ASSESSMENT OF ADHERENCE TO IRON – FOLIC ACID SUPPLEMENTATION AMONG PREGNANT WOMEN AT SELECTED HEALTH CENTERS OF GANDHI MEMORIAL HOSPITAL CATCHMENTS, ADDIS ABABA ETHIOPIA; CROSS SECTIONAL STUDY 2023/24

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by Bethelhem Taddesse

ADDIS ABABA UNIVERSITY

SCHOOL OF MEDICINE

OBSTETRICS AND GYNECOLOGY DEPARTMENT

RESEARCH REPORT ON:

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INVESTIGATOR:

DR BETELHEM TADDESSE (OBGYN, YEAR IV RESIDENT)

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Addis Ababa

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INVESTIGATOR:

DR BETELHEM TADDESSE (OBGYN , YEAR IV RESIDENT)

ADVISORS:

DR AHMED ABDELLA MD, MSC (PHDC)

ASSOCIATE PROFESSOR-OBSTETRICS & GYNECOLOGY

DR ENDALKACHEW MEKONNEN MD, MPH

ASSISTANT PROFESSOR-OBSTETRICS & GYNECOLOGY, UROGYNECOLOGY & FEMALE RECONSTRUCTIVE SURGERY SUBSPECIALIST

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ACRONYMS AND ABBREVIATIONS

AAU – Addis Ababa University

ANC – Antenatal care

GA – Gestational age

IFA – Iron folic acid

IFAS - Iron folic acid supplementation

HC – Health center

WHO – World Health Organization

HIV – Human immunodeficiency virus

DM – Diabetes mellitus

HTN – Hypertension

CDC – Center of Disease Control

EDHS – Ethiopian Demographic Health Survey

AOR – adjusted odds ratio

OR – odds ratio

CI – confidence interval

SPSS – Statistical Package for Social Sciences

ABSTRACT

Anemia poses a significant public health challenge worldwide, impacting populations in both developing and developed nations. The World Health Organization's 2023 report indicates that approximately 38% of pregnant women, 30% of women of reproductive age, and 40% of children globally are affected by anemia. Iron deficiency anemia remains the predominant cause of anemia globally. In the context of pregnancy, iron (and folate) supplementation is widely advocated as a key intervention to reduce maternal anemia. However, the efficacy of this approach is often compromised due to poor adherence to the supplementation regimen, highlighting a critical barrier to its success. Hence, this study explores the prevalence and barriers to the iron (and folate) supplementation at health centers in Addis Ababa.

Objective: This study aimed to evaluate the adherence to iron supplementation and treatment among pregnant women attending selected health centers within the Gandhi Memorial Hospital catchment area.

Method: A facility-based cross-sectional study was conducted in four health centers within the Gandhi Memorial Hospital catchment area. Utilizing a pretested and structured questionnaire, data was gathered from a sample of 410 pregnant women who attended antenatal care (ANC) consecutively from March 01, 2024, to May 30, 2024. The bivariate analysis explored the relationships between independent variables and the outcome variable, i.e. pregnant women adherent to IFA supplementation and associated factors, specifically adherence to iron supplementation. Factors identified as significant in the bivariate analysis were further examined through multiple logistic regression to understand their impact on adherence to supplementation better.

Result: 64% (n=263) of the pregnant women were adherent to IFA supplementation, while 36% (n=147) were not. The most common reasons for non-adherence were forgetfulness 32% (n=47), fear of side effects 28.6 % (n=42), and a sense of boredom with taking the medication 8.8% (n=13). Further multiple regression identified that college or higher education was significantly associated with adherece (AOR=1.7, 95% CI=1.59, 4.99) compared to illiteratracy. Adherence was significantly high (AOR=3.9, 95% CI=1.65, 8.96) among those who initiated ANC in the second trimester compared to those who started ANC in the third trimester. Conversely, women with chronic diseases were significantly less likely to adhere (AOR=0.29, 95% CI=0.09, 0.89) relative

to women with no chronic illnesses. Additionally, women who had knowledge about anemia prevention were significantly more likely to adhere (AOR=1.7, 95% CI=1.49, 3.19) compared to those with less knowledge.

1. Introduction

1.1 Background

Anemia is a global public health issue impacting both developing and developed countries. Around two billion people are anemic; mainly due to iron deficiency. WHO estimates that 40% of children 6-59 months of age, 37% of pregnant women, and 30% of women 15-49 years of age worldwide are anemic. (1)

Anemia is a condition in which red blood cells are insufficient to meet the body's physiological needs. Anemia during pregnancy is defined by the World Health Organization and Center for Disease Control and Prevention (CDC) as a hemoglobin concentration of less than 11 g/dL. (2)(3) Iron deficiency, the most prevalent micronutrient deficiency worldwide, is the leading cause of anemia during pregnancy. It affects around 30-40% of pregnancies. Due to an increase in iron deficiencies throughout gestation, about 75% of pregnancies in the third-trimester experience iron deficiency anemia. (4)(5)

Iron is a trace mineral essential for fetal growth and development. It is present in red blood cells, where it carries the oxygen needed throughout the body. Additionally, iron is crucial for normal neuronal development. Folic acid is another important micronutrient that plays a role in synthesizing neurotransmitters, particularly during early pregnancy. It is vital for DNA synthesis during organogenesis. The high physiological requirements for iron and folic acid during pregnancy are challenging to meet through a typical diet. Therefore, it is recommended that pregnant women routinely receive iron and folic acid supplements. (4) Maternal iron deficiency is linked to increased complications for the fetus, including low birth weight, small for gestational age, and higher rates of fetal distress. Moreover, neonates face increased risk of neurological complications, such as autism spectrum disorder, attention deficit disorder, and other intellectual disabilities. (6)

Adherence to a medication regimen is generally defined as the degree to which patients take medications as prescribed by their health care providers. It serves as the primary determinant of treatment success; poor adherence results in suboptimal clinical outcomes, leading to limited benefits within the health system. Adherence rates for individual patients are commonly expressed as the percentage of the prescribed doses of the medication that the patient actually takes over a specified period. (7)

1.2 Statement of the problem

Anemia is a widespread global public health concern that impacts individuals of all age groups. Worldwide, a total of 1.93 billion people are affected by anemia. In this population, women of reproductive age, especially pregnant women, are among the most vulnerable group.(1)

According to a WHO report, in 2023, 30% of non-pregnant women and 38% of pregnant women aged 15–49 years were anemic globally. (1) A systematic review and meta-analysis conducted to show the prevalence of anemia and determinant factors among pregnant women from sub-Saharan Africa found that the pooled prevalence was 36%. Iron and folic acid (IFA) supplementation was identified as the second significant determinant, following intestinal parasites. (8) Ethiopia is one of the countries that faces this burden. The Ethiopian Demographic Health Survey 2016 (EDHS) showed that the overall prevalence of anemia among pregnant women was 41%, with 20% classified as moderately anemic, 18% as mildly anemic, and 3% as severely anemic. (9)

Daily iron and folic acid supplementation is recommended by WHO as part of antenatal care to reduce the risk of low birth weight, maternal anemia and iron deficiency. (3) The recommended supplement contains 30-60 mg of iron, along with 400 μg of folic acid. Daily supplementation throughout pregnancy, starting as early as possible after conception, is advised in all settings. (3)

Despite WHO recommendations, the adoption of iron/folic acid supplementation remains low in many countries, particularly in low-resource countries. The 2019 Ethiopian Demographic and Health Survey (EDHS) shows significant differences in the consumption of iron supplements between urban and rural residents (61% vs 39%). (10) Even though many developing countries, including Ethiopia, are now implementing IFA supplementation through ANC programs, only a few countries have reported significant improvement in IFA supplementation and in the control and prevention of anemia. (10)

Iron/folic acid supplementation is affected by various factors, with maternal non-adherence to the regimen being the primary reason for the strategy's ineffectiveness in reducing maternal and child complications related to iron/folic acid deficiency. (3)

1.3 Significance of the study

Anemia during pregnancy is a major risk factor for adverse maternal and perinatal outcomes. Research shows that iron supplementation during pregnancy significantly reduces the prevalence of anemia, thereby lowering maternal morbidity and mortality rates. A meta-analysis indicated that supplementation with iron and folic acid (IFA) during pregnancy can result in a 60% reduction in the incidence of iron deficiency anemia (IDA) at term and a 20% decrease in low birth weight rates. (11)

Adherence to medication is crucial for achieving treatment success, and poor adherence is a significant barrier to the effectiveness of iron and folic acid (IFA) supplementation strategies. This study examined the levels of adherence to IFA supplementation among pregnant women attending antenatal care (ANC) at health centers in Addis Ababa, as well as the factors contributing to both poor and good adherence. The findings provide evidence-based insights to inform nationally relevant interventions, guiding policies and clinical programs aimed at improving the coverage and adherence to IFA supplementation. Improving the use and adherence to IFA supplements is expected to significantly reduce maternal mortality and morbidity associated with maternal anemia and hemorrhage.

2. LITERATURE REVIEW

A study conducted in Yaoundé indicated varying levels of adherence to iron supplementation among antenatal care (ANC) attendees. The results showed that 16.4% of participants were highly compliant with their iron supplementation regimen, 27.6% had moderate compliance, and 56% were classified as having low compliance. Key reasons for non-adherence included experiencing side effects (19.7%), forgetting to take the supplements (70.1%), and inaccessibility to iron supplements (20.1%). Furthermore, 28% of participants reported finding the daily medication routine monotonous and burdensome. (12)

A cross-sectional study in Uganda involving ANC attendees with four or more antenatal visits, approximately 12% of mothers adhered to iron supplementation over a 30-day period. The study highlighted that prior health education significantly improved adherence rates, while inadequate drug supply and side effects were identified as the major factors contributing to low adherence. (13)

In a large population-based study across 22 sub-Saharan African countries, the overall adherence rate to iron supplementation for 90 days or more during pregnancy was found to be 28.7%. This adherence varied widely by country, with rates ranging from just 1.4% in Burundi to 73.0% in Senegal. Higher adherence was linked to several factors, including older maternal age, having more than four antenatal care (ANC) visits, higher educational levels, greater socioeconomic status, and exposure to mass media. In contrast, living in rural areas was associated with lower adherence, likely due to difficulties in accessing medication despite attending ANC visits. (14)

An institution-based cross-sectional study conducted in Gulele Sub-city, Addis Ababa, revealed that 62.3% of mothers adhered to iron and folic acid supplements, with a 95% confidence interval of 57.5% to 67.0%. Several factors were linked to non-adherence, including a lack of formal education (AOR=2.37; 95% CI=1.25–4.51), poor knowledge about anemia (AOR=1.97; 95% CI=1.24–3.13), experiencing other health issues during the current pregnancy (AOR=2.59; 95% CI=1.55–4.32), participation in health information sessions on iron/folic acid supplements (AOR=2.06; 95% CI=1.08–3.92), and forgetfulness (AOR=2.23; 95% CI=1.40–3.56). These factors were significantly associated with a higher likelihood of non-adherence compared to their respective counterparts. (15)

A study at Felege Hiwot Hospital in Bahir Dar showed that 67.4% of pregnant women adhered to iron-folic acid supplementation (IFAS). Key factors associated with adherence included receiving counseling on IFAS

(AOR=2.30; 95% CI: 1.21-4.34), having good knowledge about IFAS (AOR=4.22; 95% CI: 2.43-7.31), attending more than three antenatal care (ANC) visits (AOR=3.50; 95% CI: 1.55-7.92), previously receiving ANC follow up at a tertiary hospital (AOR=2.61; 95% CI: 1.30-5.27), and having no history of hypertension (AOR=3.07; 95% CI: 1.37-6.89). The study highlighted that insufficient counseling on anemia and IFAS significantly contributed to non-adherence among pregnant women. (16)

In a study conducted in Lay Armachiho, Northwest Ethiopia, adherence to iron and folic acid supplementation among pregnant women was reported at 28.7%, with a 95% confidence interval of 24.3% to 33.6%. The research identified several factors that significantly influenced adherence, including the educational level of the husband, family size, average monthly income, and the timing of initiation of antenatal care (ANC) visits. These factors were strongly associated with the likelihood of adherence among pregnant women in the study area. (17)

In a facility-based cross-sectional study conducted in the primary health care units of Sire district, the overall adherence rate to iron and folic acid supplementation (IFAS) was 59.4%. Positive factors influencing adherence included maternal access to information, receiving medical advice during antenatal care, a history of anemia, and current anemia diagnosis. On the other hand, having children and knowledge of IFAS's role in preventing low birth weight were negatively associated with adherence. These findings highlight the complex interplay of various factors affecting IFAS adherence among pregnant women in the study setting. (18)

A study done in Debre Tabor General Hospital in West Ethiopia in 2017 found that adherence to iron and folic acid supplementation was 44%. Several factors were significantly associated with adherence: gravidity (AOR = 2.92, 95% CI [1.61, 5.30]), gestational age at the first ANC visit (AOR = 3.67, 95% CI [1.94, 6.97]), receiving advice about IFAS (AOR = 2.04, 95% CI [1.12, 3.75]), current anemia (AOR = 2.22, 95% CI [1.45, 4.29]), and having knowledge about IFAS (AOR = 3.27, 95% CI [1.80, 5.95]). (19) In a facility-based cross-sectional study conducted in Jigjiga town, Somali region, adherence to iron supplementation was reported at 54.9%. Significant determinants of adherence included the number of ANC visits, women's education, knowledge about iron and folic acid supplementation, history of stillbirth, and age. (20)

A community-based cross-sectional study in Wolita, southern Ethiopia, revealed that 11.5% (95% CI = 9.9-13.1%) of participants adhered to iron supplementation for the recommended duration of three months or more. Factors associated with adherence included maternal education, the timing of antenatal care initiation, and awareness of the benefits of iron supplements. (21) In addition, a systematic review and meta-analysis

from 2019 reported a pooled adherence prevalence of 46% for iron supplementation in Ethiopia, with the highest rates found in Addis Ababa (60%) and Tigray (58.12%). Factors positively associated with adherence included knowledge about iron and folic acid (IFA) supplementation, early initiation of ANC, and guidance from healthcare providers. Fear of side effects and forgetfulness were identified as barriers to adherence. (22)

A cross-sectional study conducted in a governmental institution in Adwa, Tigray, found that adherence to iron/folic acid supplementation was 40.9%. Women in the age group of 25-29 who received partner support, had knowledge about iron and folic acid supplements, and received counseling from healthcare providers demonstrated higher odds of adherence. (23) In another facility-based cross-sectional study in the Simada district of northwest Ethiopia, the adherence rate for iron and folic acid supplementation was 67.6%. Significant factors associated with adherence were receiving counseling about the supplements and having a history of preterm delivery. (24)

3. OBJECTIVES

3.1 GENERAL OBJECTIVE:

- To assess the adherence to iron supplementation and the associated factors among ANC attendees at four selected health centers within the catchment area of Gandhi Memorial Hospital.

3.2 Specific objectives:

- To determine the level of adherence to iron supplementation among ANC attendees in the selected health centers.
- To identify factors associated with adherence to iron supplementation among ANC attendees in the selected health centers.
- To explore the potential reasons for non-adherence to iron supplementation among ANC attendees

4. Methodology

4.1 Study setting and design:

A facility-based cross-sectional study was conducted at four selected health centers located within the catchment area of Gandhi Memorial Hospital in Addis Ababa. Addis Ababa, the capital city of Ethiopia, spans 527 square kilometers and sits at an elevation of 2355 meters above sea level. As of 2023, the United Nations World Urbanization Projects estimates the city's population to be 5,460,591. Addis Ababa currently hosts over 13 hospitals and 98 health centers. Gandhi Memorial Hospital, managed by the Addis Ababa Health Bureau, oversees 13 health centers and reports the highest annual delivery rate, with approximately 8,000 births each year. These health centers provide comprehensive antepartum, intrapartum, and postpartum services, referring patients to Gandhi Memorial Hospital when necessary. The four health centers involved in the study—Nifas Silk Lafto Woreda 2 and 6 Health Center, Kebena Health Center, and Jagema Kelo Health Center—were selected based on their accessibility and patient volume.

4.2 Study population

The source population comprised pregnant women attending antenatal care at the selected health centers, while the study population consisted of the sampled antenatal care service users of the health centers.

Inclusion criteria: Pregnant women attending ANC services at the four selected health centers within the Gandhi Memorial Hospital catchment area during the data collection period (April 1 - May 30, 2024), who are able to provide consent. The study participants are selected based on random sampling.

Exclusion criteria: Pregnant women who are sick, those who began supplementation for other reasons prior to pregnancy, and individuals who do not provide consent.

4.3 Sample size:

The sample size was determined using the single population proportion formula, assuming a proportion of 60% adherence to iron supplementation and treatment during antenatal care based on findings from a previous study in Ethiopia. A margin of error (d) of 5% and a confidence level of 95% ($z\ \alpha/2 = 1.96$) were considered, along with a 10% non-response rate. With these parameters, the calculated sample size needed for the study was 410 participants.

$$n = Z\ (\alpha/2)^2\ p\ (1-p)$$

d^2

Where: n = sample size

p=proportion of estimated prevalence of variable under study

d=margin of error

Z= is the standard normal value at the level of confidence desired, at 95% confidence level

4.4 Sampling procedure**:**

For this study, four health centers were chosen, and the number of pregnant women sampled from each center was determined proportionally based on their average client size. Then, study participants at each facility were selected using simple random sampling over the data collection period, continuing until the required sample size for each center was achieved. This method ensured that each health center contributed proportionally to the overall sample size, maintaining representativeness across the study sites.

1. **Nifas silk lafto woreda 2 health center**
2. **Nifas silk lafto woreda 6 health center**
3. **Kebena health center**
4. **Jagema kelo health center**

4.5 Data collection procedures:

Data on adherence to iron supplementation and treatment, as well as the services provided to pregnant women attending ANC clinics at the selected health facilities, were gathered through exit interviews conducted after obtaining informed consent.

A questionnaire was developed in English based on a review of relevant literature. It was then translated into Amharic, the local language, and back-translated into English to ensure consistency and accuracy. Face-to-face interviews were conducted with pregnant women attending ANC clinics at the selected health facilities to administer the questionnaire. These interviews were carried out at three teaching hospitals as part of the data collection process.

The dependent variable: the adherence of pregnant women to iron supplementation and treatment.

The independent variable are categorized in to:

- Socio-demographic characteristics of clients: age, marital status, educational status, occupation, and monthly income
- Partner education, other family member with the highest education
- Knowledge about anemia and iron supplementation
- Health related factors: other chronic illnesses such as, Diabetes Mellitus, Hypertension, HIV, etc. and the use of medications.
- Current pregnancy related factors: gestational age (GA), parity, birth interval, number of ANC visits, and gestational age at the initiation of ANC.
- Past obstetric history: stillbirths, alive children, abortions, and obstetric complications.
- Supplement related factors: availability of drugs.
- Health provider related factors: counseling on IFA supplementation.

To ensure data quality, training was provided to four healthcare providers selected as data collectors. They have backgrounds in nursing and midwifery, with qualifications ranging from diploma to degree levels, and at least one prior experience in similar data collection at health facility levels. Data collectors were recruited locally, excluding those directly employed at the health facilities involved in the study.

After completing their ANC visits, potential participants were approached by data collectors who explained the study using an information sheet (Annex I) and obtained consent to review their ANC clinical records and conduct interviews.

Interviews were conducted privately using a questionnaire (Annex II), with trained collectors overseeing the data collection process. The principal investigator supervised the process, offering support, ensuring smooth communication, and following established data collection procedures. A pre-test involving 5% of the sample size (approximately 13 pregnant women who met the inclusion criteria) was carried out to refine the questionnaire.

Every day, data collectors reviewed completed questionnaires before participants left the setting, with the principal investigator making any necessary adjustments. The principal investigator also managed the overall coordination of the data collection process to ensure consistency and quality throughout the study.

4.6. Operational definitions

Adherence to Iron supplementation and treatment: is defined as taking the supplement on at least 65% of the recommended days, which translates to a minimum of four days per week over a three-month period. (3)

Knowledge of iron/folic acid supplementation: A mother is considered knowledgeable about iron/folic acid supplementation if she answers 'yes' to at least 66% of the questions (4 out of 6) assessing her knowledge. In contrast, she is classified as not knowledgeable if she answers 'yes' to 50% or fewer of the questions (less than 4 out of 6).

4.7. Data management

Confidentiality was prioritized in the handling of data. Upon completion of the data collection, the data was checked for completeness, and data entry and validity checks were performed using SPSS software version 23. Significant efforts were made to ensure data quality throughout the entire process, including the careful selection and training of data collectors, as well as the implementation of data quality checks during data collection, compilation, cleaning, and entry.

4.8 Data analysis procedure

Descriptive statistics were computed to evaluate the extent of iron supplement provision and treatment for pregnant women attending ANC clinics at the selected health centers. To examine the association between various independent variables and the outcome variable, bivariate analysis was conducted. Additionally, multiple logistic regression analysis was performed to identify the key predictors of adherence to iron supplementation and treatment while controlling for confounding factors.

4.9 Ethical consideration

The proposal was submitted to the DRPC for ethical approval, and ethical clearance was obtained from Addis Ababa public health and emergency management directorate. An official letter of cooperation was sent to the Addis Ababa health bureau and subsequently to the four selected health centers. All study participants were informed about the purpose of the research using the attached information sheet (Annex 1), and verbal consent was obtained before the interviews, with a one-page consent letter included at the cover page of each questionnaire, witnessed by the data collector (Annex 2). Participants were informed that the interview would take less than 30 minutes and that the questions were not part of their routine ANC

contact. They were also made aware of their right to decline participation or withdraw at any time, with assurance that their responses would remain confidential. Furthermore, the report was written in a way that did not identify any specific respondents.

5. RESULT

5.1 Sociodemographic characteristics of the study participants

In this study, 410 participants were included, achieving a response rate of 100%. Forty-one percent of the participants were in the 25-29 age group, with a mean age (± 1SD) of 27.9 years (± 4.78). Nearly all participants were married (n=399, 97.3%), and 35.4% (n=145) had completed secondary education. More than half of the participants (52.3%, n=214) were homemakers, while 40.2% (n=165) of their partners had attained secondary education. Approximately two-thirds of the participants (n=272) reported a household monthly income between 5000 and 10000 Ethiopian Birr (ETB).

Table 1. The sociodemographic characteristics of pregnant women at the four selected health centers from Gandhi memorial hospital catchment, Addis Ababa, Ethiopia, 2024

Variable	frequency	Percent
Age in years		
18-24	101	24.6
25-29	168	41.0
30-34	95	23.2
>=35	46	11.2
Marital status		
currently married	399	97.3
Divorced	2	.5
non married partner	9	2.2
level of education		
unable to read and write	34	8.3
able to read and write	16	3.9
primary school	97	23.7
secondary school	145	35.4
collage and above	118	28.8
current occupation		
house wife	214	52.2
daily laborer	10	2.4
government employee	46	11.2
private employee	137	33.4
Other	3	.7
Partner level of education		
unable to read and write	8	2.0
able to read and write	11	2.7
primary school	82	20.0
secondary school	165	40.2
collage and above	144	35.1
partner occupation		

Variable	frequency	Percent
daily laborer	55	13.4
government employee	74	18.0
private employee	281	68.5
Household monthly income in birr		
<5000	51	12.4
5000-10000	272	66.3
>10000	87	21.2

5.2 Obstetric characteristics of the study participants

Two-thirds of the study participants (n=285, 69.5%) were multigravida, and 5.1% (n=21) had a history of preterm birth. Approximately one-third of the participants (n=140, 34.1%) reported a history of abortion, with 80% of them having experienced only one abortion. Seventy-nine percent of participants (n=324) were in their third trimester of pregnancy, and 53.9% (n=165) had an interpregnancy interval of less than two years.

Eighty-one percent (n=332) began antenatal care in the second trimester. More than 5% of participants reported having a chronic disease, primarily retroviral infections (RVI), followed by hypertension. Among those with chronic illnesses, 68% were on medication, as detailed in Table 2 below.

Table 2. Obstetric characteristics of the study participants at the four selected health centers from Gandhi memorial hospital catchment, Addis Ababa, Ethiopia, 2024

Variable	frequency	Percent
Gravidity		
primigravida	104	25.4
Multigravida	285	69.5
grand multigravida	21	5.1
Parity(n=306)		
Nullipara	34	11.1
Primiparous	151	49.3
Multiparous	119	38.9
Grand multiparous	2	0.7
History of preterm birth		
Yes	21	5.1
No	389	94.9
History of abortion		
Yes	140	34.1
No	270	65.9
Number of abortions (n=140)		
One	112	80.0
Two	25	17.9
Three	3	2.1

Variable	frequency	Percent
Gestational age at interview		
2nd trimester	86	21
3rd trimester	324	79
Pregnancy interval in months (n=306)		
<=24	165	53.9
>24	141	46.1
Gestational age at ANC initiation in month		
<3	45	11
3-6	332	81
>6	33	8
Have any chronic disease		
Yes	22	5.4
No	388	94.6
Types of chronic illness (n=22)		
DM	1	4.5
HTN	4	18.2
RVI	16	72.8
Renal disease	1	4.5
Have used drug for chronic illness (n=22)		
Yes	16	72.7
No	6	27.2

5.3 Knowledge of the study participants on iron and folic acid supplementation

Eighty percent of the study participants (n=327) identified iron and folic acid (IFA) as supplementation, while 82.7% (n=339) were knowledgeable about the symptoms of anemia. Among these, 85.3% (n=289) identified dizziness as a symptom. Nearly 58% of the participants (n=236) understood the causes of anemia, with 83.5% (n=197) attributing it to an unbalanced diet and excessive bleeding.

Sixty percent (n=248) of participants were familiar with methods to prevent anemia. Among this group, 77.4% (n=194) suggested consuming iron-rich foods, avoiding coffee and tea after meals, and including vitamin C-rich fruits in their diet. Additionally, 34% of participants recognized the fetal effects of anemia, with 63% noting its potential to hinder fetal growth and development, while 26.8% mentioned the risk of reduced fetal weight.

Table 3. Knowledge of the study participants on iron and folic acid supplementation in pregnancy

Variable	frequency	Percent
Ever heard about IDA		
Yes	327	79.8
No	83	20.2
Know symptoms of anemia		

Variable	frequency	Percent
Yes	339	82.7
No	71	17.3
Types of anemia symptom (n=339)		
Pale face and/ OR palms	8	2.4
Dizziness	289	85.3
Easy fatigability	42	12.4
Do you Know the cause of anemia		
Yes	236	57.6
No	174	42.4
What are cause of anemia (n=236)		
Unbalanced diet	197	83.5
Over bleeding	20	8.5
Infection	3	1.3
Iron deficiency	16	6.8
Do you Know prevention of anemia		
Yes	248	60.5
No	163	39.5
The list of types of anemia prevention (n=248)		
Iron rich food	192	77.4
Avoiding post meal coffee and tea	7	2.8
Vitamin C rich fruits	49	19.8
does IFA prevent anemia		
Yes	281	68.5
No	24	5.9
i don't know	105	25.6
Do you know fetal effect of anemia		
Yes	138	33.7
No	272	66.3
The list of fetal effect of anemia (n=138)		
decreased growth and development	87	63
still birth	4	2.9
prematurity	10	7.3
low birth weight	37	26.8
Source of information		
health worker	251	61.2
Media	60	14.6
Friend	40	9.8
School	7	1.7
Other	52	12.7

5.4 Adherence of iron and folic acid supplementation

In this study, 263 (64%) of the study participants were adhering to iron/folate supplementation, with a 95% confidence interval of (59.48, 68.81).

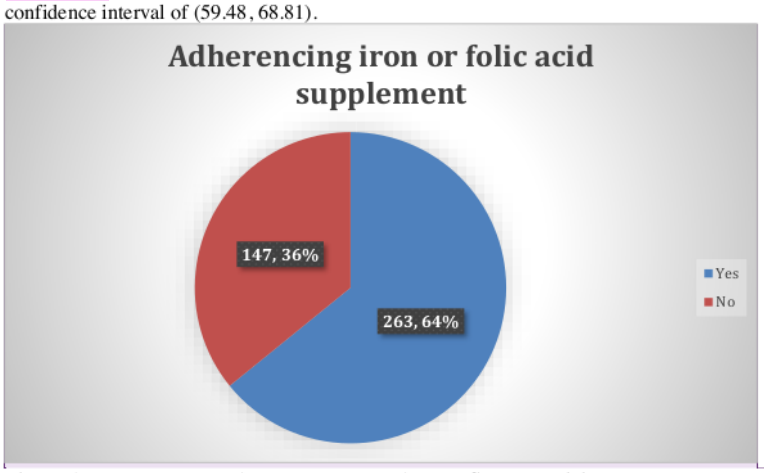

Figure 1. Iron and Folate Adherence Levels Among Study Participants

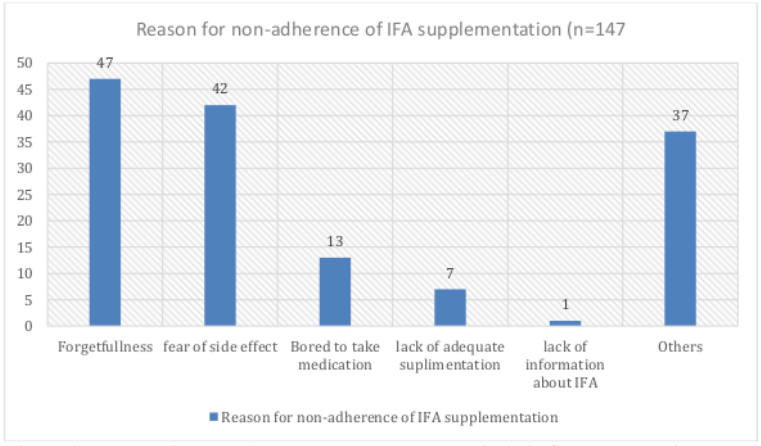

Figure 2. Reasons for Non-Adherence to Iron and Folic Acid Supplementation

Commented [1]: title should be edited, spelling error

Ninety-seven percent of the study participants were taking IFA supplementation. Among these, 64.1% (n=255) had been supplementing for three months, and 90.5% (n=360) reported taking it daily.

Table 4. Iron/folate supplementation adherence related characteristics of the study participants

Variable	frequency	Percent
Take IFA supplementation		
Yes	398	97.1
No	12	2.9
Duration of supplementation (n=398)		
one month	42	10.6
two months	78	19.6
three months	255	64.1
four months	23	5.8
Frequency of taking the supplement (n=398)		
Daily	360	90.5
Weekly	1	.3
4 times per week	18	4.5
less than 3 times per week	19	4.8

5.5 The determinant factors of associated with adherence to IFA supplementation

5.5.1 Bivariate logistic regression analysis of IFA supplementation adherence

The study identified multiple factors influencing adherence to iron and folic acid (IFA) supplementation among pregnant women. Bivariate logistic regression analysis revealed that educational level, partner's occupation, gestational age at the initiation of antenatal care, presence of chronic illness, knowledge of anemia symptoms, and awareness of anemia prevention were significant predictors of IFA adherence.

Table 5. Bivariate logistic regression of the association between independent variables and IFA supplementation adherence among pregnant women in the four selected health centers of GMH catchment, Addis Ababa, Ethiopia, 2024.

Variable	Adherence IFA supplement		p-value	COR with 95%CI
	yes	No		
Age in years				
18-24	61	40	1	
25-29	106	62	0.659	1.1(0.77, 1.86)
30-34	67	28	0.238	1.6(0.87, 2.84)
≥35	29	17	0.760	1.2(0.54, 2.29)
Level of education				
Unable to read and write	17	17	1	
Able to read and write	12	4	0.102	3.0(0.80, 11.19)

Variable	Adherence IFA supplement		p-value	COR with 95%CI
	yes	No		
Primary	52	45	0.717	1.2(0.53, 2.53)
Secondary	98	47	0.057	2.1(0.98, 4.44)
Collage and above	84	34	0.023	2.5(1.13, 5.39)
Participant occupation				
House wife	128	86	1	
Daily laborer	5	5	0.539	0.67(0.19, 2.39)
Government employee	32	14	0.239	1.5(0.77, 3.05)
Private employee	95	42	0.271	1.5(0.96, 2.39)
others	3	0		
Partner education level				
Unable to read and write	5	3	1	
Able to read and write	3	8	0.254	0.23(0.03, 1.58)
Primary	47	35	0.777	0.81(0.18, 3.59)
Secondary	111	54	0.779	1.2(0.28, 5.35)
Collage and above	97	47	0.776	1.3(0.28, 5.40)
Partner occupation				
Daily laborer	25	30	1	
Government employee	48	26	0.029	2.2(1.08, 4.52)
Private employee	190	91	0.002	2.5(1.39, 4.51)
Monthly income in birr				
<5000	37	14	1	
5000-10000	166	106	0.421	0.59(0.31, 1.15)
>10000	60	27	0.657	0.84(0.39, 1.81)
Gravidity				
Primigravida	66	38	1	
Multigravida	184	101	0.841	1.1(0.66, 1.67)
Grand multigravida	13	8	0.893	0.94(0.36, 2.46)
History of abortion				
Yes	89	51	1	
No	174	96	0.861	1.1(0.88, 1.59)
Gestational age				
2nd trimester	45	41	1	
3rd trimester	218	106	0.011	1.9(1.16, 3.04)
Inter-pregnancy interval in month				
≤24	100	65	1	
>24	97	44	0.137	1.4(0.89, 2.30)
Gestational age of ANC initiation in month				
<3	28	17	0.026	2.9(1.14, 7.31)
3-6	223	106	0.001	3.6(1.69, 7.54)
>6	12	21	1	
Have chronic disease				
Yes	6	16	0.001	0.19(0.07, 0.50)
No	2578	131	1	
Have you heard about IDA				
Yes	215	112	0.180	1.4(0.86, 2.29)

Variable	Adherence IFA supplement		p-value	COR with 95%CI
	yes	No		
No	48	35	1	
Know symptom of anemia				
Yes	229	110	0.002	2.3(1.35, 3.80)
No	34	37	1	
Know prevention of anemia				
Yes	173	75	0.004	1.8(1.22, 2.79)
No	90	72	1	

5.5.2 **Multivariate logistic regression analysis of IFA supplementation adherence**

Multivariate logistic regression analysis indicated that participants with a college education or higher were 1.7 times more likely to adhere to IFA supplementation than those who were illiterate (AOR=1.7, 95% CI=1.59-4.99). Furthermore, those who initiated antenatal care in the second trimester had a 3.9-fold higher likelihood of IFA adherence compared to those who started in the third trimester (AOR=3.9, 95% CI=1.65-8.96).

Conversely, participants with chronic diseases were 71% less likely to adhere to IFA supplementation compared to those without chronic illnesses (AOR=0.29, 95% CI=0.09-0.89). In addition, those who had knowledge of anemia prevention were 1.7 times more likely to adhere to IFA supplementation than those who did not (AOR=1.7, 95% CI=1.49-3.19). These findings underscore the importance of educational interventions and early ANC initiation in promoting adherence to IFA supplementation during pregnancy. They also highlight the barriers posed by chronic illness and the critical role of knowledge in preventive healthcare behaviors.

Table 6. Multivariate logistic regression of the association between independent variables and IFA supplementation adherence among pregnant women in the four selected health centers of GMH catchment, Addis Ababa, Ethiopia, 2024.

Variable	Adherence of IFA supplement		P-value	AOR with 95%CI
	Yes	No		
Level of education				
Unable to read and write	17	17	1	
Able to read and write	12	4	0.443	1.7(0.42, 7.30)
Primary	52	45	0.936	0.96(0.38, 2.44)
Secondary	98	47	0.714	1.2(0.45, 3.24)
Collage and above	84	34	0.032	**1.7(1.59, 4.99)**
Partner occupation				
Daily labourer	25	30	1	

Variable	Adherence of IFA supplement		P-value	AOR with 95%CI
	Yes	No		
Government employee	48	26	0.759	1.2(0.42, 3.27)
Private employee	190	91	0.267	1.6(0.72, 3.36)
Gestational age				
2nd trimester	45	41	1	
3rd trimester	218	106	0.107	1.6(0.89, 3.02)
Inter-pregnancy interval in month				
≤24	100	65	1	
>24	97	44	0.373	1.3(0.75, 2.12)
Gestational age of ANC initiation in month				
<3	28	17	0.106	2.6(0.82, 7.96)
3-6	223	106	0.002	**3.9(1.65, 8.96)**
>6	12	21	1	
Have chronic disease				
Yes	6	16	0.031	**0.29(0.09, 0.89)**
No	2578	131	1	
Have you heard about IDA				
Yes	215	112	0.919	0.96(0.44, 2.12)
No	48	35	1	
Know symptom of anemia				
Yes	229	110	0.368	1.5(0.62, 3.61)
No	34	37	1	
Know prevention of anemia				
Yes	173	75	0.026	**1.7(1.49, 3.19)**
No	90	72	1	

6. DISCUSSION

INSTEAD OF USING RATE IT IS APPROPRIATE TO USE PREVALENC…. RATE HAS TIME IMPLICATION

Adherence to iron and folic acid (IFA) supplementation among pregnant women attending antenatal care in urban Ethiopia was 64%. This finding is comparable to previous studies in different urban locations in Ethiopia, such as Addis Ababa Gulele sub-city (62.3%), Felege Hiwot Hospital in Bahir Dar (67.4%), Sire district primary health facilities (59.4%), and Simada district in northwest Ethiopia (67.6%) respectively. (15, 16, 18, 24) In comparison, the adherence proportion observed in this study is significantly higher than those found in other regions and countries. For instance, Uganda has an adherence rate of 12%, multiple sub-Saharan African countries report 28.7%, Lay Armachiho district in northwest Ethiopia shows 28.7%, Debre Tabor general hospital in western Ethiopia has 44%, the Somali region of Jigjiga town records 54.9%, Wolaita in southern Ethiopia is at 11.5%, a systematic review in Ethiopia indicates 46%, and Tigray, Adwa, shows 40.9%. (13, 14, 17, 19, 20, 21, 22, 23)

The variations in adherence rates across studies can be attributed to several factors. Differences in sample sizes, study durations, and methodologies can all impact the reported rates. Additionally, social desirability bias may lead participants to overestimate their adherence due to societal expectations, affecting the reliability of the findings. Access to healthcare services for obtaining necessary supplements, along with the quality of counseling and follow-up from healthcare providers, are also key factors influencing adherence. Furthermore, cultural beliefs and perceptions surrounding pregnancy and supplement use, concerns about potential side effects, personal motivations, and beliefs about the benefits of supplementation, as well as varying levels of support from family, community health workers, and healthcare providers, play a significant role in these observed differences.

The study identified common reasons for non-adherence to IFA supplementation, including forgetfulness, fear of side effects, and lack of interest in taking medication. These findings are consistent with research conducted in other locations, such as Yaoundé, which also highlights the difficulties faced by pregnant women, especially those balancing work and childcare, in maintaining adherence to supplementation schedules. (12) Multivariate logistic regression analysis revealed several factors associated with higher adherence rates among participants. Women with a college education or higher were 1.7 times more likely to adhere to IFA supplementation than those with lower educational levels (AOR=1.7, 95% CI=1.59-4.99). This finding reinforces previous research in urban Ethiopia, indicating that higher education improves health literacy and enhances understanding of the benefits of IFA in preventing anemia and supporting fetal development. (15, 17)

Participants who began their ANC visits in the second trimester were 3.9 times more likely to adhere to IFA supplementation than those who started in the third trimester (AOR=3.9, 95% CI=1.65-8.96). Early initiation of ANC allows healthcare providers to educate pregnant women on the significance of IFA supplementation, potentially enhancing adherence by raising awareness of its benefits in preventing anemia-related complications. (19)

In contrast, participants with chronic diseases were 71% less likely to adhere to IFA supplementation compared to those without such conditions (AOR=0.29, 95% CI=0.09-0.89). This finding aligns with findings from previous studies in Addis Ababa's Gulele sub-city, showing women with other health problem during the current pregnancy had significant association with ~~non adherence~~non-adherence (AOR 2.59, 95% CI= 1.59-4.32) which indicated that managing multiple medications for chronic illnesses might hinder adherence to IFA supplementation. (15)

Finally, participants with knowledge about anemia prevention were 1.7 times more likely to adhere to IFA supplementation (AOR=1.7, 95% CI=1.49-3.19). This finding underscores the positive impact of health education, as seen in studies at Felege Hiwot Hospital in Bahir Dar (AOR 2.03, 95% CI=1.21-4.34) and Debre Tabor General Hospital in West Ethiopia (AOR 2.04, 95% CI=1.12-3.75). In these studies, increased awareness of the benefits of IFA encouraged women to incorporate supplementation into their prenatal care routines. (16, 19)

7. Conclusion

In this study, 64% of participants adhered to iron/folate supplementation. Reasons for non-adherence included forgetfulness, fear of side effects, and boredom with taking medication. The determinant factors influencing adherence to IFA supplementation were:

1. **Education Level**: Participants with a college education or higher were 1.7 times more likely to adhere to IFA supplementation than those who were illiterate (AOR=1.7, 95% CI=1.59-4.99). This emphasizes the crucial role of education in enhancing health literacy and understanding the importance of supplementation during pregnancy.
2. **ANC Initiation**: Women who began ANC visits in the second trimester were 3.9 times more likely to adhere to IFA compared to those who started in the third trimester (AOR=3.9, 95% CI=1.65-8.96). Early initiation of ANC provides healthcare providers with an opportunity to educate pregnant women about the benefits of IFA supplementation, potentially increasing adherence.

3. **Chronic Disease**: Participants with chronic diseases were 71% less likely to adhere to IFA supplementation compared to those without such conditions (AOR=0.29, 95% CI=0.09-0.89). The need to manage multiple medications for chronic illnesses may contribute to this reduced adherence.
4. **Knowledge of Anemia Prevention**: Women knowledgeable about anemia prevention were 1.7 times more likely to adhere to IFA supplementation (AOR=1.7, 95% CI=1.49-3.19). This finding highlights the importance of health education in empowering women to prioritize IFA supplementation as part of their prenatal care routine.

These findings emphasize the multifaceted nature of factors influencing adherence to IFA supplementation among pregnant women. Addressing educational disparities, promoting early and comprehensive ANC visits, providing tailored support for women with chronic illnesses, and enhancing health literacy about anemia prevention are crucial steps toward improving adherence rates and subsequently maternal and fetal health outcomes. Future interventions should consider these determinants to develop effective strategies aimed at optimizing IFA supplementation adherence in similar settings.

8. RECOMMENDATION

Based on the findings and discussions from this study on iron/folate supplementation adherence among pregnant women, the following recommendations are proposed to improve adherence rates and enhance maternal and fetal health outcomes:

1. **Early Initiation of ANC Visits**: ~~Encourage healthcare providers to advocate~~ Increasing community awareness on ~~for the~~ early initiation of antenatal care ~~visits~~as early as ~~, preferably in~~ the first trimester. Early engagement enables timely counseling on the significance of iron/folate supplementation, which can enhance adherence rates.
2. **Integration of Chronic Disease Management**: Investigate underlying causes of the low adherence of iron supplementation among ~~Develop integrated care protocols that combine~~ patients with chronic disease ~~management with prenatal care~~. At the same time, inform ~~Provide clear guidance to~~ healthcare providers to ~~on managing multiple medication regimens,~~ include ~~ing~~ iron/folate supplementation use with the other drugs patient with pregnant women are taking. ~~, to reduce barriers to adherence among pregnant women with chronic illnesses.~~
3. ~~—~~**Research and Evaluation**: Conduct further research to explore additional factors influencing adherence to iron/folate supplementation, especially in diverse socio-cultural contexts,

includingand among women with chronic illnesses. Evaluate the effectiveness of implemented interventions to continuously improve strategies aimed at enhancing adherence rates.

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INFORMATION SHEET AND CONSENT FROM

Research Project: assessment of adherence to iron/folate supplementation and treatment among pregnant women at three teaching hospitals of Addis Ababa, Ethiopia.

Name of Principal Investigator: Betelhem Taddesse

Introduction

This information sheet and consent form is prepared by the investigator whose main aim is to study the level of adherence to iron/folate supplementation and treatment among pregnant women and factors associated with it. The investigator is a gynecology and obstetrics resident at Black Lion specialized comprehensive hospital.

Purpose: to determine the level of adherence to iron supplement and treatment among pregnant women and factors associated with it.

Procedures: you are kindly invited to take part in our research because we believe you can provide the necessary information for the research. Participation in the study is on a voluntary basis. If you are willing to participate in our project, you need to understand and sign the consent form. Then, you will be asked to give your response by the data collectors. All the responses given by the participants and the results obtained will be kept anonymous and confidential. No one outside the research team will have access to your responses.

Risk and/or Discomfort: since you just came out of the ANC clinic you might feel a little exhausted to be asked again.

Benefits: the research will help us to know the level of adherence to iron supplement and treatment among pregnant women and factors associated with it to determine the possible mitigation to reduce anemia and ultimately maternal death.

Confidentiality and Anonymity: The information that we will collect from this research project will be kept confidential. Information about you that will be collected from the study will be stored in a file, which will not have your name on it, and it will not be revealed to anyone except the principal investigator.

Right to Refuse or Withdraw: you have the full right to refuse from participating in this research (you can choose not to respond to some or all of the questions) if you do not wish to participate; and this will not affect you. You also have the full right to withdraw from this study at any time you wish to, without losing any of your rights as a resident of this site.

If you agree to participate in this study, I appreciate your truthfulness. And after having this consent form read to you, please put a sign below to show if you are willing to participate (No need of writing your name).

Are you willing to participate in this study?

Yes [ ] No [ ]

DATA COLLECTION TOOL/QUESTIONNAIRE/

Socio-demographic and economic characteristics

S.NO	Question	Response
	How old are you?	…….. Years
	What is your marital status?	Currently Married Never married Widowed Divorced Non married partner
	What is your level of Education?	Unable to read and write Able to read and write Primary school Secondary school Collage and above
	What is your current occupation?	House wife Daily laborer Government employee Private employee Other(specify)……
	What is your husband/partner level of education?	Unable to read and write Able to read and write Primary school Secondary school Collage and above
	What is your husband/partner's current occupation?	Daily laborer Government employee Private employe Other specify
	Average monthly income?	…… Ethiopian birr

Reproductive and obstetrics history

S.NO	Question	Response
	How many pregnancies have you had?	……..

	How many deliveries did you have?	……..
	Number of alive birth	……..
	Do you have history of stillbirth	Yes No
	If yes, how many?	…….
	Do you have a history of abortion?	yes no
	If yes how many	…….
	Gestational age	1st trimester 2nd trimester 3rd trimester
	Inter pregnancy interval (from end of a previous pregnancy to beginning of current pregnancy)	……months
	GA or month of pregnancy when ANC contact initiated	…….. weeks
	number of ANC contact	…… visits
	Any known Chronic medical illness	Yes No
	If yes what is the illness (multiple answers possible)	cardiac illness diabetes hypertension RVI Renal illness Cancer
	Any Use of drugs for medical illness	Yes No

Knowledge on anemia and its prevention

S.NO	Question	Answer
	Have you heard about Iron deficiency anemia(IDA)	Yes No

	Do you know symptoms of anemia	Pale face and palms Dizziness Easy fatigability I don't know
	Do you know causes of anemia	Unbalanced diet Over bleeding Infections Iron/folate deficiency I don't know
	Do you know how to prevent anemia	Iron rich food Avoiding post meal tea and coffee Vitamin C rich fruits I don't know
	Does IFA supplementation prevent anemia	Yes No I don't know
	Do you know effects of anemia(multiple answers possible)	decreased growth and development still birth prematurity low birth weight I don't know
	What is your source of information	Health worker Media Friend school other…….

Iron/folate supplementation adherence related factors

S.NO	Question	Response
	Did you take an iron/folate supplement for current pregnancy?	Yes No
	For how long did you take the supplement?	One month Two month Three month Other (specify)
	How did you take the supplement	Daily Weekly 4 times per week Less than 3 times per week
	If you are taking less than 4 times per week what was reason for non-adherence	Fear of side effect Forgetfulness Bored to take medication Lack of adequate supplement in health facility Lack of information about IFA

		Unpleasant tests Too many pills Other (specify)

የመረጃ ወረቀት እና ስምምነት

የምርምር ፕሮጀክት፡- በነፍሰ ጡር እናቶች ላይ የብረት ማሟያ እና ህክምናን በጥብቅ መከተል በአዲስ አበባ፣ ኢትዮጵያ ሶስት የማስተማሪያ ሆስፒታሎች ግምገማ።

የዋና መርማሪ ስም፡- ቤተልሄም ታደሰ

መግቢያ

ይህ የመረጃ ወረቀት እና የስምምነት ፎርም የሚዘጋጀው በመርማሪው ነው ዋናው አላማው በነፍሰ ጡር ሴቶች መካከል ያለውን የብረት ማሟያ እና ህክምናን ደረጃ እና ከእሱ ጋር የተያያዙ ጉዳዮችን ማጥናት ነው። መርማሪው በጥቁር አንበሳ ስፔሻላይዝድ አጠቃላይ ሆስፒታል የማህፀንና የጽንስና ህክምና ነዋሪ ነው።

ዓላማው፡- በነፍሰ ጡር ሴቶች መካከል የብረት ማሟያ እና ህክምናን እና ከእሱ ጋር ተያያዥነት ያላቸውን ነገሮች የመጠበቅ ደረጃን ለመወሰን

የአሰራር ሂደት፡- ለምርምሩ አስፈላጊውን መረጃ መስጠት ትችላላችሁ ብለን ስለምናምን በጥናታችን እንድትሳተፉ በአክብሮት ተጋብዘዋል። በጥናቱ ውስጥ መሳተፍ በፈቃደኝነት ላይ የተመሰረተ ነው. በፕሮጀክታችን ውስጥ ለመሳተፍ ፍቃደኛ ከሆኑ፣ የስምምነት ቅጹን መረዳት እና መፈረም አለብዎት። ከዚያ፣ ምላሽዎን በመረጃ ሰብሳቢዎች እንዲሰጡ ይጠየቃሉ። በተጎታፊዎች የተሰጡ ሁሉም ምላሾች እና የተገኙ ውጤቶች በሚይታወቁ እና በሚስጥር ይያዛሉ. ማንም ከምርምር ቡድን ውጭ የእርስዎን ምላሾች ማግኘት አይችልም።

ስጋት እና/ወይም ምቾት፡ ከኤኤንሲ ከሊኒክ ስለወጡ እንደገና ለመጠየቅ ትንሽ ድካም ሊሰማዎት ይችላል።

ጥቅማ ጥቅሞች፡- ጥናቱ በነፍሰ ጡር እናቶች መካከል ያለውን የብረት ማሟያ እና ህክምናን ደረጃ ለማወቅ ይረዳናል እና ከሱ ጋር ተያያዥነት ያላቸው ነገሮች የደም ማነስን እና በመጨረሻም የእናቶች ሞትን ለመቀነስ የሚቻልበትን ሁኔታ ለመወሰን ይረዱናል።

ምስጢራዊነት እና ማንነትን መደበቅ፡- ከዚህ የምርምር ፕሮጀክት የምንሰበስበው መረጃ በሚስጥር ይጠበቃል። ከጥናቱ የሚሰበሰበው ስለእርስዎ መረጃ በፋይል ውስጥ ይከማቻል። ስምዎ በእሱ ላይ አይኖረውምና ከዋናው መርማሪ በስተቀር ለማንም አይገለጽም።

እምቢ የማለት ወይም የመውጣት መብት፡- በዚህ ጥናት ውስጥ ላለመሳተፍ ሙሉ መብት አለህ (ለጥያቄዎቹ ጥቂቱን ወይም ሁሉንም ምላሽ ላለመስጠት መምረጥ ትችላለህ) መሳተፍ ካልፈለጉ ይህ እርስዎን አይነካዎትም። እንዲሁም የዚህ ድረ-ገጽ ነዋሪ እንደመሆንዎ መጠን ምንም አይነት መብትዎን ሳያጡ ከዚህ ጥናት በማንኛውም ጊዜ የመውጣት ሙሉ መብት አለዎት።

በዚህ ጥናት ላይ ለመሳተፍ ከተስማሙ፡ እውነትነትዎን አደንቃለሁ። እና ይህ የስምምነት ቅጽ ከተነበበላችሁ በኋላ፣ ለመሳተፍ ፈቃደኛ መሆንዎን (ስምዎን መጻፍ አያስፈልግም) እባክዎን ከዚህ በታች ምልክት ያድርጉ።

በዚህ ጥናት ለመሳተፍ ፈቃደኛ ነህ?

አዎ [ ] አይ [ ]

የመረጃ መሰብሰቢያ መሳሪያ/መጠይቅ/

I. ማህበራዊ ስነ-ሕዝብ እና ኢኮኖሚያዊ ባህሪያት

ተ.ቁ.	ጥያቄ	ምላሽ
1.	ስንት አመትዎት ነው?	..... ዓመት
2.	የጋብቻ ሁኔታዎ ምን ምንድን ነው?	1. በአሁኑ ጊዜ ባለትዳር 2. በጭራሽ አላገባም 3. ባል የሞተባት 4. የተፋታ 5. ያላገባ የትዳር ጓደኛ
3.	የትምህርት ደረጃዎ ስንት ነው?	1. ማንበብ እና መጻፍ የማይችል 2. ማንበብ እና መጻፍ የሚችል 3. የመጀመሪያ ደረጃ ትምህርት ቤት 4. ሁለተኛ ደረጃ ትምህርት ቤት 5. ኮላጅ እና ከዚያ በላይ
6.	አሁን ያሉበት ሙያ ምንድን ነው?	1. የቤት እመቤት 2. የቀን ሰራተኛ 3. የመንግስት ሰራተኛ 4. የግል ሰራተኛ 5. ሌላ (ይግለጹ).....

7.	ባለቤትዎ/የጓደኛዎ የትምህርት ደረጃ ምን ያህል ነው?	ሀ. ማንበብ እና መጻፍ የማይችል 2. ማንበብ እና መጻፍ የሚችል 3. የመጀመሪያ ደረጃ ትምህርት ቤት 4. ሁለተኛ ደረጃ ትምህርት ቤት 5. ኮላጅ እና ከዚያ በላይ
8.	የእርስዎ ባል/ባልደረባ አሁን ያለው ሥራ ምንድነው?	1. የቀን ሰራተኛ 2. የመንግስት ሰራተኛ 3. የግል ሰራተኛ 4. ሌሎች ይግለጹ
9.	አማካይ ወርሃዊ ገቢዎ?	..... የኢትዮጵያ ብር

II. የመራቢያ እና የወሊድ ታሪክ

ተ.ቁ	ጥያቄ	ምላሽ
1.	ስንት እርግዝና ነበርዎት?	…….
2.	ስንት ወሊድ ነበሩዎት?	…….
3.	በህይወት ያለ የልጅ ቁጥር	……..
4.	ያለ ጊዜ የመወለድ ታሪክ አለ?	1. አዎ 2. አይ
5.	አዎ ከሆነ ስንት ነው?	……
6.	የፅንስ ማቋረጥ ታሪክ አለ?	1. አዎ 2. አይ
7.	አዎ ከሆነ ስንት	

		……
8.	የእርግዝና ጊዜ(የአሁን እርግዝና ወር)	ı. ı ኛ አጋማሽ 2. 2 ኛ አጋማሽ 3. 3 ኛ አጋማሽ
9.	የኢንተር እርግዝና ልዩነት (ከቀድሞው እርግዝና መጨረሻ እስከ የአሁኑ እርግዝና መጀመሪያ ድረስ)	…… ወራት ወይም አመት……
10.	የ እርግዝና ክትትል ማንኑነት ሲጀመር GA ወይም የእርግዝና ወር	…… ወር
11.	የእርግዝና ክትትል ማንኑነት ቁጥር	…… ጉብኝቶች
12.	ማንኛውም የታወቀ ሥር የሰደደ የሕክምና ሕመም	ı. አዎ 2. አይ
13.	አዎ ከሆነ በሽታው ምንድን ነው (በርካታ መልሶች ይቻላል)	ı. የልብ ሕመም 2. የስኳር በሽታ 3. የደም ግፊት 4. RVI 5. የኩላሊት በሽታ 6. ካንሰር
14.	ለህክምና በሽታዎች ማንኛውንም መድሃኒት መጠቀም	ı. አዎ 2. አይ

III. ስለ ደም ማነስ እና መከላከያው እውቀት

ተ.ቁ.	ጥያቄ	ምላሽ
1.	ስለ ብረት እጥረት የደም ማነስ (IDA) ሰምተሃል	ነ. አዎ 2. አይ
2.	የደም ማነስ ምልክቶችን ያውቃሉ?	ነ. የገረጣ ፊት እና መዳፍ 2. ማዞር 3. ቀላል መዳከም 4. አላውቅም
3.	የደም ማነስ መንስኤዎችን ያውቃሉ?	ነ. ሚዛናዊ ያልሆነ አመጋገብ 2. ከደም መፍሰስ በላይ 3. ኢንፌክሽኖች 4. የብረት / ፎሌት እጥረት 5. አላውቅም
4.	የደም ማነስን እንዴት መከላከል እንደሚችሉ ያውቃሉ?	ነ. የተመጣጠነ ምግብ 2. ከምግብ በኋላ ሻይ እና ቡናን ማስወገድ 3. በቫይታሚን ሲ የበለጸጉ ፍራፍሬዎች 4. አላውቅም
5.	የ አይረን ማሟያ የደም ማነስን ይከላከላል?	ነ. አዎ 2. አይ 3. አላውቅም
6.	የደም ማነስ ፅንስ ላይ የሚያመጣውን ችግር ያውቃሉ (ብዙ መልሶች ሊኖሩ ይችላሉ)	ነ. የእድገት እና የእድገት መቀነስ 2. ገና መወለድ 3. ያለጊዜው 4. ዝቅተኛ የልደት ክብደት 5. አላውቅም

7.	የመረጃ ምንጭ ምንድን ነው?	ሀ. የጤና ሰራተኛ 2. ሚዲያ 3. ጓደኛ 4. ትምህርት ቤት 5. ሌላ .....

IV. ከብረት/ ፎሌት ማሟያ ጋር ተያያዥነት ያለው ነገርን ማከበር

ተ.ቁ.	ጥያቄ	ምላሽ
1.	ለአሁኑ እርግዝና የብረት ፎሌት ማሟያ ወስደዋል?	ሀ. አዎ 2. አይ
2.	ተጨማሪውን ለምን ያህል ጊዜ ወስደዋል?	ሀ. አንድ ወር 2. ሁለት ወር 3. ሶስት ወር 4. ሌላ (ይግለጹ)
3.	ተጨማሪውን እንዴት እንደወሰዱት	ሀ. በየቀኑ 2. በየሳምንቱ 3. 4 ጊዜ በሳምንት 4. በሳምንት ከ 3 ጊዜ ያነሰ

4.	በሳምንት ከ 4 ጊዜ ያነሰ የሚወስዱ ከሆነ ያለመታዘዝ ምክንያት ምን ነበር	1. የጎንዮሽ ጉዳቶችን መፍራት 2. መርሳት 3. መድሃኒት ለመውሰድ ሰልችቶታል 4. በጤና ተቋማት ቡቂ ማማያ እጥረት 5. ስለ IFA መረጃ እጥረት 6. ደስ የማይል መከራዎች 7. በጣም ብዙ እንክብሎች 8. ሌላ (ይግለጹ)

ASSESSMENT OF ADHERENCE TO IRON – FOLIC ACID SUPPLEMENTATION AMONG PREGNANT WOMEN AT SELECTED HEALTH CENTERS OF GANDHI MEMORIAL HOSPITAL CATCHMENTS, ADDIS ABABA ETHIOPIA; CROSS SECTIONAL STUDY 2023/24

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