(Research Article)

# Prevalence of anaemia among pregnant women attending antenatal clinic at St. Francis Referral Hospital Ifakara, Tanzania

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## Abstract

**Background**: Anemia in pregnancy is a worldwide public health problem affecting both developing and developed countries with significant impact on the health of mothers and fetus.

**Objective:** This study aimed to determine the prevalence of anemia among pregnant women attending antenatal clinic at St. Francis Referral Hospital (SFRH), Ifakara, Tanzania.

**Methodology**: This was a descriptive cross-sectional study conducted from January to March 2021. A total of 116 pregnant women were enrolled in this study. Interviews were conducted followed by determination of haemoglobin level.

**Results**: The results revealed the prevalence of anemia among pregnant women attending antenatal clinic at SFRH to be 52.6%. In this study mild anemia was 34.5%, moderate anemia13.8% and severe anemia 4.3%.

**Conclusion**: Anemia in pregnancy is a public health problem in study setting of St. Francis Referral Hospital, Ifakara, Tanzania.

**Keywords:** Anemia; Pregnant women; Prevalence; Ifakara

## 1. Introduction

Anemia describes a situation in which there is a reduction of haemoglobin concentration in the blood of pregnant women to a level below 11g/dl. Anemia is one of the most common nutritional deficiency diseases observed globally and affects more than a quarter of the world's population, especially in the developing countries [1]. Anemia is classified into mild anemia (10 -10.9g/dl), moderate anemia (7-9.9g/ dl) and severe anemia (<7g/dl). Globally, an estimated 32.4 million (38.2%) pregnant women are anemic. Its burden was high in South East Asia (48.7%) and Africa (46.3%) [2]. In Africa, (57%) of pregnant women are anemic, which corresponds to 17 million affected women, with severe consequence on health, social and economic development [3, 4]. Studies in Africa have shown a high prevalence of anemia in pregnancy ranging from 41-83% in different settings [5, 6, 7, 8, 9, 10]. The cause of anemia in pregnancy is multi-factorial, low caloric intake leading to deficiencies in iron, folate, Vitamin B12 and Vitamin A, as well as intestinal parasitic infections, malaria, haemoglobinopathies and HIV all have been shown to be the main causes of anemia among pregnant African women [11, 12].

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Few studies have however assessed anemia among pregnant women in Tanzania, especially in the third trimester when anemia is most likely to affect the maternal and perinatal outcomes [6, 9]. Therefore, the aim of this study was to assess the prevalence of anemia among pregnant women attending antenatal clinic at St. Francis Referral Hospital, Ifakara, Tanzania. The results of this study will be used for national-level policy making and programming by concerned bodies to intervene and lessen the high burden of anemia in pregnancy.

## 2. Material and methods

### 2.1. Study area

The study was conducted among pregnant women attending routine antenatal care at St. Francis Referral Hospital, Ifakara, Tanzania. The study was conducted between January and March 2021. St. Francis Referral Hospital is in Kilombero district (Fig.1). It also serves as a referral hospital for other health facilities within Ulanga and Malinyi districts. Ifakara is located in southern central Tanzania between latitude 87′59′S and longitude 3640′59.880′. Ifakara has a population of 49532 people according to census of 2012. The main tribes are Ndamba, Pogolo and Mbunga, as well as Masai and Sukuma who migrated here as pastoralists. Main activities are farming of rice, maize, sugarcane and fishing from Kilombero river.



**Figure 1** St. Francis Referral Hospital

### 2.2. Study design

The study design was a descriptive cross-sectional study which prevalence of anemia among pregnant women attending antenatal clinic at St. Francis Referral Hospital was studied at a time. Structured pre-tested questionnaire with key information was used to collect the desired data.

### 2.3. Study population

Women attending antenatal clinic at St. Francis Referral Hospital were involved in the study.

### 2.4. Sample size

The sample size in this study was 116 participants. The sample size calculation obtained by Kirkwood formula:

$$N = \frac{Za^2 xp(1-p)}{d^2}$$

### 2.5. Sampling Technique

Simple randomly technique was employed whereby participants attending at St.Francis Referral Hospital antenatal clinic were allocated numbers (even and uneven numbers). Participants who had even numbers were involved in the study.

### 2.6. Data collection

The data collected by structured guided questionnaire. The questionnaire prepared in English language and translated into Swahili to maintain the consistency and content of the questionnaire, confidentiality of information, participant's

right and voluntarily informed consent were secured. The participants were asked the questions and their answers filled in the questionnaire by a researcher.

## 2.7. Data analysis

Questionnaires filled with irrelevant information were removed. The data from questionnaires were entered, cleaned and analysed by using Statistical Package for Social Sciences (SPSS version 20).

## 2.8. Inclusion criteria

Women attending antenatal clinic willing to participate in the study were included.

## 2.9. Exclusion criteria

Women attending antenatal clinic but unwilling to participate in the study were excluded.

## 2.10. Ethical clearance

Permission to conduct the study was obtained from research committee of St. Francis University College of Health and Allied Sciences (SFUCHAS) while permission to use participants at St. Francis Referral Hospital was obtained from the Director General of the referral hospital.

# 3. Results

**Table 1** Socio-demographic characteristics of pregnant women attending antenatal clinic at SFRH

| Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Age (years) | <15 | 3 | 2.6 |
| | 15 – 19 | 10 | 8.6 |
| | 20 – 24 | 15 | 12.9 |
| | 25 - 29 | 36 | 31 |
| | 30 - 34 | 20 | 17.2 |
| | 35 - 39 | 15 | 12.9 |
| | >40 | 17 | 14.6 |
| Religion | Christian | 70 | 60.3 |
| | Muslim | 40 | 34.8 |
| | Pagan | 6 | 5.2 |
| Marital Status | Single | 90 | 77.6 |
| | Married | 25 | 21.6 |
| | Widowed | 1 | 0.9 |
| Education level | Primary | 57 | 49.1 |
| | Form 4 | 40 | 34.5 |
| | Form 6 | 6 | 5,2 |
| | College | 13 | 11.2 |
| Occupation | Civil servants | 11 | 9.5 |
| | Business | 32 | 27.6 |
| | Housewife | 30 | 25.9 |
| | Peasant | 43 | 37.1 |

A total of 116 pregnant women attending antenatal clinic at SFRH were involved in this study. Age; 3(2.6%) less than 15 years, 10(8.6%) age group 15 – 19 years, 15(12.9%) were of age group 20 -24 years, 36(31%) were in the age group of 25 – 29 years, 20(17.2%) age group 30 – 34 years, 15(12.9%) age group 35 – 39 years, and 17(14.6%) more than 40 years. Religion; Christians were 70(60.3%), Muslim were 40(34.8%) and Pagan were 6(5.2%). Marital status; single 90(77.6%), married 25(21.6%), widowed 1(0.9%). Education level of participants; Primary education 57(49.1%), Form four 40(34.5%), Form six 6(5.2%), College 13(11.2%). Occupation of participants; civil servants 11(9.5%), business 32(27.6%), housewife 30(25.9%) and peasants 43(37.1%) as shown in Table 1.

### 3.1. Distribution of gestational age and gravidity among pregnant women attending antenatal clinic at SFRH

In this study the gestational age of the participants was: 1-3 months were 14 (23%), 4 –6 months were 14 (23%), 7–9 months were 33 (54%); gravidity: primegravida were 47(77%) and multigravida were 14 (23%) as shown in Table 2.

**Table 2** Distribution of gestational age and gravidity among pregnant women attending antenatal clinic at SFRH

| Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Gestation (months) | 1 – 3 (First Trimester) | 14 | 23 |
| | 4 – 6 (Second Trimester) | 14 | 23 |
| | 7 – 9 (Third Trimester) | 33 | 54 |
| Gravidity | Primigravida | 47 | 77 |
| | Multigravida | 14 | 23 |

### 3.2. Intermitent Prevention Treatment among pregnant women attending antenatal clinic at SFRH

Pregnant women attending antenatal clinic at SFRH received the following medications: Mebendazole were 58(50%), Ferrous sulphate were 71(61.2%), Folic acid were 34(29.3%), SP doses were 73(62.9%), and Sleeping under treated bednets were 80(69%) as shown in Table 3.

**Table 3** Intermitent Treatment Prevention among pregnant women attending antenatal clinic at SFRH

| Variables | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Mebendazole | Yes | 58 | 50 |
| Ferrous sulphate | Yes | 71 | 61.2 |
| Folic acid | Yes | 34 | 29.3 |
| Received SP doses | Yes | 73 | 62.9 |
| Using treated bednets | Yes | 80 | 69 |

### 3.3. Distribution of haemoglobin level among pregnant women attending antenatal clinic at SFRH

The haemoglobin distribution was studied among 116 pregnant women attending antenatal clinic at SFRH. Those who were not anemic with haemoglobin level above 11g/dl were 55(47.4%), with mild anemia haemoglobin 10 -11g/dl were 40(34.5%), with moderate anemia haemoglobin 8 – 9g/dl were 16(13.8%) and those with severe anemia haemoglobin between 4 – 7 were 5(4.3%) as shown in Table 4. Therefore, in this study the prevalence of anemia in pregnant women attending ANC at SFRH was 52.6%.

**Table 4** Distribution of haemoglobin level among pregnant women attending antenatal clinic at SFRH

| Variable (Hb level g/dl) | Frequency | Percentage (%) |
|---|---|---|
| 4 - 7 | 5 | 4.3 |
| 8 - 9 | 16 | 13.8 |
| 10 - 11 | 40 | 34.5 |
| >11 | 55 | 47.4 |
| Total | 116 | 100 |

## 4. Discussion

Anemia in pregnancy is one of the most widespread public health problems especially in developing countries and has significant health, social and economic consequences.

The results in this study showed that prevalence of anemia in pregnant women attending antenatal clinic at SFRH was 52.6%. The prevalence of anemia in our study was higher compared to a study done in northern Tanzania which showed prevalence of 47.4% as reported by [13]. The prevalence in this study is higher than that reported elsewhere [14]. A study done in Kenya showed prevalence of 40.7%, while a study done in northwestern Ethiopia revealed prevalence of 36.1% [15]. Only five participants (4.3%) with severe anemia were detected in the present study while those found to be anemic were mild and moderate anemia at 34,8% and 13 8% respectively. This indicates that may be there is less improvement in maternal nutrition in this study area. Over the years, the government of Tanzania has been strengthening the antenatal care services and every pregnant woman is given iron supplementation to combat anemia, deworming, malaria prophylaxis and treated mosquito nets [16]. Women who had secondary or higher education were less likely to be anemic compared to their counterparts. Education has been reported to reduce the risk of being anemic in several studies. Educated pregnant women have better income and eat nutritious food and hence do not get nutritional anemia [17]. A study done in Ethiopia also reported higher prevalence of anemia among pregnant women who had no education [18].

Poor income leads to limited access to nutritious foods and is associated with poor eating habits that might lead to anemia. A study done in Ethiopia showed that women with low income were more anemic than women with higher income [19].

This study found that 23% of pregnant mothers initiated antenatal care in the first trimester and 23% and 54% in their second and third trimester respectively. This study is in line with the study done in Kenya which concluded that during the first trimester pregnant women do not attend antenatal clinic hence there being low attendance of antenatal care [14].

This study shows that pregnant women attending antenatal clinic with an age >40 years were (14.6%). This agrees with previous study which reports that as maternal age increases, the mother may face repetitive pregnancies, the result of labor related complications the mother can be subjected to other illnesses which may predispose her to anemia [20].

This study highlights the prevalence of anemia to be significantly higher among pregnant women attending antenatal clinic at SFRH.

## 5. Conclusion

In this study, the prevalence of anemia among pregnant women attending ANC at SFRH was 52.6%, the majority of the participants had moderate type of anemia (Haemoglobin 10 – 11g/dl). The observed prevalence of anemia might affect the birth outcome of pregnant women. It is recommended that the ongoing interventions including health, nutrition and dietary education about anemia should be given top priority.

**Compliance with ethical standards**

*Statement of informed consent*

Written informed consent was obtained from all antenatal mothers who consented to the study, records were coded and participants/ Researcher names were not used. All the information collected remained confidential and was used for purposes of the study only. Participation was voluntary and no incentives were given.

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