is reduced oxygen delivery to the tissue due to the increasing demand during pregnancy.

**Behavioral change of maternal anemia** refers how the mother behaves during her pregnancy period such as her diet and physical activity.

### 3.13. Validity and reliability of data.

Content validity was ensured by subjecting the researcher devise questionnaires on innovation and success to judgment by the content experts (who shall estimate the validity on the basis of their experience). The test-retest technique was used and checked twice the checklist. In order to become valid and Reliable measured by repeatedly checking.
CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION

This chapter deals with data presentation, analysis and interpretation which were obtained among pregnancy women attending antenatal care in Sahardiid MCH, in this study its used secondary data source from Sahardiid MCH, and Statistical package for the social sciences (SPSS) version 20 was used for data entry to aggregate and analyze the data presented in this chapter and data were analyzed as the following.

<table>
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<tr>
<th>VARIABLE</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
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</thead>
<tbody>
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<td>ANC Visit</td>
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<tr>
<td>1</td>
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<tr>
<td>Age</td>
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<td>15 - 25</td>
<td>180</td>
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<td>38 - 48</td>
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<td>3.3</td>
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<tr>
<td>Gestational Age</td>
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<tr>
<td>First trimester</td>
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<tr>
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<tr>
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<td>Gravidity</td>
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</tr>
<tr>
<td>G1 - G3</td>
<td>219</td>
<td>65.2</td>
</tr>
<tr>
<td>G4 -G7</td>
<td>53</td>
<td>15.8</td>
</tr>
<tr>
<td>G8 - G11</td>
<td>64</td>
<td>19</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>249</td>
<td>74.1</td>
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<tr>
<td>3</td>
<td>46</td>
<td>13.7</td>
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<tr>
<td>7</td>
<td>41</td>
<td>12.2</td>
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<tr>
<td>HB level</td>
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<tr>
<td>&lt;11</td>
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<td>84.5</td>
</tr>
<tr>
<td>&gt;11</td>
<td>50</td>
<td>14.9</td>
</tr>
</tbody>
</table>

*Table 4. 1*
This table shows that pregnant women who attend their first ANC were 45.8%, were 25.3% mothers attended ANC 2 times during their pregnancy and remaining 28.9% attended 3 times during their pregnancy period. This means antenatal care services were low due to poor attendance of antenatal care.

Figure 4. 1

This table shows that most 53.6% of the mothers were the ages between 15-25 yrs. were 43.2% were the age in between 26-37 yrs. and the remaining 3.3% were in between 38-48 yrs.

Figure 4. 2
This table shows that small number 4.2% of mothers came MCH at their first trimester, were 22.3% of them came MCH their second trimester and largest number 73.5% of them came MCH their last or third trimester.

This table shows that around 65.2% of mothers booked when they had their first 1-3 child, while 15.8% of them booked when they had 4-7 children and 19% booked when they had 8-11 children.
This table shows that 74.1% were nulliparas and 13.7% among mothers have gave birth to 3 children while the remaining 12.2% have gave birth to 7 children.

This table shows that most of the mothers 84.5% had HB level less than 11mg/dl were the remaining 14.9% had HB level more than 11mg/dl.
CHAPTER FIVE
DISCUSSION, CONCLUSION, AND RECOMMENDATION

Discussion

Prevalence of anemia in pregnancy is quite high, and this study showed more than half of the mothers 84.5% were anemic. Another study demonstrated that the prevalence of anemia among Iranian pregnant women in Urmia is 20.2%. (52)

This study also shows that anemia in pregnant is neglected public health concern as we have seen in study findings. This study found that 45.8% had their antenatal care visit only one time during their pregnancy period. Another study conducted on slum residents in Addis Ababa, Ethiopia mentioned that 81.6% of the ANC clients had four or more visits during their pregnancy period. (53)

Early antenatal care attendance during the first three months of gestation plays a major role in detecting and treating some complications of pregnancy and forms a good basis for appropriate management during delivery and after childbirth. The study showed that small number 4.2% among pregnant women attended MCH during their first trimester so Late ANC attendance during first trimester is high in the study area, other studies carried out in Debre Berhan Health Institutions, Central Ethiopia mentioned that 26.2% pregnant mothers started their first ANC visit early (first trimester). (54)

The body of a pregnant women requires more oxygen and the oxygen-carrying capacity of the blood is proportional to the circulating hemoglobin concentration. This study demonstrated that more than half 84.5% of mothers had HB level less than 11mg/dl (anemic) and the remaining 14.9% had HB level more than 11mgdl. Other studies from El Alto, Bolivia mentioned that 17.5% of the pregnant study population from El Alto is diagnosed with maternal anemia. [55]

Complications during pregnancy can involve the mother’s health and severe maternal anemia is strongly associated with maternal mortality 20% of maternal deaths in Africa have been attributed to anemia. Anemia in pregnant women reduces a woman’s ability to survive bleeding during and after childbirth (i.e., post-partum hemorrhage (PPH) another
study from Azita Kamjoo shows that Anemia is responsible for 15% to 20% of maternal mortality\textsuperscript{56}

**Conclusion**

Prevalence of anemia in pregnancy is quite high, and in this study 84.5% were anemic because of limited or late-term antenatal care visits.

This study also shows that anemia in pregnant is neglected public health concern as we have seen in study findings. This study found that 45.8% had their antenatal care visit only one time during their pregnancy period. Because some mothers were missed opportunity, information, education and communication of antenatal care service and misunderstanding of effectiveness regular attendance of ANC visits.

ANC is an essential part of modern health care services. So, every pregnant woman should have full access to it. The study showed that small number 4.2% among pregnant women attended MCH during their first trimester so late ANC attendance during frist trimester is high in the study area the results of this study revealed that the main reasons for inadequate utilization of ANC services were unawareness about the importance of ANC services and family refuse. There is a significantly higher rate of pregnancy complications and adverse birth outcomes in irregular attendants.

This study demonstrated that more than half 84.5% of mothers had HB level less than 11mg/dl (anemic) and the remaining 14.9% had HB level more than 11mgdl. This is because mothers attended late during their pregnancy period.

**Recommendation**

- Health workers should enhance awareness about the importance of ANC and motivate women to utilize ANC services.
- Health care providers should give brief and detailed counseling about physiological changes during pregnancy and point out supplementary foods which are use full and can prevent anemia.
- Pregnant mothers should attend ANC every three months for proper diagnose of minor complications.
References


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APPENDIX
GOLLIS UNIVERSITY
FUCULTY OF CLINICAL OFFICER

Checklist for data collection related to antenatal care profile of pregnant mothers for the purpose of retrospective study in the partial fulfillment of BSc degree of clinical officer

Name of the health facility

Date of collection

Name and signature of data collection

<table>
<thead>
<tr>
<th>No.</th>
<th>ANC Visit</th>
<th>Age</th>
<th>Gestational age</th>
<th>Gravidity</th>
<th>Parity</th>
<th>HB level</th>
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