WOLKITE UNIVERSITY

COLLEGE OF HEALTH SCIENCES AND MEDICINE

DEPARTMENT OF PUBLIC HEALTH

ADHERENCE TO PRENATAL IRON-FOLIC ACID SUPPLEMENTATION AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN IN ENOR DISTRICT: COMMUNITY BASED CROSS-SECTIONALSTUDY

INVESTIGATED BY

AYELE MELIS (BSC.)

THESIS REPORT SUBMITTED TO THE DEPARTMENT OF PUBLIC HEALTH, COLLEGE OF HEALTH SCIENCES AND MEDICINE, WOLKITE UNIVERSTIY, IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS MASTER OF PUBLIC HEALTH (MPH) IN PUBLIC HEALTH NUTRITION.

DECEMBER/2023

WOLKITE, ETHIOPIA

Wolkite University

College Of Health Sciences and Medicine

Department Of Public Health

Adherence to Prenatal Iron-Folic Acid Supplementation and Associated Factors among Pregnant Women in Enor District: Community Based Cross-Sectional Study

Thesis Report Submitted To The Department Of Public Health, College Of Health Sciences And Medicine, Wolkite University, In Partial Fulfillment For The Requirements Master Of Public Health (MPH) In Public Health Nutrition.

Investigated By

Ayele Melis (Bsc.)

Advisors

1. **Mr.Samuel Dessu (Assistant Professor of Epidemiology and Biostatistics)**
2. **Mr. Abdurezak Kemal (Bsc, MPH)**

December/2023

Wolkite, Ethiopia

APPROVAL SHEET

WOLKITE UNIVERSITY

SCHOOL OF POST GRADUATE STUDIES

We here by certify that we have read and evaluated this Thesis entitled "Adherence to prenatal iron-folic acid supplementation and associated factors among pregnant women in Enor district, SNNPR, Ethiopia 2023: community based cross-sectional study" prepared under our guidance by Ayele Melis Gebremichael. We recommend that the Thesis shall be submitted as fulfilling the requirements for the award of MPH degree in Public Health Nutrition.

Samuel Dessu (Assistant Professor) _____ _____

Major Advisor Signature Date

Abdurezak Kemal (Bsc, MPH) _____ _____

Co-Advisor Signature Date

As members of the Board of Examiners of the MPH Thesis Open Defense Examination, we have read and evaluated this Thesis prepared by Ayele Melis Gebremichael and examined the candidate. We here by certify that, the thesis is accepted for fulfilling the requirements for the award of MPH degree in Public Health Nutrition.

1. _____ _____ _____

External Examiner Signature Date

2. _____ _____ _____

Internal Examiner Signature Date

3. _____ _____ _____

Chairperson Signature Date

4. _____ _____ _____

SGS Approval Signature Date

Final approval and acceptance of the Thesis is contingent upon the submission of its final copy to the Council of Post Graduate Studies (CPGS) through the candidate's department or school graduate committee (DGC or SGC).

Stamp of SGS Date: _____

DECLARATION

I, the undersigned, declare that this MPH thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

Name: Ayele Melis Signature: _____

This MPH thesis has been submitted for examination with our approval as thesis advisors.

Name: Mr. Samuel Dessu (Assistant Professor) Signature: 

Name: Mr. Abdurezak Kemal (Bsc, MPH)Signature: _____

Place and Date of Submission: Wolkite, 20/12/2023

ACKNOWLEDGEMENT

First of all my gratitude goes to Wolkite University College of medicine and health sciences, department of public health for giving the opportunity to do my research thesis. Secondly I would like to forward my deepest appreciation and thanks to my advisors Mr.Samuel.D (Assistant Professor of Epidemiology and Biostatistics) and Mr.Abdurezak.K (Bsc, MPH) for their unreserved and constructive comments and guidance to do this research thesis. Thirdly I would like to appreciate and give huge thanks to Enor district health office, my data collectors and the study participants for their cooperation and tremendous effort and support to do this thesis.

ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CBN	Community Based Nutrition
CI	Confidence Interval
COR	Crude Odds Ratio
CSA	Central Statistical Agency
EC	Ethiopian Calendar
EDHS	Ethiopian Demographic and Health Survey
FDRE	Federal Democratic Republic of Ethiopia
FMOH	Federal Ministry of Health
Hgb	Hemoglobin
HMIS	Health Management and Information System
HSTP	Health Sector Transformation Plan
IDA	Iron Deficiency Anemia
IFA	Iron and Folic Acid
IFAS	Iron Folic acid Supplementation
IHRERC	Institutional Health Research Ethics Review Committee
NNP	National Nutrition Programme
OR	Odd Ratio
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNICEF	United Nations Children‘s Fund
WKU	Wolkite University

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Introduction: Iron and folic acid supplementation is the most widely employed strategy to alleviate iron deficiency anemia and neural tube defects. Adherence to iron and folic acid is crucial for the prevention of birth defect and anemia during pregnancy. In Ethiopia, the national data suggests that from all pregnant women supplemented with IFA tablets only 0.4% consumed more than 90 tablets during their pregnancy time. The factors for this low adherence are not clearly known.

Objective: To assess adherence to prenatal iron folic acid supplementation and associated factors among pregnant women attending antenatal care services in Enor district, South Ethiopia, 2023.

Methods: A community based cross-sectional study was conducted in 388 pregnant women attending antenatal care from 20th of March to 20th of April 2023 in Enor district, South Ethiopia. The study participants were selected using systematic random sampling technique. The level of adherence was assessed based on the reported number of iron folic acid tablet doses taken by pregnant women ≥ 4 times per a week in the previous one month preceding the survey during the data collection period. Data were entered in to Epi Data version 3.1 and exported to SPSS version 26 for analysis. Variables having $P \leq 0.05$ in the bivariate analysis were entered in to a multivariable logistic regression analysis in order to detect association with adherence to iron folic acid supplementation. Adjusted odds ratios (AOR) with 95% CI were estimated to assess the strength of associations and statistical significance was declared at a p-value < 0.05.

Results: The adherence rate in this study was 53.6% (95% CI: 49.5 – 57.9). Factors significantly associated with adherence to Iron/folic acid supplementation in the multivariable logistic regression model were history of still birth (AOR: 2.957: 95% CI: 1.098 - 7.965), history of abortion (AOR: 3.444: 95% CI: 1.290 - 9.191), early registration during the first ANC visit (AOR: 2.768: 95% CI: 1.182 - 6.486), knowledge of anemia (AOR: 2.093: 95% CI: 1.106 - 3.961), and knowledge of Iron folic acid supplement (AOR: 2.1: 95% CI: 1.108 - 3.981).

Conclusion: This study revealed that the adherence status of pregnant women to iron folic acid supplement was low in the study area. Improving the knowledge of pregnant women on anemia and iron folic acid supplement by delivering health education on the cause, consequence and prevention of anemia during pregnancy was primarily recommended to increase adherence level.

Key words: adherence, prenatal, iron folic acid supplement, pregnant women

1. INTRODUCTION

I. Background

Anemia is a public health problem affecting low, middle and high income countries with significant adverse health consequences, as well as adverse impacts on social and economic development (1). Globally, the most significant contributor to the onset of anemia is iron deficiency accounting for 50% of anemia cases. Approximately 75% of anemia that occurs during pregnancy is secondary to iron deficiency. Other causes of anemia include other micronutrient deficiencies (e.g. folate, riboflavin, vitamins A and B12), acute and chronic infections (e.g. malaria, cancer, tuberculosis and HIV), and inherited or acquired disorders that affect hemoglobin synthesis, red blood cell production or red blood cell survival (e.g. haemoglobinopathies (2).

The World Health organization estimated that 38% of pregnant women worldwide are anemic with highest in Africa followed by South East Asia which accounts 62.3% and 53.8% respectively (2). The World Health organization targeted to reach a 50% reduction of anemia in women of reproductive age group by 2025 (3). Iron and folic acid supplementation is the most widely employed strategy to alleviate iron deficiency, iron deficiency anemia and neural tube defects both globally and nationally (4). Iron supplementation has a larger impact on population health than fortification by reducing maternal mortality and prenatal mortality (5).

In Ethiopia prevalence of anemia among women age 15-49 were 24% and 29% pregnant women were anemic which suggests that anemia is a public health problem (6). Different studies conducted in Ethiopia also showed that the prevalence of anemia among pregnant women were ranges from 21% to 54% (7). In Ethiopia nutrition is integrated in the health sector transformation plan (HSTP) in the form of micronutrient interventions to prevent the occurrence of anemia and improve the nutritional status of mothers during pregnancy (8).

Pregnant women are at particular risk of iron and folic acid deficiency due to their increased requirements. World health organization and National guideline recommend all pregnant women should receive daily dose of 60mg iron + 400 μg folic acid for 6 months and additional 3 months in setting where anemia prevalence is high, to prevent maternal anemia, puerperal sepsis, low birth weight and preterm birth (4, 8).

Adherence is the extent to which a person's behavior of taking the prescribed medication each day and within a prescribed period and following adiet corresponds with agreed recommendations from a health care provider. Adherence rates for individual patients are usually reported as the percentage of the prescribed doses of the medication actually taken by the patient over a specified period(9).Adherence to iron and folic acid is crucial for the prevention of birth defect and anemia during pregnancy (3).

II. Statement of the Problem

Iron deficiency is one of the most prevalent nutrient deficiencies in the world, affecting more than 2 billion of the world's population and causing an estimated 20% of maternal deaths (2). In Indonesia 20% of neonatal deaths could be attributed to mothers not using IFA supplements (10). Globally, 70% of women (11) and 41% in Nepal (12) didn't take iron and folic acid supplements during pregnancy. A cohort study conducted in Tanzania showed that the self-reported adherence status of pregnant women was low which accounts 16.1% (13).

A meta-analysis report showed that antenatal use of iron and folic acid supplement could eliminate 50% of iron deficiency anemia in pregnant women and also there is 19% reduction in the risk of low birth weight (14). Early neonatal death was reduced by 57% in Nepal (12), 45% in Pakistan and 39% in Indonesia (15). In Ethiopia, nationally only 5% and in South Ethiopia region 5.1% of pregnant women took IFAS for greater than 90 days but more than half of the women with a child born in the last 5 years (58%) nationally and 57.7% in South Ethiopia region did not took any iron folic acid tablets during their most recent pregnancy (6).

Many developing countries are now implementing iron/folic acid supplementation programs, but only a few countries had significant improvement in anemia control and prevention. Studies conducted in different parts of the world (Asia, Latin America and African countries) have shown low adherence of women taking daily iron/folic acid supplements and this is among one of the main reasons why IFAS programs have been less effective. There are different factors that can affect the adherence status, which are not studied extensively (16, 17, 18).

One in every three women had anemia and deficiency of folic acid while one in every two had iron deficiency, indicating that both folic acid and iron deficiencies constitute the major micronutrient deficiencies in Ethiopian women(19). Iron deficiency is a serious public health issue due to its high prevalence and potential negative consequences. It can lead to several adverse outcomes including low birth weight, preterm delivery, stillbirth, and maternal and neonatal mortality. Infants are among the vulnerable groups of iron deficiency. Since there is a link between maternal and neonatal iron status, interventions on infant alone will be insufficient to increase infant iron status. Oral Iron/folic acid supplementation is a feasible and cost-effective strategy that exists for iron deficiency anemia prevention and control (18,20).

In Ethiopia, iron/foliate supplementation is the main strategy for Anemia control and prevention. However, adherence rate remains very low. A survey done in Ethiopia showed that only 16.1% of pregnant women took the IFA supplements for 90 or more days (3). In Ethiopia, the national data suggests that from all pregnant women supplemented with IFA tablets only 0.4% consumed more than 90 tablets during their pregnancy time(22). Eighty-three percent of women did not take iron tablets during their last pregnancy, fifteen percent took them for less than 60 days, and less than one percent took them for three months or more during their last pregnancy (22). A comparison of 2011 and 2016 EDHS data reveals that the percent of women with at least one ANC visit who took iron tablets increased(6,22), despite this progress adherence rate is low. Studies conducted in different parts of Ethiopia showed low adherence and the factors associated are not persistent and clearly known (17, 23, 24).

Adherence to iron and folic acid during pregnancy increases productivity and prevents iron deficiency anemia during pregnancy which reduces the risk of hemorrhage, sepsis and maternal mortality(25). Poor adherence has negative consequence on levels of energy and productivity, cognitive and physical development and immune function(26). Similarly, iron deficiency anemia during pregnancy has fetal and neonatal risks, which include miscarriage, still births, prematurity, low birth weight, congenital anomalies and prenatal mortality(27, 28).

Recent studies on this research topic suggest that there were a number of reasons for non-adherence to IFAS including inadequate supplies, poor quality tablets, lack of access to or use of prenatal care, and poor monitoring of the problem(27,29). There was paucity of data concerning adherence status particularly in Gurage zone of Ethiopia, even if many studies done in different regions of Ethiopia and efforts were made to reduce iron deficiency anemia clear information about adherence to iron and folic acid supplementation and its associated factors were lacking.

Therefore, this Community based cross sectional study was done to assess the adherence status level and identify factors associated with adherence to iron folic acid supplement among pregnant women attending ANC services in Enor district, South Ethiopia.

III. Objectives of the Study

1. General Objective

- To assess adherence to prenatal iron–folic acid supplementation and associated factors among pregnant women attending antenatal care services in Enor district, South Ethiopia 2023.

2. Specific Objectives

- To determine adherence level to prenatal iron–folic acid supplementation among pregnant women attending antenatal care services in Enor district.
- To identify factors associated with adherence of prenatal iron–folic acid supplementation among pregnant women attending antenatal care services in Enor district.

IV. Research question/hypothesis

1. How much of pregnant women attending antenatal care services in Enor district were adhered to prenatal iron–folic acid supplementation?

2. What are the determinant factors for adherence to prenatal iron–folic acid supplementation among pregnant women attending antenatal care services in Enor district?

V. Significance of the Study

The findings of this study primarily help health care providers to advise pregnant mothers to properly adhere to iron folic acid supplement by informing them about the benefit of taking iron folic acid supplement during each ANC visit. Findings from this study would also give valuable information for Enor district health office, Gurage zone health department and other stake holders on adherence status and determinant factors associated with adherence of iron folic acid supplementation for planning appropriate strategies directed towards improving adherence of pregnant women to iron and folic acid supplementation. In addition, findings of this study could also serve as a basic framework and baseline information for other studies with similar interest in the future. Finally the study would also serve as a partial fulfillment for the principal investigator to require master of Public Health in Public Health nutrition.

VI. Scope of the Study

This study focused on assessing the adherence status level to perinatal iron folic acid supplementation and associated factors among pregnant woman who could get routine antenatal care services in Enor district, South Ethiopia. It was conducted from 20th of March to 20th of April 2023. The study identifies issues that would help in designing feasible government policies and recommend interventions to solve problems.

VII. Limitation of the Study

This study cannot establish firm causal links due to its cross-sectional design. The adherence status of pregnant mothers was assessed by self-report which cannot rule out potential susceptibility of recall bias. Therefore other methods like pill count method may predict adherence rate better.

VIII. Operational Definition of Variables

Adherent to iron folic acid supplementation: pregnant women taking iron folic acid tablet ≥4 times per a week in the previous one month preceding the survey(43).

Non adherent to iron folic acid supplementation: pregnant women taking iron folic acid tablet <4 times per a week in the previous one month preceding the survey(43).

Early registration to ANC clinic: pregnant women visit ANC clinic before 16wks of gestation(44).

Good knowledge about anemia and iron folic acid supplementation: those who score mean and above on questions prepared to assess comprehensive knowledge of anemia and iron folic acid supplement were considered as having good knowledge about anemia and iron folic acid supplement respectively(38).

Poor knowledge about anemia and iron folic acid supplementation: those who score below mean on questions prepared to assess comprehensive knowledge of anemia and iron folic acid supplement were considered as having poor knowledge about anemia and iron folic acid supplement respectively(38).

Multiple answer questions: for questions with multiple answers in the study respondents who were responding above mean score were considered as they know all about the asked questions and those respond below mean score were categorized to the nearest ones.

Counseling: health care provider advice given to pregnant women about ANC follow up Visit, benefits of iron folic acid supplement including how and when to take iron folic acid supplementation during pregnancy(43).

2. LITERATURE REVIEW

2.1 Need of Iron Folic Acid Supplementation in Pregnancy

Even though amenorrhea helps to save 150 mg of iron during pregnancy it is difficult to get and supply enough amount of iron which are needed for the increase maternal red blood cell volume, fetal erythropoiesis and placenta and for growing uterus through the regular diet (41).Study done in rural province Vietnam shows direct adverse effects of persistent antenatal iron deficiency anemia found to be statistical significance on cognitive development of 6 months old infants in developing country. The risk of early neonatal death was significantly reduced for infants of mothers who received either any form of antenatal care; spatially iron folic acid supplement provided the main protective effect(10). Cross-sectional study from India's third National Family Health Survey used to examine the association between adequately diversified dietary intake, IFAS during pregnancy and symptoms suggestive of Preeclampsia or eclampsia in Indian women; the likelihood of reporting preeclampsia or eclampsia symptoms was also 36% lower among those mothers who consumed IFAS for at least 90 days during their last pregnancy(30).

In Indonesia analysis showed that 20% of early neonatal deaths could be attributed to a lack of iron/ folic acid supplement during pregnancy. The health issues associated with the most common micronutrient deficiency; iron deficiency anemia reduced cognitive capability, reduced physical capacity and productivity, increased maternal mortality, complications with childbirth, and increased infant mortality. Using IFAS was protective against anemia and low birth weight infants(31).

2.2 Adherence Status of Pregnant Women to Iron Folic Acid Supplementation

An institution based cross-sectional study conducted in India among pregnant women showed that the overall adherence of iron folic acid supplementation was 64.7% (16).And a similar study conducted in Thika District Hospital in Kenya among pregnant women showed that the self-reported adherence rate in pregnant women was 24.5% (32).And a community based cross sectional study conducted to assess the determinants of iron consumption in Senegal among pregnant women showed that the self-reported adherence rate in pregnant women was 51%(33).

Different institution based cross sectional studies which was conducted in Tigray (14), Bench Maji Zone(34) and Afar Ethiopia among pregnant women(35) Showed that the self-reported adherence rate in pregnant women was 37.2%, 70.6%, and 22.9% respectively.

2.3 Factors Associated With Adherence to Iron Folic Acid Supplementation

2.3.1 Socio-Demographic Factors

A cross sectional house hold survey conducted in Pakistan showed that women with no maternal and paternal education were more likely non-adhered as compared to the counter parts(29). A cross-sectional study conducted in Urban Slum India among pregnant women showed that women from nuclear family with less number of children and having formal educational status were two times more likely adhered as compared to their counter parts respectively (36).

A cross sectional study conducted to assess the determinants of iron consumption among pregnant women in Senegal showed that mothers who had secondary/higher education were 2.5 times more likely adhered compared to women who were unable to read and write (33). According to a cross-sectional study conducted in Sudan showed that pregnant mothers whose ages ≥25 years were 3 times more likely adhered with iron and folic acid supplement than those pregnant mothers who were <25 years(31).

A study done in Western Amhara Ethiopia showed that mothers who had secondary/higher education were more likely adhered compared to women who were unable to read and write(17). A study done in South Ethiopia (38), Tigray Ethiopia (24) and Western Amhara Ethiopia (17) showed that pregnant mothers whose ages ≥25 years were 3 times,52% and 3.4 times more likely adhered with iron and folic acid supplement than those pregnant mothers who were <25years respectively. A cross sectional study conducted in Afar Ethiopia showed that urban residents were two times more likely adhered to IFAS than rural residents(35).

2.3.2 Obstetrics and Health Related Factors

An institution based cross-sectional study conducted in Brazil showed that adherence was increased in nulliparous women as compared with women with one or more child births(37). According to a study conducted in India(16), Tanzania (13) showed that mothers who had anemia in current pregnancy were almost two times, eleven times more likely adhered with IFA supplements than mothers had no anemia during current pregnancy. A cross-sectional study conducted in Senegal showed that mothers who had visited ANC four times and above were two

times adhered to IFA supplements than their counterparts(33).According to a study conducted in Ismailia governorate Egypt showed that pregnant mothers having ≥3 years pregnancy (child birth) spacing were more likely adhered with iron and folic acid as compared to their counter parts (32).

A study done in Tigray, Ethiopia(24) and Western Amhara, Ethiopia (17) showed that mothers who had anemia in current pregnancy were more likely adhered with IFA supplements than mothers had no anemia during current pregnancy. A study conducted in Tigray, Ethiopia showed that mothers who had history of anemia in previous pregnancy were almost two times more likely adhered with IFA supplements than mothers had no anemia during previous pregnancy(24). A study conducted in South, Ethiopia (38) and Tigray, Ethiopia (24) showed that mothers who had visited ANC four times and above were 3.5 times and 3.8 times more likely adhered with iron and folic acid supplements than those pregnant mothers who had less than four ANC visits.

An institution based cross-sectional study conducted in Tigray, Ethiopia (24), Bench Maji Zone, Ethiopia(34) and Afar, Ethiopia (35) showed that early antenatal registration were 1.8 times, 59% and two times more likely adhered to IFA supplementation as compared to lately registered mothers.

2.3.3 Knowledge related factors

A cross-sectional study conducted in Korea showed that mothers who had good knowledge of iron and folic acid supplement were more likely adhered compared to mothers who had poor knowledge of iron and folic acid supplement (39) and a study done in South, Ethiopia (38) and Western Amhara, Ethiopia (17) showed that mothers who had good knowledge of iron and folic acid supplement were also more likely adhered compared to mothers who had poor knowledge of iron and folic acid supplement. A cross-sectional study conducted in South, Ethiopia(38), Bench Maji Zone, Ethiopia(34) and Western Amhara, Ethiopia (17) showed that pregnant mothers who had good knowledge of anemia were 4.5 times, two times and 3.6 times more likely adhered to iron and folic acid supplementation as compared to mothers who had poor knowledge of anemia.

2.3.4 Health Care System Related Factors

According to a study done in Pakistan shortage of iron folic acid supplement in health facilities was an independent negative predictors of iron folic acid supplement adherence(29). A cross-sectional study conducted in Senegal showed that pregnant mothers who had obtained counseling on taking iron folic acid were more likely adhered to iron and folic acid supplement than those pregnant mothers who had not obtained counseling on taking iron folic acid (33).

A cross sectional study conducted in eight rural districts of Ethiopia, showed that less than 30 minute distance from the nearest health facility were not significantly associated with adherence to IFAS (23) and a similar study conducted in Tigray, Ethiopia showed that waiting time of less than 30 minute were not significantly associated with adherence to IFAS (24) and also a study conducted in Afar, Ethiopia (35), South, Ethiopia (38) and Bench Maji Zone, Ethiopia (34) showed that pregnant mothers who had obtained counseling on taking iron folic acid were 1.8, 4and 2.5 times respectively more likely adhered with iron folic acid supplement than those pregnant mothers who had not obtained counseling on taking iron folic acid.

2.3.5 Supplement Related Factors

According to a study conducted in Pakistan compliance of pregnant mother towards IFAS increased with single daily dose(12). A qualitative study conducted in Urban Slum India showed that forgetfulness, big size of tablets, side effects and frustration to take daily pills were the main reason for non-adherence(36). In a study conducted in Kenya showed that lack of information to take, side effects (vomiting, heart burn), bad taste, and unwillingness to take were among the reasons for not taking the supplement(32).

A cross-sectional study conducted in eight rural districts of Ethiopia showed that among women who missed two or more doses, the leading underlying reasons were side-effects (63.3%), forgetfulness (16.7%), running out of supplements (10.0%) and alleviation of the symptoms of anemia (6.7%)(23).

A study conducted in South Ethiopia showed that among women who missed the doses of IFA supplement, the leading underlying reason was side effects (50.6%) followed by forgetfulness (42.1%) and perceived shortage of iron-foliate supplements in health facility (5.3%), finding from qualitative part of the study revealed that most pregnant mothers' main reason for missing doses of iron and folic acid supplement were fear of side effects followed by forgetfulness (38).

2.4 Conceptual Framework

The conceptual framework was developed by reviewing of available literatures and the previous Studies stated that socio demographic factors, health care system, pregnancy/obstetrics related factors, knowledge of mother about anemia and IFAS and supplement related factors were the most determinant factors for adherence status to IFAS.

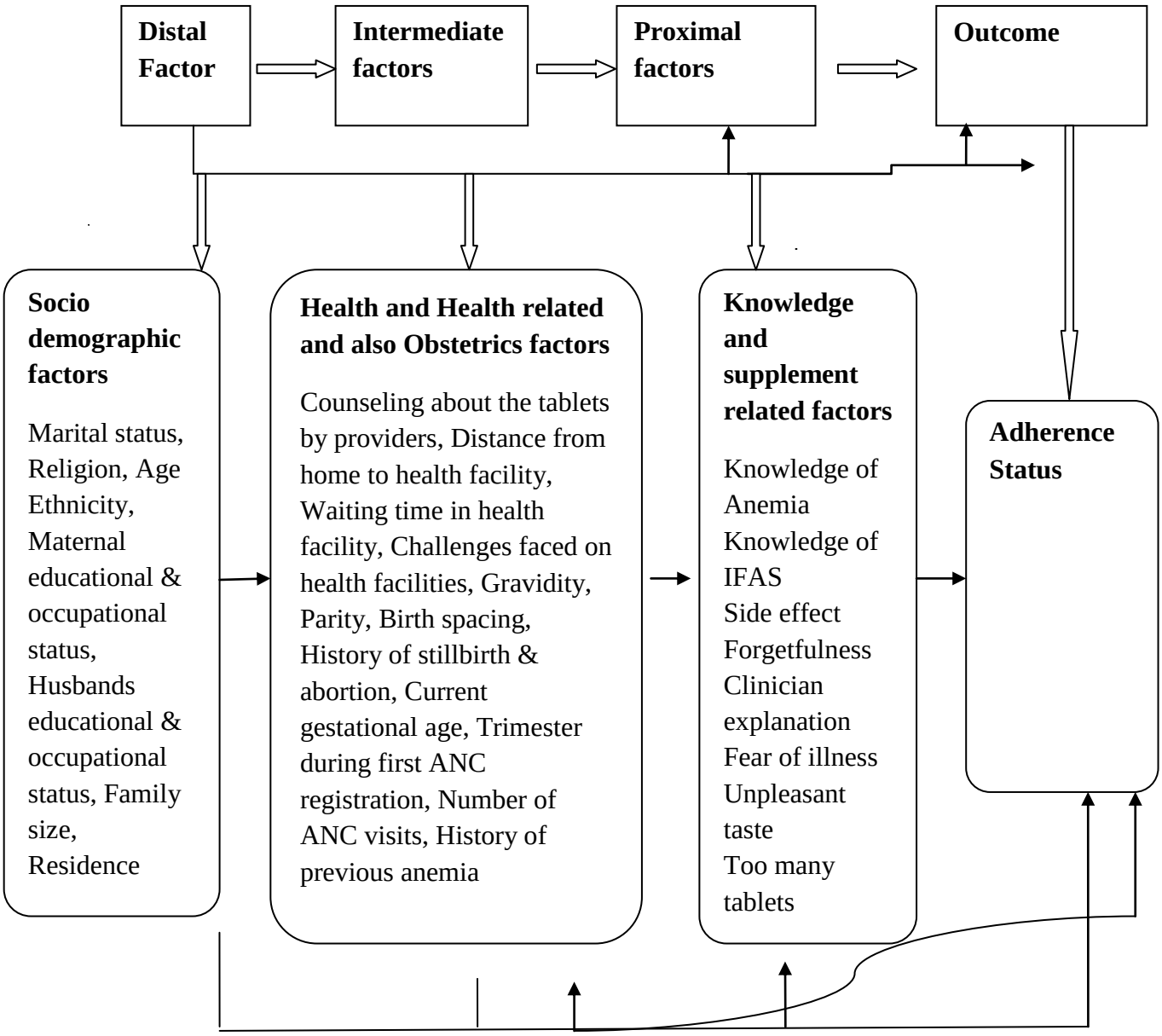

Figure 1: conceptual framework developed for the study on adherence status to IFAS among pregnant women attending ANC in Enor district, Gurage zone, South Ethiopia, 2023

3. METHOD AND MATERIALS

3.1 Study Area and Period

The study was conducted in Enor district, Gurage zone, South Ethiopia. The district is located about 200 kilometers far from Addis Ababa, the capital city of Ethiopia, 299 Km from Hawasa the capital of Southern Ethiopia regional state and 42Km south west from Wolkite town the capital of Gurage zone. The district has forty rural and three urban kebele's. The estimated total population of the district was 135,890 of which male populations constitute 66, 586(49%) and female accounts for 69, 304(51%)(Enordistrict.2022).There were an estimated 31662 women are under the reproductive age group, from this 4702 women's were expected to be pregnant on this EFY. Regarding to health services, the district comprises one primary hospital and eight health centers, nine private primary clinics and forty health posts. There were132 health professionals and 72 HEWs all over the health facilities (Enor district health office.2022). The major socio-economic activity in the study area was mixed one (Enor district.2022).The study was conducted from 20th of March to 20th of April 2023 in Enor district, Southern Ethiopia.

3.2 Study Design

Community based cross-sectional study design were employed.

3.3 Population

3.3.1 Source Population

All pregnant women in Enor district who visited ANC clinic and started to take iron/ folic acid Supplementation at least for one month before the survey.

3.3.2 Study Population

All the randomly selected pregnant women in Enor district who visited the ANC clinic and started to take iron/ folic acid supplementation at least for one month before the survey from selected kebele's.

3.3.3 Study Unit

The study unit for this study was each pregnant woman attending ANC services.

3.4 Eligibility Criteria

3.4.1 Inclusion Criteria

Pregnant mothers who have at least one ANC visit and supplemented with iron/ folic acid tablet for at least one month before the date of interview and residents of Enor district were included.

3.4.2 Exclusion Criteria

Pregnant mothers who were seriously ill during the time of data collection, who were on the treatment of anemia and who were unable to hear and/or speak were excluded from the study.

3.5 Sample Size Determination

The required sample size was calculated using a single population proportion formula by taking37.47% adherence rate of iron/ folic acid supplementation from previous study in Fogera district, North West Ethiopia (42), with a 95 % confidence interval (CI) and 5 %margin of error. Based on this assumption the sample size was found using the formula;

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

Where, n= is the minimum sample size required

P= the prevalence of adherence status to iron/ folic acid supplement (37.47 %)

d = the margin of error (the required precision) assumes to be = 5%= 0.05

Z= the upper percentile of the normal distribution 1.96

$n = (1.96)^2 0.3747(0.6253)/\ (0.05)^2$

n= 360

After considering non response rate of 10%, the final sample size was396.To determine the required sample size for the second specific objective of this study, various factors significantly associated with the outcome variable were considered with confidence level of 95%, margin of error 5%, power of 80%, and using open Epi 7 save software program. After calculating the required sample size for those selected variables and non-response rate 10 percent were added and then the maximum sample size shown (Table 1).

Table 2 Sample size determination for study on adherence and associated factors to IFAS among pregnant women attending ANC in Enor district, South Ethiopia 2023

Specific Objectives	Variable (Factors considered)	Power	Ratio	Out come in exposed	Out come in unexposed	AOR	Non response (10%)	Total sample size	Reference
Factors associated with adherence of iron/ folic acid supplementation among pregnant women	Early registration	80%	1:1	45% (1.58:1)	28.4% (0.63:1)	95%	29	317	(38)
	Number of ANC visits	80%	1:1	59.4% (1.9:1)	31.3% (0.53:1)	95%	11	121	(38)
	Counseling on IFA	80%	1:1	57.1% (2.9:1)	19.7% (0.345:1)	95%	6	62	(38)

Finally, the required sample size for this study were taken by considering the maximum sample size from the first and second objective sample size calculation results which was 396 pregnant women.

3.6 Sampling Procedure and Techniques

A simple random sampling technique were used to select kebele's from the forty three kebele's found in the district /forty rural and three urban/, a total of 15kebeles, 14 rural and 1 urban kebele's were selected and included in the study. As a result, the study was conducted on fifteen kebele's. The total sample size was allocated proportionally to each selected kebele's based on the number of pregnant women supplied with iron/ folic acid supplementation one month prior to the survey. List of study subjects were selected by systematic random sampling from health extension workers registration book/Community Health Management Information System (CHMIS) folder. According to 2015 EFY Enor district health office has an annual plan of 4702 women were expected to be pregnant. Regarding to this in the last five months report 1305

pregnant women were enrolled in ANC-1 visit and 1269 pregnant women were enrolled and get full ANC visits i.e. four visits (ANC-4) service.

Iron/ folic acid supplementation was the vital component of ANC and the tablet was supplemented free of charge in Ethiopia. By using the flow of pregnant women visiting ANC in the last five months prior to the survey a total of 2574 pregnant women got ANC service as of the registration which fulfills the eligibility criteria during the study period (Enor district health office last five months (July up to November) report 2022).Using this information as baseline data, the total number of participants interviewed for each selected kebele was calculated as follows:

No of ANC attending Pregnant Women in the previous five months from X kebele* Sample Size

Total number of ANC attending Pregnant Women in the previous five months from

Fifteen selected kebele's

$$n_x = \frac{n * N_x}{N}$$

Where: nx is sample size of the X^{th} kebele, n = total number of ANC attending pregnant women in the previous five months from each selected kebele, Nx is total sample size and N is total number of pregnant women from fifteen selected kebele's(Enor district health office report.2022).

The number of pregnant women with in the previous five months prior to the survey from selected kebele's visited the ANC service were; Agata (114), Abogade (102), Amogera (111), Gahrad (97), Mekana (98), Andahore (65), Egebegne (92), Achawede (94), Weshezewuyar (82), Gardashe (103),Eseher (75), Gomshe (74), Denber (58), Terede (85) and Egeze (55)respectively. The study participants were selected by systematic random sampling (every k^{th}); using the total number of women enrolled in the ANC service from fifteen kebele's N = 1305 and minimum sample size n = 396, with an interval:

K = N/nf

Where; K = ratio fraction, N is total number of women enrolled in the ANC service from fifteen kebele's within the previous five months (1305)and nf is final sample size (396)

K= 1305/ 396= 3.29 = 3 (every third), so the data was collected every third pregnant women in each selected kebele's. The first pregnant women previously enrolled in the ANC service were randomly selected from the first three ANC attending pregnant women by lottery method for each selected kebele's.

3.6.1 Selected kebele's in Enor district

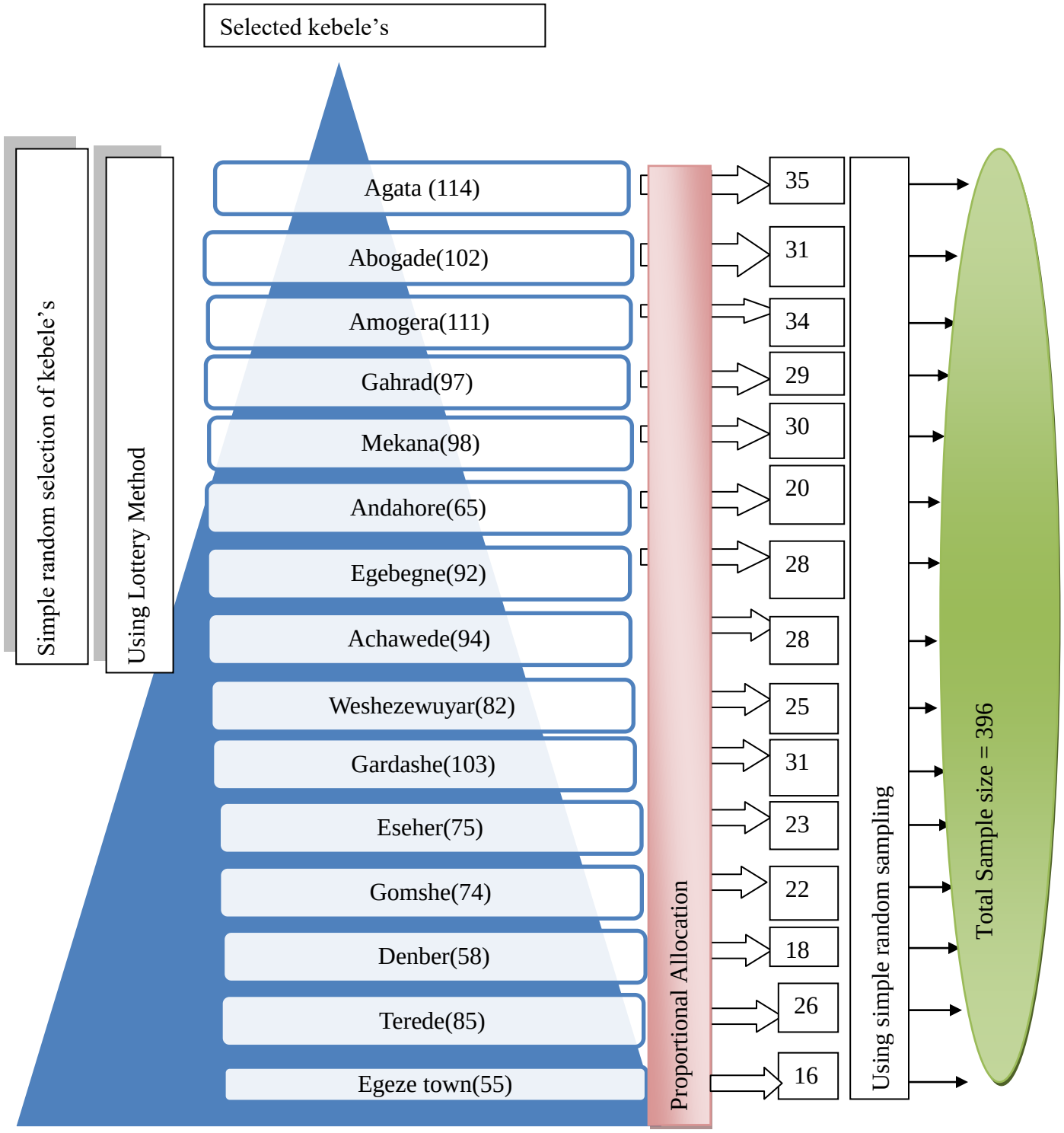

Figure 2: Schematic diagram of sampling procedure to study adherence to prenatal IFAS and associated factors among pregnant women attending ANC service in Enor district South Ethiopia, 2023

3.7 Study Variables

3.7.1 Dependent Variable

Adherence to iron and folic acid supplementation

3.7.2 Independent Variables

Socio-demographic characteristics Factors: Age, ethnicity, religion, residence, marital status, mother education level, mother's occupation, partner education level, partner's occupation, family size.

Obstetrics and health related factors: Number of ANC visits, trimester during first ANC registration, current gestational age, gravidity, child birth spacing, parity, history of still birth & abortion, place of ANC visit, history of previous anemia and history of current anemia.

Health care system related factors: Adequate explanation about the tablets by providers, time taken from home to health facility, waiting time in health facility and challenges faced on health facilities.

Knowledge related factors: Knowledge on Anemia, knowledge on IFAS

Supplement related factors: Side effect, forgetfulness, unpleasant tests, too many pills.

3.8 Data Collection Tool and Procedure

The data collection tool was developed by reviewing different literatures (14, 15, 17), and it consists of five parts; socio demographic factors, health and health related factors, knowledge related factors and supplement related factors. The English language questionnaire was translated into Amharic language by Amharic language speaker and it was translated back to English language and comparison was made on the consistency of the two versions. The questions were close ended.

Data was collected by using three BSc nurses and one public health officer who are fluent in Amharic and Guragigna language (for good communication only) for the data collection and supervision respectively. The data collectors were collect a community based face to face interview by using the pretested structured amharic questionnaire. The interviewers informed the pregnant women about all details of the research. The women were encouraged to feel free and told that the confidentiality of their responses was assured and no information were shared with third parties, except the investigator. After this, women who were willing to participate and signed the informed consent document was interviewed in quiet and comfortable place. On site supervision was carried out during the whole period of data collection on daily basis by the supervisor and principal investigator. At the end of each day questionnaires were reviewed and cross checked for completeness, accuracy and consistency by the supervisor and principal investigator and corrective measures was taken.

3.9 Data Quality Control

Translation of instrument was made from English language to local Amharic language and back to English language by different experts who were familiar on the field of area and blind to the original version of the questionnaire (English version) in order to facilitate reliable responses to underline questions and keep the original meaning of the instrument. Two days training was given for data collectors and supervisors about techniques of data collection and briefed on each question included in the data collection tool. After the training was given, pre-test was conducted on 20 pregnant mothers before the actual data collection period in Enor district Kosed kebele to ensure the validity of the tool, then correction was made before the actual data collection.

Principal investigator and supervisors were checked on the spot and review all the questionnaires to ensure completeness and consistency of the information collected and immediate action was taken accordingly. To minimize bias, interviews was conducted in an area with adequate confidentiality and privacy. Finally after the data collection double data entry was done by two data clerks and consistency of the entered data was cross checked by comparing the two separately entered data. Simple frequencies and cross tabulation was done for missing values and outliers and crosschecked with hard copies of the collected data.

3.10 Data Processing and Analysis

The interviewed and collected questionnaires were checked visually. Data was coded and entered using Epi data version 3.1. The entered data was exported and analyzed with SPSS version 26. The analysis was conducted at several steps. First, simple descriptive statistics such as a frequency distribution and percentages was performed to describe the socio demographic and obstetric characteristics of the respondents. Second, a bivariate logistic regression was performed for each independent variable with outcome variable. By considering the result of bivariate analysis, variables were selected for the multivariable analysis to control confounding.

Independent variable with P value ≤ 0.05 in the bivariate analysis was candidate for a multivariable logistic regression analysis along with all variables in order to detect association with adherence to iron folic acid supplementation. Once the variables were identified, multivariable analysis begins with a model containing all of the selected variables. Multi-collinearity was checked to see the linear correlation among the independent variables by using variance inflation factor and standard error. Variables with standard error of > 2 were dropped from the multi-variable analysis. Hosmer-Lemeshow test was found to be insignificant and Omnibus tests was significant which indicate that the model was fitted.

Knowledge of anemia was computed by adding 11 relevant knowledge questions (items on cause, complication, prevention and others). A correct answer for each question was scored as "1" and incorrect answer was scored as "0". Responses were summed up and then converted to 100%. Similarly, knowledge of IFAS was computed by adding 9 relevant knowledge questions. Finally, multivariable logistic regression model was done to determine independent predictors of adherence status to IFAS. Crude and adjusted odds ratios together with their corresponding 95% confidence intervals were computed to see the strength of association. All tests were two sided and P <0.05 was considered statistically significant and results were presented using tables, figures, and texts.

3.11 Ethical Consideration

Ethical clearance was obtained from Ethical review committee of Wolkite University, College of medicine and Health Science, department of Public Health. Following the approval, Official letter of co-operation was written to concerned bodies by the department of Public Health of Wolkite University. Permission was also obtained from Enor district Health office and respective kebele's administrations. Clear information were given to inform respondents about the purpose and procedure of the study, the importance of their participation, the right to withdraw at any time if they want and about privacy and confidentiality of the information given by each respondent kept properly and name would not be recorded.

3.12 Dissemination of Results

The final finding of this study was initially communicated and submitted to Wolkite University College of Medicine and Health Science, department of public health before and after final thesis defense. The findings of the research were also disseminated to Enor district health office, Gurge zone health department and other concerned bodies at different managerial level. Furthermore, the paper could be presented at workshops, seminars, and on other professional meetings and an effort would make to publish in peer reviewed journal.

4. RESULTS

4.1 Socio-Demographic Characteristics

In this study, a total of 388 study participants were involved, making a response rate of 98%. The mean age of study participants was 30.11 (± 5.45 SD) years. Almost all, 379 (97.7%) of the study participants were married by marital status and 199 (51.3%) were Muslims. Concerning educational status and occupation of mothers, 196(50.5%) were learnt primary education and 272 (70.1%) were housewives respectively (Table 3).

Table 4: Distribution of socio- demographic characteristics of pregnant women attending ANC in Enor district, south Ethiopia, 2023(n= 388)

Variables	Category	Frequency (n)	Percentage (%)
Age in years	15-28	158	40.7
	29-49	230	59.3
Religion	Muslim	199	51.3
	Orthodox	134	34.5
	Protestant	44	11.3
	Catholic	11	2.8
Ethnicity	Gurage	346	89.2
	Hadiya	15	3.9
	Amhara	13	3.4
	Others*	14	3.6
Educational status of mothers	Can't read and write	86	22.2
	Primary	196	50.5
	Secondary and above	106	27.3
Occupational status of mothers	Housewife's	272	70.1
	Government employee	36	9.3
	Merchant	34	8.7
	Daily laborer	31	8.0
	Others**	15	3.9
Educational status of husbands(n= 379)	Can't read and write	32	8.4
	Primary	181	47.8
	Secondary and above	166	43.8
Occupational status of husbands (n= 379)	Farmer	195	51.5
	Merchant	63	16.6
	Daily laborer	55	14.5
	Government employee	51	13.5
	Others***	15	3.95
Family size	2-3	96	24.8
	≥ 4	293	75.2
Place of residence	Urban	26	6.7
	Rural	362	93.3

Other*: Oromo, Wolayita and others Other**: Farmer, Private employee, Student and others

Other***: Private employee, Student and others

4.2 Obstetrics and Health Related Characteristics

From the study participants, 345(88.9%) were multigravida and 289(74.5%) of them were multiparous, 31(9%) and 27(7.8%) of the respondents had past history of abortion and still birth respectively. The mean gestational age of the study participants was 26.4 (SD ±1.287) weeks, majority of the them, 314(80.9%) and 196(50.5%) were got < 4 ANC visits during the current pregnancy and started first ANC visit on their second trimester of pregnancy respectively (Table5).

Table 6 : obstetrics and health related characteristics of pregnant women attending ANC in Enor district, Ethiopia, 2023 (n=388)

Variables	Category	Frequency (n)	Percentage (%)
Gravidity	Primigravida	43	11.1
	Multigravida	345	88.9
Parity	Nulliparous	43	11.1
	Primiparous	56	14.4
	Multiparous	289	74.5
Birth Spacing in years (n=345)	< 2	82	23.8
	≥ 2	263	76.2
Current gestational age (n=388)	< 16 weeks	40	10.3
	≥ 16 weeks	348	89.7
Gestational age of mothers during 1st ANC visit (n=388)	1st trimester(early registered)	112	28.9
	2nd trimester(late registration)	196	50.5
	3rd trimester(late registration)	80	20.6
Number of ANC visits (n=388)	< 4 visits	314	80.9
	≥ 4 visits	74	19.1
ANC service follow up facility	Health center	312	80.4
	Hospital	76	19.6
Medical illness other than anemia (n=388)	Yes	45	11.6
	No	343	88.4
History of anemia during previous pregnancy (n=345)	Yes	38	11
	No	307	89

4.3 Health Facility Related Characteristics

From the study participants, majority of them 289(74.5%) said that it took greater than 30 minutes to reach the nearest health institution from their place of residence. Regarding waiting time, 258(66.5%) of them wait less than or equal to 30 minutes in the health institutions and almost all, 379 (97.7%) of respondents had got counseling on IFA tablets. From the respondents who had got counseling on IFA tablets, 132 (34.83%) had got counseling on benefit of IFAS, 60 (15.83%) on how and for how long it should be taken, 39(10.29%) on side effects of IFA tablets specifically and 148(39%) of them had got counseling about all the listed options. One third of the study participants, 131(33.8%) faced challenges during IFAS intake, from this 85(65%) of them faced long waiting time to take the tablet followed by poor communication with the health care provider 43(33%) and almost all 377(97.2%) of the respondents got 30 tablet per each ANC visit (Table 7).

Table 8: Health facility related characteristics of pregnant women attending ANC in public health facilities of Enor district, South Ethiopia, 2023(n=388)

Variables	Category	Frequency (n)	Percentage (%)
Distance from Facility	≤ 30 minutes	99	25.5
	>30 minutes	289	74.5
Obtain counseling on IFA	Yes	379	97.7
	No	9	2.3
Waiting time at health facility	≤ 30 minutes	258	66.5
	>30 minutes	130	33.5
Challenges faced in the Health Facility	Yes	131	33.8
	No	257	66.2

4.4 Knowledge Status of Respondents on Anemia and Benefit of IFAS

Majority, 364 (93.8%) of the respondents ever heard about anemia and all, 388(100%) of them know IFA tablet. The proportions of pregnant women who had good knowledge on anemia were 55.2% (95%CI: 3.509 - 8.394), similarly the proportion of pregnant women who had good knowledge on iron and folic acid supplementation was 62.4% (95%CI: 4.018 –10.041)(figure 3).

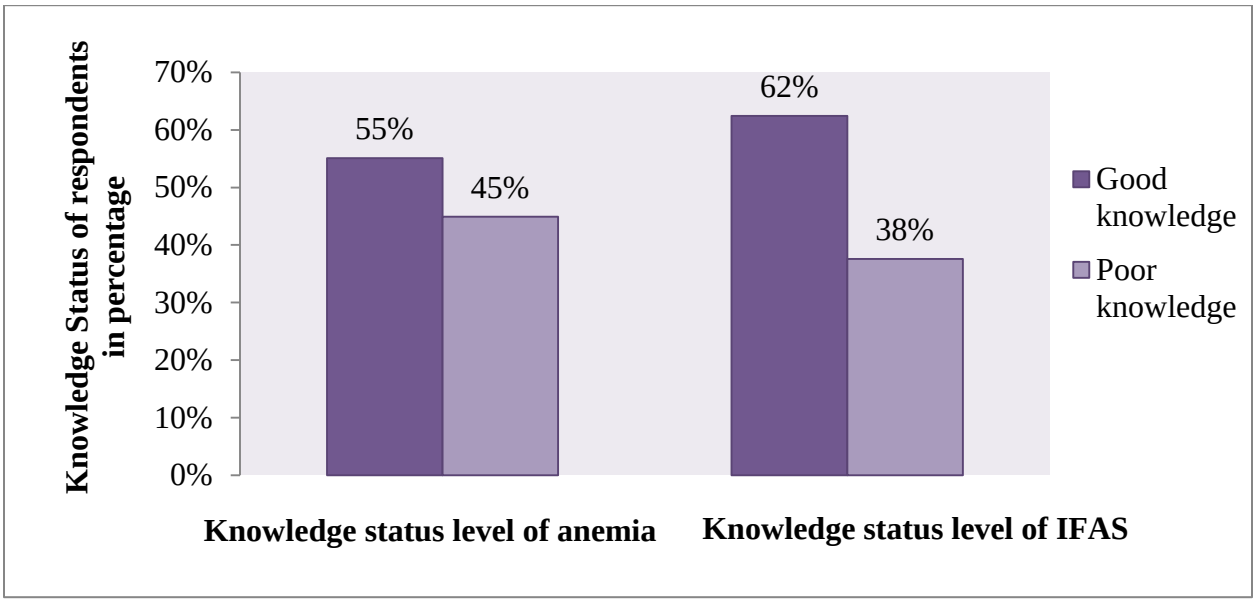

Figure 4: Knowledge status level of anemia and IFA supplementation of pregnant women attending ANC in Enor district, South Ethiopia 2023 (n=388)

4.5 Self-Reported Adherence Status to IFA Supplementation

From the total study participants who were given/prescribed iron foliate supplements during their current pregnancy; the level of adherence was assessed based on the reported number of iron folic acid tablet doses taken by pregnant women ≥ 4 times per a week in the previous one month preceding the survey during the data collection period. The overall adherence of iron foliate supplementation was 53.6% with (95%CI: 49.5 − 57.9) (figure 5).

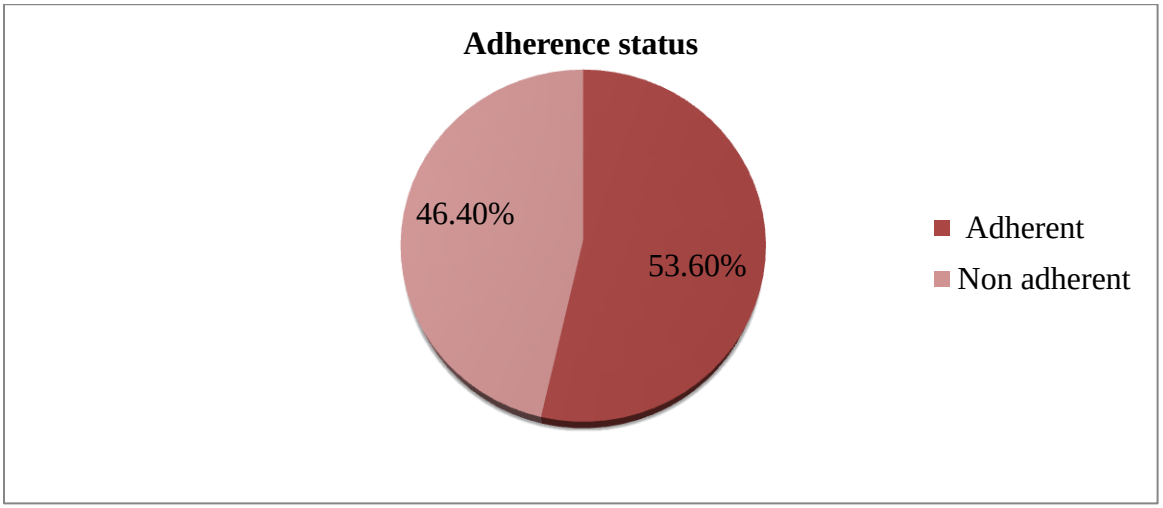

Figure 6 : self- reported adherence status of pregnant women attending ANC in Enor district, South Ethiopia, 2023 (n=388)

From the study participants who were not adhered to iron folic acid supplement the leading underlying reasons were fear of side-effects, 71 (39.5%),taking too many tablets would harm the mother and/or her baby,30(16.67%) and forgetfulness,26 (14.5%) were the major ones (Fig 7).

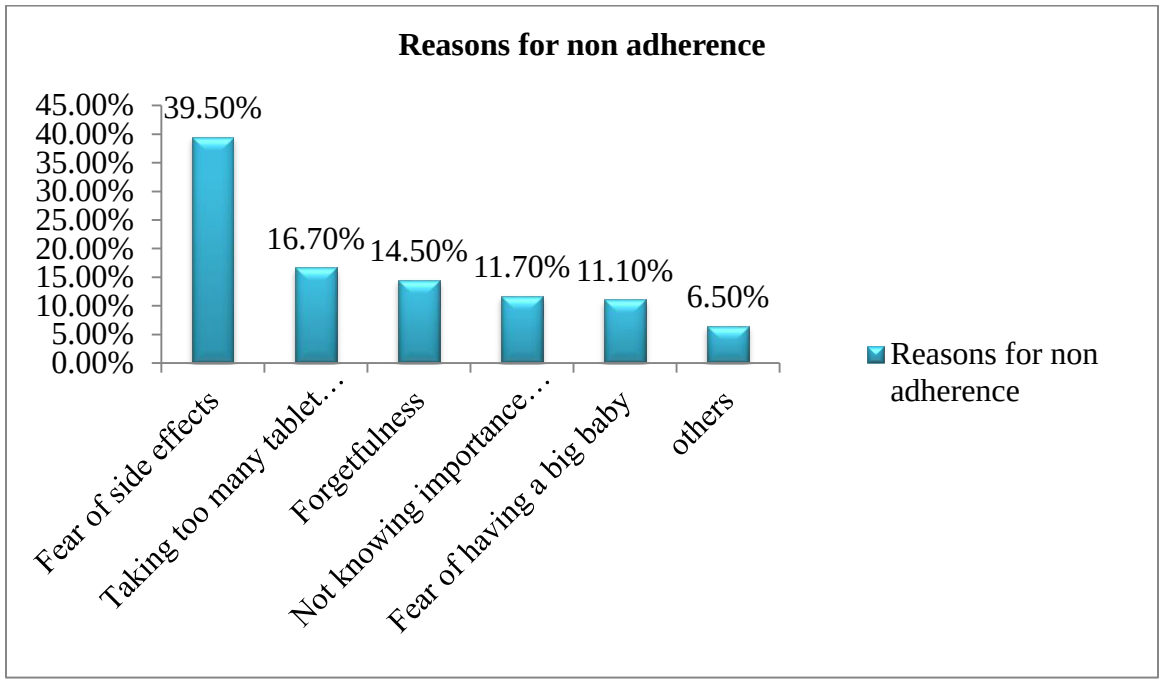

Figure 8 : Reasons for non-adherence to iron folic acid supplement among pregnant mothers attending antenatal care in Enor district, South Ethiopia, 2023 (n=180)

From those mothers who were not adhered seventy one (39.5%) of them experienced side effects while they took iron foliate supplements. The main complaints related with iron foliate intake were gastric upset, 31 (43.7%), heart burn, 27(38%) and the rest one experience other side effects, 13(18.3) (Fig 9).

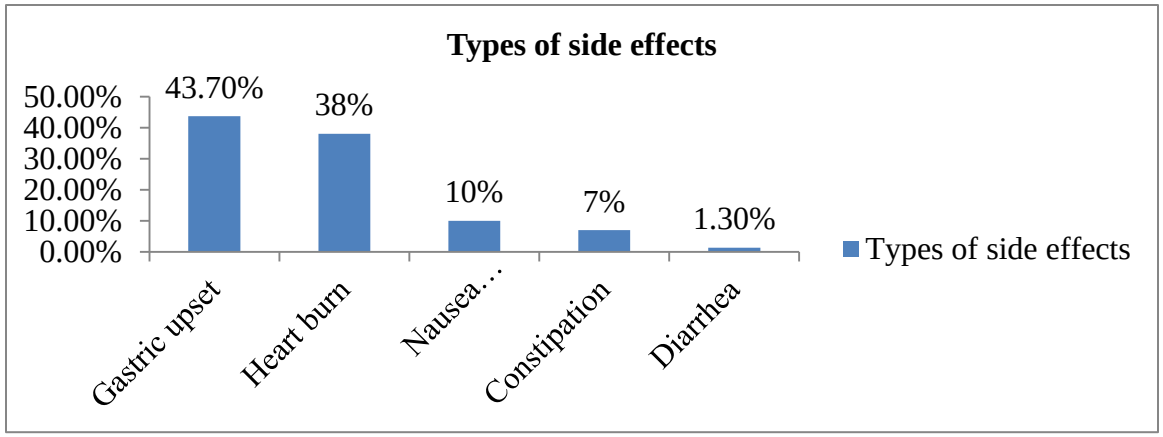

Figure 10 : Side effects related with iron foliate intake among pregnant mothers attending antenatal care in Enor district, South Ethiopia, 2023 (n=71)

4.6 Factors Associated With Adherence to IFA Supplementation

On bivariate logistic regression analysis thirteen variables; Age of mothers, family size, gravidity, birth spacing, history of still birth, history of abortion, current gestational age, trimester(registration) during the first ANC visit, history of anemia during previous pregnancy, waiting time, challenges faced during iron folic acid intake, knowledge of anemia and iron folic acid supplement were statistically significant variables with adherence to iron folic acid supplement use, at p value ≤ 0.05 and they were a candidate for multivariable logistic regression analysis.

Multivariate logistic regression was conducted for variables which have significant association in bivariate analysis to determine the independent predictors of adherence to iron folic acid supplement use during pregnancy and those variables that were identified as significantly associated with adherence to iron folic acid supplement use were; history of still birth, history of abortion, trimester (time of registration) during the first ANC visit, knowledge of anemia and iron folic acid supplement.

The comparison of pregnant women those who adhered to IFAS and those who do not revealed that; Pregnant women who had history of still birth were 2.957 times more likely to be adhered to IFAS than those who did not have history of still birth (AOR (95% C.I): 2.957 (1.098 - 7.965). Pregnant women who had history of abortion were 3.444 times more likely to be adhered to IFAS than those who did not have history of abortion (AOR (95% C.I): 3.444 (1.290 - 9.191). Pregnant women who had started first ANC visit at the first trimester of pregnancy(early registered) were 2.768 times more likely to be adhered to IFAS than those who had started later (AOR: 2.768, 95% CI: 1.182 - 6.486).Pregnant women who had good knowledge of anemia were 2.093 times more likely to be adhered to IFAS than those who had poor knowledge of anemia (AOR (95% C.I): 2.093 (1.106 - 3.961). Pregnant women who had good knowledge of IFAS were 2.1 times more likely to be adhered to IFAS than those who had poor knowledge of IFAS (AOR (95% C.I): 2.1 (1.108 - 3.981) (Table 5).

Table 5: Factors associated with adherence to iron and folic acid supplementation among pregnant women attending ANC in Enor district, South Ethiopia, 2023(n=388)

Variables	Category	Adherence status		COR (95%CI)	AOR (95%CI)	P – value on multivariate analysis
		Adhered (%)	Not yet adhered (%)			
Age in years	15-28	101(63.9)	57(36.1)	2.037(1.344-3.086	1.768(0.941- 3.320)	0.076
	29-49	107(46.5)	123(53.5)	1	1	
Family size	2-3	64(66.7)	32(33.3)	2.056(1.269-3.330)	0.549(0.239-1.260)	0.157
	≥ 4	144(49.3)	148(50.7)	1	1	
Gravidity	Primigravida	32(74.4)	11(25.6)	2.793(1.364-5.721)	1.3(0.79-2.27)	0.284
	Multigravida	176(51)	169(49)	1	1	
Birth spacing	< 2 years	26(31.7)	56(68.3)	0.316(0.188-0.531)	0.584(0.308-1.108)	0.100
	≥ 2 years	182(59.5)	124(40.5)	1	1	
History of still birth	Yes	20(74)	7(26)	2.967(1.220-7.213)	2.957(1.098-7.965)	0.032*
	No	156(49)	162(51)	1	1	
History of abortion	Yes	23(74.2)	8(25.8)	3.025(1.313-6.968)	3.444(1.290-9.191)	0.014*
	No	153(48.7)	161(51.3)	1	1	
Current gestational age	< 16 weeks	29(72.5)	11(27.5)	2.489(1.205-5.140)	0.594(0.188-1.871)	0.374
	≥ 16 weeks	179(51.4)	169(48.6)	1	1	
Trimester for 1st ANC visit	Early registered	90(80.35)	22(19.65)	5.478(3.245-9.247)	2.768(1.182-6.486)	0.019*
	Lately registered	118(42.75)	158(57.25)	1	1	
History of anemia during the previous pregnancy	Yes	28(73.7)	10(26.3)	3.008(1.413-6.406)	1.173(0.500-2.752)	0.713
	No	148(48.2)	159(51.8)	1	1	
Average waiting time	≤30 minutes	159(61.6)	99(38.4)	2.655(1.719-4.100)	3.422(0.696-16.832)	0.130
	> 30 minutes	49(37.7)	81(62.3)	1	1	
Challenges faced during IFA intake	Yes	51(39)	80(61)	0.406(0.264-0.625)	1.915(0.391-9.389)	0.423
	No	157(61)	100(39)	1	1	
Knowledge about anemia	Good	153(71.5)	61(28.5)	5.427(3.509-8.394)	2.093(1.106-3.961)	0.023*
	Poor	55(31.6)	119(68.4)	1	1	
Knowledge about IFAS	Good	169(70)	73(30)	6.352(4.018-10.041)	2.100(1.108-3.981)	0.023*
	Poor	39(26.7)	107(73.3)	1	1	

NB: 1 = reference, AOR = Adjusted Odds Ratio, CI = Confidence Interval,

COR = Crude Odds Ratio, * $p < 0.05$ (statistically significant).

5. DISCUSSION

Pregnant women are among the most vulnerable groups of iron deficiency anemia. Iron and folic acid supplementation is among the feasible ways to prevent anemia during pregnancy. However adherence to Iron and folic acid supplementation is low in most African countries including Ethiopia. Thus, the aim of this study was to assess the level of adherence and identify factors associated with IFA supplementation among pregnant women attending routine antenatal services.

The study revealed that 53.6% of pregnant women were adhered to Iron folic acid supplementation which is consistent with the study done in Indonesia (53.7%)(45) and Asosa zone, western Ethiopia (55.5%)(32). However; it is higher than the study done in Thika district hospital, Kenya (24.5%)(46), Tigray, Northern Ethiopia(24), Fogera district, North West Ethiopia (37.47%)(42), Misha district, South Ethiopia (39.2%)(38) and Borena district, North east Ethiopia (45.6%) (47). The possible reason may be increased knowledge of pregnant women about anemia and IFA supplementation (through medical advice and media), difference in socio demographic characteristics of the respondents and the time gap between studies, but this finding was lower than a study done in South India (64.7%) (16) and a study done in eight rural districts in SNNP, Ethiopia (74.9%) (23). The variation may be due difference in geographic locations and life style, inaccessibility of health services and giving low attention for adherence issue due to lack of awareness(32).

The study showed that, pregnant women who had past history of stillbirth were 2.957 (95% CI, 1.098 - 7.965) times more likely to adhere to iron folic acid supplementation than their counterparts. This finding is similar with the study conducted in Tirunesh Beijing General Hospital, Addis Ababa, Ethiopia (48), whereas it is contraindicated with a study conducted in Adwa town, Tigray, Ethiopia(49) in which pregnant women who had past history of still birth had less likely adhered to iron folic acid than their counterparts. This discrepancy might be due to a socio-cultural variation and increased awareness of pregnant mothers with past history of still birth on the disadvantage of not taking the prescribed supplement, complications of anemia during pregnancy by creating good communication with the health care provider on how to deliver a normal baby (48).

The study also revealed that history of abortion during previous pregnancy was significant association with IFA supplement adherence. According to our result pregnant mothers who had history of abortion previously were 3.444 (95% CI 1.290 – 9.191) times more likely to adhere to IFA supplement use as compared to those who have no history of abortion, this finding is similar with the study conducted in Aykel Town, Northwest, Ethiopia (50), whereas it is contraindicated with a studies conducted in Tirunesh Beijing General Hospital, Addis Ababa, Ethiopia (48) and Borena district, North east Ethiopia(47). This variation might be due to women's poor perception of the prevention and treatment of anemia by taking iron and folic acid as prescribed and recommended by health care providers (50).

Adherence was more likely observed among pregnant women who registered for ANC during the first trimester of pregnancy (early registered) which is consistent with the result obtained from Tigray, Northern Ethiopia(24), and Afar, North-eastern Ethiopia(35) and Bench Maji Zone, Ethiopia (34). This might be due to pregnant mothers who were early registered for ANC have the chance of more ANC visit throughout their pregnancy which ultimately results in better awareness and knowledge regarding iron deficiency anemia and benefit of iron and folic acid supplementation for the fetus and for their health which was obtained from other pregnant women and health care providers counseling during their ANC visits (24, 34, 35).

Having good knowledge of anemia was significantly and positively associated with pregnant Women’s adherence to iron and folic acid supplementation in which adherence was more likely among pregnant women’s who were knowledgeable for anemia. This finding is similar with the studies conducted in South Ethiopia(38), Bench Maji Zone, Ethiopia (34), and Western Amhara, Ethiopia (17). The probable reason could be due to the fact that knowledge helps women to have a good perception on prevention and treatment of anemia by taking iron-foliate supplement during pregnancy (17, 34, and 38).

The study also showed that knowledge of Iron/folic acid supplementation had a significant association with Iron/folic acid supplementation adherence. Pregnant women who had good knowledge of Iron/folic acid supplementation were 2.1 (95% CI: 1.108 – 3.981) times more likely to be adhered compared to those pregnant women who had poor knowledge of Iron/folic acid supplementation. The possible reason is that those pregnant women who had good knowledge of Iron/folic acid supplementation were aware of the tablets importance, side effect, how it is taken, and complication if missed, in addition knowledge result in good perception for the women about prevention and treatment of anemia by taking iron and folic acid as prescribed and recommended by health care providers which in turn results in adherence to the prescribed supplement. The finding is supported by other studies done in Korea(39), South Ethiopia(38) and Western Amhara, Ethiopia(17).

There were different reasons for adherence and non-adherence to Iron/folic acid supplementation, among the reasons that makes pregnant women to be adhered to Iron/folic acid supplementation was: getting medical advice and fear of illness if missed were the major ones, this could be due to increased knowledge of both anemia (including pregnancy complications) and Iron/folic acid supplementation that resulted from proper counseling through medical advice from health care providers. The finding was supported by the study conducted in Kenya (46). The other reason of pregnant women for adherence was getting family support, the justification behind is that when pregnant women get family support; they will have an opportunity not to forget the tablets and great concern for adherence. The finding of this study was supported by the study conducted in Pakistan(12).

Fear of side effect was the major reason of pregnant women for non-adherence, this could be probably resulted from getting inadequate counseling during medical advice from health care providers and women decreased knowledge of anemia and IFAS. Better counseling might decrease the high occurrence of side effects by increasing the psychological tolerance of women to side effects of the tablet. The finding is supported by other studies done in South India(16), Pakistan(12), Kenya(46), eight rural districts of Ethiopia(23) and Misha district, South Ethiopia(38). Taking too many tablets would harm the mother and/or her baby, forgetfulness, not knowing importance of taking all the tablets, fear of having a big baby and others were the reasons of pregnant women for missing the tablets, this could be due to health care provider's inadequate counseling about the tablets and pregnant women decreased knowledge of Iron/folic acid supplementation and anemia. This finding is supported by other studies done in Pakistan(29), Ethiopia (51), and Western Ethiopia(17).

6. CONCLUSSION AND RECOMMENDATION

6.1 Conclusion

This study revealed that the adherence status of pregnant women to iron folic acid supplement was low in the study area. History of still birth, history of abortion, trimester during the first ANC visit (time of registration), knowledge of pregnant women about anemia and Iron/folic acid supplementation were significantly associated with pregnant women adherence to Iron/folic acid supplementation. Getting medical advice followed by fear of illness if missed the tablet were the major reasons that enforce pregnant women to take the tablets. On the contrary, fear of side effects, taking too many tablets would harm the mother and/or her baby and forgetfulness were among the leading reasons of pregnant women for missing the tablets.

6.2 Recommendation

Based on the study findings, the following recommendations were forwarded for the responsible bodies as follows:

Gurage Zone Health Department in collaboration with Enor district Health Office

- Prepare regular education program to pregnant women through locally available mass media in collaboration with other stakeholders in regards to anemia, nutrition, duration of supplementation during pregnancy and IFA adherence benefits.

Health care providers

- Should improve the knowledge of pregnant women on anemia and IFAS by delivering health education on the cause, consequence and prevention of anemia during pregnancy.
- Strengthen health education programs in health facilities to pregnant women on the importance of iron/folic acid throughout pregnancy times and its anticipated tolerable side effects.

Community

- Strengthen awareness creation activities to the community and family members to encourage and support pregnant women to take iron folic acid supplementation.

Researchers

- Longitudinal quantitative study to be done on adherence using advanced measures like pills counting and based on hemoglobin level other than self-reported adherence.

7. REFERENCES

1. Organization, W. H. (2015). Global technical strategy for malaria 2016-2030, World Health Organization.

2.De Benoist, B., et al. (2008). "Worldwide prevalence of anaemia 1993-2005; WHO Global Database of anaemia."

3.WHO, U. (2014). "Global nutrition targets 2025: breastfeeding policy brief (WHO/NMH/NHD14. 7)."Geneva: World Health Organization.

4. Organization, W. H. (2016). WHO recommendations on antenatal care for a positive pregnancy experience, World Health Organization.

5. Baltussen, R., et al. (2004). "Iron fortification and iron supplementation are cost-effective interventions to reduce iron deficiency in four subregions of the world."The Journal of nutrition**134**(10): 2678-2684.

6. Demographic, C. E. (2016). Health Survey-2011. Central Statistical Agency Addis Ababa. Ethiopia ICF International Calverton, Maryland, USA. 2012.

7. Kefiyalew, F., et al. (2014). "Anemia among pregnant women in Southeast Ethiopia: prevalence, severity and associated risk factors."BMC research notes**7**(1): 1-8.

8. Demis, A., et al. (2019). "Iron and folic acid supplementation adherence among pregnant women attending antenatal care in North Wollo Zone northern Ethiopia: institution based cross-sectional study."BMC research notes**12**: 1-7.

9.Osterberg, L. and T. Blaschke (2005). "Adherence to medication."New England journal of medicine**353**(5): 487-497.

10. Titaley, C. R., et al. (2010). "Iron and folic acid supplements and reduced early neonatal deaths in Indonesia."Bulletin of the World Health Organization**88**(7): 500-508.

11. Bailey, R. L., et al. (2015). "The epidemiology of global micronutrient deficiencies."Annals of nutrition and metabolism**66**(Suppl. 2): 22-33.

12.Nisar, Y. B. and M. J. Dibley (2014). "Earlier initiation and use of a greater number of iron-folic acid supplements during pregnancy prevents early neonatal deaths in Nepal and Pakistan."PloS one**9**(11): e112446.

13. Ogundipe, O., et al. (2012). "Factors associated with prenatal folic acid and iron supplementation among 21,889 pregnant women in Northern Tanzania: a cross-sectional hospital-based study."BMC public health**12**: 1-10.

14.Haider, B. A., et al. (2013). "Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis."Bmj**346**.

15.Titaley, C. R. and M. J. Dibley (2012). "Antenatal iron/folic acid supplements, but not postnatal care, prevents neonatal deaths in Indonesia: analysis of Indonesia Demographic and Health Surveys 2002/2003–2007 (a retrospective cohort study)."BMJ open**2**(6): e001399.

16. Mithra, P., et al. (2014). "Compliance with iron-folic acid (IFA) therapy among pregnant women in an urban area of south India."African health sciences**14**(1): 255-260.

17. Taye, B., et al. (2015). "Factors associated with compliance of prenatal iron folate supplementation among women in Mecha district, Western Amhara: a cross-sectional study."Pan African Medical Journal**20**(1).

18. Wendt, A., et al. (2015). "Individual and facility-level determinants of iron and folic acid receipt and adequate consumption among pregnant women in rural Bihar, India."PloS one**10**(3): e0120404.

19. Haidar, J. A. and R. S. Pobocik (2009). "Iron deficiency anemia is not a rare problem among women of reproductive ages in Ethiopia: a community based cross sectional study."BMC Hematology**9**(1): 1-8.

20. Shao, J., et al. (2012). "Maternal serum ferritin concentration is positively associated with newborn iron stores in women with low ferritin status in late pregnancy."The Journal of nutrition**142**(11): 2004-2009.

21. Fiedler, J., et al. (2014). "Nutrition technical brief: a rapid initial assessment of the distribution and consumption of iron–folic acid tablets through antenatal care in

Bangladesh."Arlington, VA: USAID/Strengthening Partnerships, Results and Innovations in Nutrition Globally (SPRING) Project.

22. Demographic, E. (2011). "Health survey: Addis Ababa."Ethiopia and Calverton, Maryland, USA: central statistics agency and ORC macro**2011**.

23. Gebremedhin, S., et al. (2014). "Coverage, compliance and factors associated with utilization of iron supplementation during pregnancy in eight rural districts of Ethiopia: a cross-sectional study."BMC public health**14**: 1-8.

24. Gebre, A., et al. (2015). "Assessment of factors associated with adherence to iron-folic acid supplementation among urban and rural pregnant women in North Western Zone of Tigray, Ethiopia: comparative Study."International Journal of Nutrition and Food Sciences**4**(2): 161.

25. Guideline, W. (2012). "Daily iron and folic acid supplementation in pregnant women."Geneva: World Health Organization**27**.

26. Rahmati, S., et al. (2016). "Maternal anemia and pregnancy outcomes: A systematic review and meta-analysis."International journal of pediatrics**4**(8): 3323-3342.

27. Seck, B. C. and R. T. Jackson (2008). "Determinants of compliance with iron supplementation among pregnant women in Senegal."Public health nutrition**11**(6): 596-605.

28. Iuga, A. O. and M. J. McGuire (2014). "Adherence and health care costs."Risk management and healthcare policy: 35-44.

29. Nisar, Y. B., et al. (2014). "Perceptions of antenatal iron-folic acid supplements in urban and rural Pakistan: a qualitative study."BMC pregnancy and childbirth**14**(1): 1-12.

30. Agrawal, S., et al. (2015). "Adequately diversified dietary intake and iron and folic acid supplementation during pregnancy is associated with reduced occurrence of symptoms suggestive of pre-eclampsia or eclampsia in Indian women."PloS one**10**(3): e0119120.

31. Abdullahi, H., et al. (2014). "Antenatal iron and folic acid supplementation use by pregnant women in Khartoum, Sudan."BMC research notes**7**: 1-4.

32. Seyoum, M. (2019). Adherence to Iron/Folic Acid Supplementation and Associated Factors among Pregnant Women in Assosa Zone, Western Ethiopia.

33. Niang, K., et al. (2016). "Determinants of iron consumption among pregnant women in southern Senegal."Open Journal of Obstetrics and Gynecology**7**(1): 41-50.

34. Shewasinad, S. and S. Negash (2017). "Adherence and associated factors of prenatal iron folic acid supplementation among pregnant women who attend ante natal care in health facility at Mizan-Aman Town, Bench Maji Zone, Ethiopia, 2015."J Pregnancy Child Health**4**(3): 1-5.

35. Gebre, A., et al. (2017). "Determinants of compliance to iron-folic acid supplementation among pregnant women in pastoral communities of Afar region: the cases of mille and assaita districts, Afar, Etiopia-2015."Medico research chronicles**4**(04): 352-362.

36. Dutta, A. J., et al. (2014). "Compliance to iron supplementation among pregnant women: a cross sectional study in urban slum."National Journal of Community Medicine**5**(04): 457-462.

37. Niquini, R. P., et al. (2016). "Factors associated with non-adherence to prescribed iron supplement use: a study with pregnant women in the city of Rio de Janeiro."Revista Brasileira de Saúde Materno Infantil**16**: 189-199.

38. Arega Sadore, A., et al. (2015). "Compliance with iron-folate supplement and associated factors among antenatal care attendant mothers in Misha District, South Ethiopia: community based cross-sectional study."Journal of environmental and public health**2015**.

39. Kim, J., et al. (2017). "Preconceptional use of folic acid and knowledge about folic acid among low-income pregnant women in Korea."Nutrition Research and Practice**11**(3): 240-246.

40. Getahun, W., et al. (2017). "Burden and associated factors of anemia among pregnant women attending antenatal care in southern Ethiopia: cross sectional study."BMC research notes**10**(1): 1-7

41. Tapiero, H., et al. (2001). "Iron: deficiencies and requirements."Biomedicine & pharmacotherapy**55**(6): 324-332.

42. Giezewu, G., et al. (2019). Adherence to Iron/Folic Acid Supplementation and Associated Factors among Pregnant Women in Fogera district, North west Ethiopia.

43. Stoltzfus, R. J. and M. L. Dreyfuss (1998). Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia, Ilsi Press Washington, DC.

44. Ejeta, E., et al. (2014). "Prevalence of anaemia in pregnant womens and associated risk factors in Western Ethiopia."Food Sci Qual Manag**31**(6).

45. Wulandari, L. P. L., et al. (2013). "Foetal Health Locus of Control and iron supplementation adherence among pregnant women in Bali."Journal of reproductive and infant psychology**31**(1): 94-101.

46. Dinga, L. A. (2013). Factors associated with adherence to iron/folate supplementation among pregnant women attending antenatal clinic at Thika District Hospital in Kiambu County, Kenya, University of Nair

47. Hassen, s. (2020). Assessment of adherence and associated factors of prenatal iron-folic acid supplementation among pregnant women who attend antenatal care in public health centers at Borena woreda, South Wollo, Ethiopia.

48. Bekele, A., et al. (2022). "Magnitude of Adherence to Iron Folic Acid Supplementation and Associated Factors among Pregnant Women's attending Antenatal care at Tirunesh Beijing General Hospital, Addis Ababa, Ethiopia."

49. Gebregyorgis, Welesamuel, TG., et al. (2020). Adherence to Iron/Folic Acid Supplementation and Associated Factors among antenatal care attending pregnant mothers in government health institutions of Adwa town. Tigray Ethiopia.cross sectional study 22:1-11.

50. Assefa, H., et al. (2019). "Magnitude and factors associated with adherence to Iron and folic acid supplementation among pregnant women in Aykel town, Northwest Ethiopia."BMC pregnancy and childbirth**19**(1): 1-8.

51. Bang, C., et al. (2014). "Cardiac fibroblast–derived microRNA passenger strand-enriched exosomes mediate cardiomyocyte hypertrophy."The Journal of clinical investigation**124**(5): 2136-2146.

8. APPENDIX

8.1 Appendix A: Information Sheet and Informed Consent Form for Health Office (English Version)

My name is Ayele Melis (BSc in public health) attending my MPH in Public Health Nutrition at Wolkite University. I am here to conduct a study in your district. I will conduct this study under Wolkite University for partial fulfillment of MPH in Public Health Nutrition. It will also have an imperative importance for your district to know the problem under study and act accordingly. So I kindly request you to give me time to explain about the study importance, ethical issues and how the study will be conducted. First I would like to thank you for your time.

Study Title: Adherence to prenatal Iron-folic acid supplementation and associated factors among pregnant women in Enor district, Southern Ethiopia: Community based cross-sectional study 2023.

Study Purpose: The findings of this study can be important for Enor district health office and also to Gurage zone health department to plan and implement activities that can motivate pregnant women to increase their adherence to iron/ folic acid supplementation. It can also provide important baseline information for further studies. Moreover, the aim of this study is to write a thesis as a partial fulfillment of a Masters' degree in Public Health Nutrition.

Procedure and Duration: My data collectors will have an interview with pregnant women who are visiting ANC service providing clinic and supplemented with iron/ folic acid at least one month prior to the survey will be candidate for this interview. The interview will beheld using a questionnaire that contains fifty nine questions. The interview will take about 20-30minutes.

Risk and Benefit: Risk of conducting this study is very minimal taking few minutes from pregnant mothers' time. There will not be any direct payment for participating in this study. But the findings from this study may reveal important information for the local health planners related with iron/ folic acid supplementation among pregnant women.

Confidentiality: Information gathered from this study will not be disclosed to others. There will be no information that will identify the study participant in particular. Findings of the study will be general for the study area & will not reflect anything particular to the individual. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the study.

Rights: Participation in this study is fully voluntary. Have the right to declare to participate or not. If they decide to participate, they have the right to withdraw from the study at any time and this will not label them for any loss of benefits which you otherwise are entitled. They also have the right to not answer any question that they do not want to answer.

Contact address: If you have any questions about the study, the procedure or anything else related to the study, please contact the principal investigator through the following address:

Name: Ayele Melis

Mobile/phone number: +251923134106

Email address: melisayele97@gmail.com

Declaration of Informed Voluntary Consent:

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participants and the contact address for any enquires. I have understood the opportunity to ask questions for things that may have been unclear for them. I am informed that the participants have the right to withdraw from the study at any time or not to answer any question that they do not want. I am also informed that the district health office has the right to stop the study from being conducted in the district if any misleads and unethical procedures are reported during the data collection process in accordance to the settled premises and also I understand that the health office has the right to use the result of study as public property. Therefore; I declare my voluntary consent on behalf of the health office to conduct this study in the district selected kebele's with my initials (signature).

Name of head of health office: _____Signature: _____Date: _____

Name of data collector: _____ Signature: _____ Date:_____

Thank you for your cooperation!!!

8.2 Appendix B: Participant Information Sheet and Informed Consent Form for Pregnant Women (English Version)

Good morning/ afternoon Dear participant!

My name is _____. I am working as a data collector for the study being conducted in Enor district selected kebele's by Mr Ayele Melis, who is studying for his Masters' Degree at Wolkite University, School of public health post graduate program. I kindly request you to lend me your attention to explain about the study and being you selected as the study participant.

The Study title: Adherence to prenatal Iron-folic acid supplementation and associated factors among pregnant women in Enor district, Southern Ethiopia: Community based cross-sectional study 2023.

Purpose of the Study: The findings of this study can be important for Enor district health office and also to Gurage zone health department to plan and implement activities that can motivate pregnant women to increase their adherence to iron/ folic acid supplementation. It can also provide important baseline information for further studies. Moreover, the aim of this study is to write a thesis as a partial fulfillment of a Masters' degree in Public Health Nutrition for the principal investigator.

Procedure and Duration: I will be interviewing you using a questionnaire to provide me with pertinent data that is helpful for the study. The questionnaire includes fifty nine questions. The interview will take about 20-30 minutes. So, I kindly request you to spare me this time for the interview.

Risk and Benefits: The risk of participating in this study is very minimal, only taking few minutes from your time. There will not be any direct payment for participating in this study. But the findings from this study may reveal important information for the district health office and health facilities to fill the gaps identified through this study.

Confidentiality: The information you provide for us will be confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study area and will not reflect anything particular of individual persons. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the study.

Rights: Participation for this study is fully voluntary. You have the right to declare to participate or not in the study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Contact address: If you have any questions or enquire at any time about the study or the Procedure, please contact the principal investigator through the following address:

Name: Ayele Melis

Mobile/phone number: +251 923134106

Email address: melisayele97@gmail.com

Declaration of Informed Voluntary Consent: It is read to me (I have read) the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights if participating and the contact address for any enquires. I have been given the opportunity to ask questions for things that may have been unclear. I am informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my initials (signature).

Name of participant: _____ Signature: _____Date:_____

Name of data collector: _____ Signature: _____ Date: _____

N.B - This is to be signed face to face in the presence of data collector

Thank you for your cooperation!!!

8.3 Appendix C: ጥናቱን አስመልክቶ ከጤና ቢሮ (ጤና ጽ/ቤት) መረጃ መስጫ እና ፈቃደኝነት መጠየቂያ ቅፅ በአማርኛ

እኔ አቶ አየለ መልስ የጤና መኮንን ሙያተኛ ስሆን በወልቂጤ ዩኒቨርስቲ ስርዓተ-ምግብ ትምህርት ክፍል የሁለተኛ ዲግሪ ትምህርት በመከታተል ላይ ነኝ፤ ወደ እኖር ወረዳ የመጣሁት የሁለተኛ ዲግሪ የማሟያ የመመረቂያ ፅሁፍ በእኖር ወረዳ ባሉ የተመረጡ ቀበሌዎች ነፍሰጡር እናቶች በእርግዝና ወቅት የሚሰጣቸውን ተጨማሪ የአይረን እና ፎሊክአሲድ እንክብል በተገቢ ሁኔታ መውሰዳቸውን እና እናቶች በእርግዝና ሰዓት የተሰጣቸውን ንጥረ ነገር በተገቢው ሁኔታ እንዳይወስዱ እንቅፋት የሆኑ ተዛማጅ ችግሮችን ለመዳሰስ ነው፡፡ ስለሆነም ስለጥናቱ ዝርዝር መግለጫ ለመስጠት የእርስዎን ፈቃደኝነት እና ጊዜ እንዲሰጡኝ በትህትና እጠይቃለሁ፣ ስለጥናቱ ቀጥሎ የተዘረዘሩ መረጃዎችን አቀርባለሁ፡፡

የጥናቱ ርዕስ

በእኖር ወረዳ ዉስጥ የሚገኙ ነፍሰጡር እናቶች በእርግዝና ወቅት የሚሰጣቸውን ተጨማሪ የአይረን እናፎሊክ አሲድ እንክብል በትክክል ለመወሰዳቸዉ እና ላለመዉሰዳቸዉ አመላካች የሆኑ ነገሮችን መለየት፣ ደቡብ ኢትዮጵያ፣2015 ዓ.ም።

የጥናቱ አላማ

ከጥናቱ የሚገኘው ውጤት በወረዳው እና በዞኑ ውስጥ ለሚገኙ ጤና ተቋማት እና ጤና ባለሞያዎች፣ሌሎች ለሚመለከታቸዉ ባለድርሻ አካላት እና ድርጅቶች ለችግሩ ትኩረት እንዲሰጡ እና መፍትሄ እንዲያፈላልጉ የበኩሉን ይወጣል ተብሎ ይታሰባል፡፡ ከዚህ ጥናት የሚገኘው ውጤት በወረዳው፣ በዞኑ እና በክልሉ ወደፊት ለሚጠኑ ተመሳሳይ ጥናቶች እንደመነሻ ግብዓት ሆኖ ያገለግላል:: ከዚህም በላይ በዋናነት የሁለተኛ ዲግሪ የመመረቂያ የማሟያ ጥናታዊ ጽሁፍ ለማዘጋጀት ነው:::

ድርሻ እና ቆይታ

ለጥናቱ አስፈላጊውን መረጃ ለማግኘት የተዘጋጀውን መጠይቅ በመጠቀም የብረት እና ፎሊክ አሲድ ንጥረ ነገር የሚወስዱ ነፍሰጡር እናቶች መጠይቅ ይደረግላቸዋል፡፡መጠይቁ 59 ጥያቄዎችን የያዘ ነው፡፡

ሊያደርስ የሚችለዉ ጉዳት እና የሚያስገኘዉ ጥቅም

ይህ ጥናት ከጊዜያቸው ላይ ከ20-30 ደቂቃ ከመውሰድ ውጭ በእነርሱም ሆነ በልጃቸው/ጆቻቸው ላይ ጉዳት አያመጣም።በዚህ ጥናት በመሳተፋቸው በቀጥታ የሚያገኙት ክፍያ የለም። ነገር ግን የዚህ ጥናት ውጤት ለወረዳው ጤና ጽ/ቤት፣ ለዞኑ ጤናመምሪያ እና እቅድ አውጭው የመንግስት አካላት ጠቃሚ መረጃ ሊሰጥ ይችላል።

ሚስጢራዊነት

የሚሰጡ መረጃዎች ሚስጥራዊነት የሚጠበቅ ሲሆን እንደግለሰብ ተለይቶ የሚወሰድ መረጃ የለም። የጥናቱ ውጤት የህብረተሰቡን አጠቃላይ ሁኔታ እንጂ የአንድን ግለሰብ ምንም ነገር አያንፀባርቅም።የተሳታፊዎችን ስም ላለማሳየት ለመጠይቆቻችን የራሳችን ቁጥር ሰጥተናቸዋል። የጥናቱ ተሳታፊዎችን ከምርምሩ ጋር በማጣቀስ የሚሰጥ የቃልም ይሁን የጽሁፍ ሪፖርት የለም።

መብት

በዚህ ጥናት ውስጥ መሳተፍ ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሰረተ ሲሆን በጥናቱ ለመሳተፍም ሆነ ላለመሳተፍ የመወሰን መብት አላቸው። በፊለጉት ጊዜ ከጥናቱ መውጣት ይችላሉ።።ይህን በማድረጋቸውም ማግኘት የሚገባቸውን ጥቅም አያስቀርባቸውም።

ለተጨማሪመረጃ

ስለ ጥናቱ ጥያቄ ካሎት መጠየቅ ይችላሉ፤ ጥናቱን የሚያጠናውን ሰው ከፊለጉም ከዚህ በታች ባሉት አድራሻዎች ማግኘት ይችላሉ።።

ስም:አየለ መልስ የሞባይል ስልክ ቁጥር: +251923134106

የኢሜልአድራሻ – melisayele97@gmail.com

የሙሉ ፈቃደኝነት ማረጋገጫ

የጥናቱ ተሳታፊዎችን መረጃ ወረቀት አንብቤዋለሁ/ተነብቦልኛል። የጥናቱን አላማ፣ክንዋኔ፣ጥቅም፣ ጉዳት፣ሚስጥራዊነት፣መብት እና ለማንኛውም ጥያቄ የተሰጠውን የመገኛ አድራሻ በደንብ ተረድቼዋለሁ። ግልፅ ያልሆነ ጥያቄ ካለ እንዲጠይቁ እድል ተሰጥቷቸዋል። በፊለጉት ጊዜ ከጥናቱ መውጣት እንደሚችሉ እንዲሁም መመለስ የማይፈልጉትን ጥያቄ ያለመመለስ መብት እንዳላቸዉ ተነግሮናል።ከመብት፣ከስነምግባር ወጣ ያሉ እና ሌሎች ማንኛውም ተገቢ ያልሆኑ ችግሮች ከተከሰቱ እና ሪፖርት ከተደረጉ ቢሮው ወይም ጽ/ቤቱ በማንኛውም ጊዜ ይህን ጥናታዊ ፅሁፍ የማስቆም መብት እንዳለው ተነግሮናል።።

በተጨማሪም ቢሮው ወይንም ጽ/ቤቱ የጥናቱን ውጤት እንደህዝብ ሀብት የመጠቀም መብት እንዳለው ተረድተናል፡፡ ስለሆነም ይህን ጥናት በእኖር ወረዳ በተመረጡት ቀበሌዎች ላይ እንዲያደርጉ የፈቀድን መሆናችንን በእኖር ወረዳ ጤና ጽ/ቤት ስም በፊርማዬ አረጋግጣለሁ፡

የጤና ጽ/ቤቱ ሀላፊ ስም_____ ፊርማ_____ ቀን_____

የመረጃ ሰብሳቢ ስም _____ ፊርማ_____ ቀን _____

ስለትብብርዎ እናመሰግናለን!!!

8.4 Appendix D: ለጥናቱ ተሳታፊ ነፍሰጡር እናቶች መረጃ መስጫ እና ፈቃደኝነት መጠየቂያ ቅፅ በአማርኛ

ይህ መጠይቅ 59 ጥያቄዎች እና 9 ገፆች አሉት፡፡ ጥያቄዎች ከመጀመራቸው በፊት የስምምነት መግለጫ፣ መረጃው መሰብሰብ ከመጀመሩ በፊት ሁሉም ገፆች መኖራቸውን እንዲሁም ጋዎን መልበስዎን ያረጋግጡ፡፡

እንደምን አለ? ስሜ _____ እባላለሁ፡፡ በወልቂጤ ዩኒቨርስቲ ስርዓተ-ምግብ ትምህርት ክፍል የሁለተኛ ዲግሪ የመመረቂያ ፅሁፍ ለሚሰሩት ለአየ አየለ መልስ ለሚያጠኑት ምርምር በመረጃ ሰብሳቢነት እሰራለሁ።

ይህ ጥናት መገምገም የፈለገው በእኖር ወረዳ የቅድመ ወሊድ ክትትል የሚያደርጉ ነፍሰጡር እናቶች የሚሰጣቸውን ተጨማሪ የአይረን እና ፎሊክ አሲድ እንክብል በተገቢው ሁኔታ መውሰዳቸውን እና እናቶች በእርግዝና ሰዓት የተሰጣቸውን ንጥረ ነገር በተገቢው ሁኔታ እንዳይወስዱ እንቅፋት የሆኑ ተዛማጅ ችግሮችን ነው፡፡ ጥናቱን በተመለከተ የተወሰኑ ጥያቄዎችን ልጠይቅዎት እፈልጋለሁ፡፡ ምንም አይነት መርፌ መውጋት እና ደም መቅዳት የለበትም፡፡ እርስዎ የሚሰጡን መረጃ ለጠቅላላ ውሳኔ ብቻ የምንጠቀመው ሲሆን ምስጢራዊነቱ የተጠበቀ ነው፡፡ስምዎት ስለማይጠቀስ የሰጡን መረጃ የእርሶ ይሁን የሌላ ሰው አይታወቅም፡፡ እርስዎ በጥናቱ ውስጥ ባጋጣሚ ስለሆነ የተጠቃለሉት ፍቃደኛ ካልሆኑ ያለመሳተፍ መብት አሎት፡፡ መመለስ የማይፈልጉት ጥያቄ ካገኙ አለመመለስ ይችላሉ፡፡ ስለጥናቱ ጥያቄ ካሎት መጠየቅ ይችላሉ፤ ጥናቱን የሚያጠናውን ሰው ከፈለጉም ከዚህ በታች ባሉት አድራሻዎች ማግኘትይችላሉ፡፡

ስም:— አየለ መልስ የሞባይል ስልክ ቁጥር: +251923134106

የኢሜል አድራሻ:— melisayele97@gmail.com

የስምምነትመግለጫ

እኔ የዚህ ጥናት ተሳታፊ እንድሆን የታጨሁት እና ከዚህ በፊት የተነበበልኝን መረጃ በትክክል አዳምጫለሁ፡፡ የጥናቱን ዓላማ፣ጥቅም እና ጉዳቱን በሚገባ ተረድቻለሁ፡፡ ከዚህ በተጨማሪ እኔ የምሰጠው መረጃ ከእኔ ፍቃድ ውጪ ለማንም እንደማይሰጥ አረጋግጫለሁ፡፡ ስለሆነም በዚህ ጥናትውስጥ ለመሳተፍ፤

እስማማለሁ ☐ አልስማማም ☐

የጠያቂ ስም: _____ ፊርማ: _____ ቀን: _____

ስለትብብርዎ እናመሰግናለን!!!

8.5 Appendix E: English Version Questionnaire

WOLKITE UNIVERSITY POST GRADUATE STUDY PROGRAM

Dear Respondents

This questionnaire is prepared to assess adherence to prenatal Iron folic acid supplementation and associated factors among pregnant women attending antenatal care services in selected Enor district kebele's, South Ethiopia, 2023.

The assessment is made for the partial fulfillment of MPH Degree in Public Health Nutrition. The questionnaire contains closed ended questions and will be interviewed. You are therefore kindly requested to provide genuine response to the questions. The information you provide is confidential and is used only for the purpose of this study. If you have any question, don't hesitate to ask the data collector. Your cooperation and participation until the completion of the interview is very necessary for the successful completion of the assessment

Thank you for your cooperation!!!

Date of data collection	Date	Month	Year	
	___	___	___	
Name of kebele				
Code number				
Data collector	Name		Signature	
Supervisor	Name		Signature	

Part one: Socio-Demographic Characteristics

S.No	Questions	Response	Skip
1.	How old are you? (age in years)	_____ year	
2.	What is your current marital status?	1. Married 2. Divorced 3. Widowed 4. Single	
3.	What is your religion?	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Others (specify)…….	
4.	What is your Ethnicity?	1. Gurage 2. Amhara 3. Oromo 4. Hadiya 5. Wolaita 6. Others (specify)……..	
5.	What is your educational level?	1. Can't read and write 2. Can read and write 3. Primary(grade 1-8th) 4. Secondary (grade 9-12th) 5. College and above	
6.	What is your current occupation?	1. House wife2. Government employee 3. Private employee 4. Daily laborer 5. Farmer6. Student 7. Merchant8. Others (specify)…….	
7.	What is your husband's level of educational status if you are married?	1. Can' t read and write 2. Can read and write 3. Primary (grade 1-8th) 4. Secondary (grade 9-12th) 5. College and above	
8.	What is your husband's occupation if you are married?	1. Government employee 2. Private employee 3. Daily laborer 4. Farmer 5. Student 6. Merchant 7. Others (specify)…….	

9.	How many people are living in the household (family size of the house hold)?	Enter No…….	
10.	What is your place of residence?	1. Urban 2. Rural	

Part Two: Obstetrics and health related factors

S.No	Questions	Response	Skip
1.	What is your gravidity? (number of pregnancy including the present)	Enter No……	
2.	What is your parity? (number of births)	Enter No……	
3.	What is your child birth interval in years from your previous child if you were pregnant for second and above?	……	
4.	Did you have history of still birth?	1. Yes 2.No	2-->6
5.	If yes, how many still births did you have till this pregnancy? (in number)	_____	
6.	Did you have history of Abortion?	1. Yes 2.No	2-->8
7.	If yes, how many abortions do you have till this pregnancy?	_____	
8.	Gestational age in weeks?	1.12– 16 weeks 2.17 – 24 weeks 3.25 – 32 weeks 4.33 – 36 weeks 5. > 36 weeks	
9.	At which Trimester period the First Antenatal Care visit made?	1. Less than 3 months2. From 3 – 6 months 3. Above 6 months	
10.	Number of Antenatal Care visit for current pregnancy?	1. One 2.Two 3.Three 4.Four 5.More than four times	
11.	Where did you receive the ANC?	1.Health post 2.Health center 3.Hospital 4.other(Specify) _____	
12.	Do you have any disease diagnosed and treatments given other than anemia during the current pregnancy?	1.Yes 2.No	2>Skip Q 14
13.	If yes, specify it	----------	

14.	Do you have history of anemia during your previous pregnancy?	1. Yes 2. No	

Part three: Health care and system related factors

S.No	Questions	Response	Skip
1.	How long it take to reach Health Institution from your residence in minutes?	_____	
2.	Did you obtain counseling on IFA Supplementation from the Health Workers in any of your antenatal care visits?	1.Yes 2. No	2-->4
3.	If your answer for Q No 2 is yes, about what aspect (s) of IFAS they told you? (Multiple answers allowed)	1. Importance 2. How and for how long it is taken 3. Possible side effects 4. All of the above 5. Other (specify)……	
4.	How many tablets did you receive per visit?	_____tablets	
5.	Average waiting time in the health facility while you collect iron/folic acid supplement in minutes?	_____	
6.	Did you face any problem in the facility while you are receiving your supplement?	1.Yes 2.No	If No goes to Part four Q
7.	If the answer to question number 6 is yes, which problem do you faced? Multiple answer allowed	1. Shortage of supplement. 2.Long waiting time in the health institution 3.Poor health care provider communication 4. All of the above 5.others (specify) _____	

Part Four: Mother's knowledge status on anemia

S.No	Questions	Response	Skip
1.	Have you ever heard of Anemia?	1. Yes 2. No	If No goes to part five questions
2.	If yes for Q No 1, do you know the sign/symptoms of anemia?	1. Yes 2. No	
3.	Do you know the cause of anemia?	1. Yes 2. No	2-->5
4.	If yes for Q No 3, What is the cause of anemia? Multiple answer is allowed	1. Unbalanced diet 2. Deficiency iron/folate 3. Loss of blood 4. Malaria 5. Worm infestation 6. All of the above 7. Other (specify) _____	
5.	Do you know what anemia resulted in pregnancy?	1. Yes 2. No	2-->7
6.	If yes for Q No 5, What are they? Multiple answer is allowed	1. Maternal mortality 2. Still birth 3. Infant mortality 4. Impaired development in children 5. Prematurity 6. All of the above 7. Other (specify) _____	
7.	Who are the most susceptible groups to anemia? (more than one answer is possible)	1.Pregnant women 2.None pregnant women 3. Children 4. All of the above 5. I don't know	
8.	Currently do you have anemia told by health workers?	1. Yes 2. No	
9.	Is anemia during pregnancy can be Prevented?	1. Yes 2. No	2-->11
10.	If yes for Q No 9, how does it would be prevented? Multiple answer is allowed	1. Consumption of food rich in dietary iron/ folate 2. Taking iron and folic acid supplements 3. Prevention of blood loss 4. Prevention of malaria	

		5. Prevention of worms 6. All of the above 7. Other (specify) _____	
11.	What is/ are your source of information about anemia?	1.Health workers 2.Media 3.Friends 4.others (specify) _____	

Part Five: Knowledge of iron-foliate supplementation during pregnancy

S.No	Questions	Response	Skip
1.	Have you ever heard about iron and folic acid supplements? **(**show the strip**)**	1. Yes 2. No	If No goes to part six questions
2.	If yes, do you know the benefit of iron and folic acid supplement?	1. Yes 2. No	2-->4
3.	If yes, what is the benefit of taking iron and folic acid supplement? Multiple answer is allowed	1. Prevent maternal death 2. Prevent infant mortality 3. Prevent birth defects 4. Increase maternal blood 5. Healthy growth and mental development for infants 6. All of the above 7.others (specify) _____	
4.	Do you think that taking iron and folic acid supplement has risk for your baby?	1. Yes 2. No	2-->6
5.	If yes, what are the risks? Multiple answer is allowed	1. Harm fetus growth 2. Cause bigger fetus 3. Result in complicate delivery 4. All of the above 5.others (specify) _____	
6.	During pregnancy time for how long iron/folic acid supplement should be taken?	1.One month2.Two months 3.Three months4.More than three months 5. others (specify) _____	
7.	Is/are there food/substance/s which inhibit/s absorption of iron/folic acid?	1.Yes	

	While taking together with supplement?	2.No	2-->9
8.	Which food/substance/s inhibits absorption of iron while taking together with iron/folic acid supplements?(more than one answer is possible)	1. Tea 2. Coffee 3. Vegetables 4. All of the above	
9.	What is/are your source of information about iron/folic acid supplementation/s? (more than one answer is possible)	1. Health workers 2.Media 3. Friends 4. All of the above 5.others (specify) _____	

Part Six: Supplement and Adherence to Iron/Folic acid Related Factors

S.No	Questions	Response	Skip
1.	Have you taken iron/folic acid Supplement for current pregnancy?	1.Yes 2.No	If No skip the other questions
2.	How do you are taking your Supplement?	1. Daily 2. Every other day 3. Weekly 4. When am sick 5.others (specify) _____	
3.	Total number of iron/folic acid Supplement taken in this pregnancy (in number) up to the time of data collection period?	_____ tabs	
4.	How many iron/folic acid supplement you got totally from the health facility for this pregnancy (in number) up to the time of data collection period?	_____ tabs	
5.	Have you taken ≥4 tabs per week or ≥ 48tabs within 3 months of this pregnancy?	1. Yes 2. No	2-->7
6.	If you say yes for Q No 5, What motivates you to continue	1. Directly consumer advertising 2. Free in charge	

	supplementation? (more than one answer is possible)	3. Reminding technique use 4. Family support 5. Always take whatever they are prescribed because of fear of illness 6. Clinician instructed and explained them to take the tablets 7. Knew that the tablets would increase their blood 8. All of the above 9. Other specify------	
7.	If you say no for Q No 5, Why you do not take your IFA tablets daily? **(**Do not read choices! Tick all mentioned**)**	1. Too many tablets would harm the mother and/or her baby 2. Forgetfulness 3. Not knowing importance of taking all the tablets 4. Fear of having a big baby 5. Tablet-related issues (Taste, size, color, coating etc.) 6. Due to side effects 7. IFA tablets supplements given insufficient 8. Taking other supplements and treatments 9. Health problems during pregnancy other than anemia 10. It is enough for me 11. All of the above 12. Others specify……	
8.	If the answer to question No 7 is due to side effect, which side effects were responsible (more than one answer is possible) (Do not read choices! Tick all mentioned)	1. Gastric upset 2. Nausea and Vomiting 3. Constipation 4. Heart burn 5. Diarrhea 6. All of the above 7. Others specify…….	

Thanks for your cooperation!!!

8.6 Appendix F: Amharic Version Questionnaire

ወልቂጤ ዩኒቨርሲቲ የድህረ ምረቃ ፕሮግራም

ውድ ተሳታፊዎችችን

ይህ መጠይቅ የተዘጋጀው በጉራጌ ዞን በእኖር ወረዳ ዉስጥ በሚገኙ በተመረጡ ቀበሌዎች ላይ በነፍሰ ጡር እናቶች የሚወሰደዉ የብረት እና ፎሊክአሲድ ክኒን መድሃኒትን በትክክል መወሰዱንና በትክክል ላለመወሰዱ አመላካች የሆኑ ነገሮችን መለየት፤ ደቡብ ኢትዮጵያይሰኛል።.

ይህ ጥናት በዋናነት ለማስተርስ ዲግሪ መመረቂያ የማሟያ ጥናታዊ ጽሁፍ ለማዘጋጀት ነው፡፡ ለጥናቱ አስፈላጊውን መረጃ ለማግኘት መጠይቁ የያዛቸውን ጥያቄዎች በመጠቀም ቃለ-መጠይቅ አደርግልዎታለሁ፡፡ ትክክለኛ የሆነ መልስ እንዲሰጡኝ እጠይቅዎታለሁ፡፡ የእርስዎ ትብብርና ተሳትፎ እሰከመጨረሻው ድረስ መቀጠል ለመረጃው መሰብሰብ በጣም አስፈላጊ ነው፡፡

ስለ ትብብርዎ ከልብ እናመሰግናለን!!!

ለጥናቱ ተሳታፊ እናቶች መረጃ መሰብሰቢያ መጠይቅ በአማርኛ

Questionnaire for Data Collection (Amharic version)

ቃለ መጠይቅ የተደረገበት ቀን	**ቀን**	**ወር**	**ዓ.ም**	
	___	___	___	
የቀበሌው ስም				
ኮድ ቁጥር				
የጠያቂው/ የመረጃ ሰብሳቢው	**ስም**		**ፊርማ**	
የተቆጣጣሪው	**ስም**		**ፊርማ**	

ክፍል አንድ፡የማህበራዊ እና የአኗኗር መረጃ

ጥያቄቁ.	**ጥያቄ**	**መልስ/ አማራጮች**	**ዝለል**
1.	**እድሜዎት ስንት ነዉ**?	_____**ዓመት**	
2.	**የጋብቻ ሁኔታ**?	1. **ያገባች** 2. **የፈታች** 3. **ባለቤቷ የሞተባት** 4. **ያላገባች**	
3.	**ሃይማኖትዎ ምንድን ነው**?	1. **ኦርቶዶክስ** 2. **ሙስሊም** 3. **ፕሮቴስታንት** 4. **ካቶሊክ** 5. **ሌላ ካለ ይገለፅ**----------	
4.	**ብሔርዎ**?	1. **ጉራጌ** 2. **አማራ** 3. **ኦሮሞ** 4. **ሀድያ** 5. **ወላይታ** 6. **ሌላ ካለ ይገለፅ**----------	
5.	**የእርስዎ የትምህርት ደረጃ**?	1. **ማንበብና መፃፍ የማትችል** 2. **ማንበብና መፃፍ የምትችል** 3. **የመጀመሪያደረጃ** (ከ1ኛ-8ኛክፍል) 4. **ሁለተኛደረጃ** (ከ9ኛ-12ኛደረጃ) 5. **ኮሌጅ እና ከዚያ በላይ**	
6.	**በአሁኑ ሰአት እየሰሩ ያሉት ስራ ምንድን ነዉ**?	1. **የቤት እመቤት** 2. **የመንግስትሰራተኛ** 3. **የግል መስሪያ ቤት**4. **የቀን ስራ** 5. **አርሶአደር** 6. **ተማሪ** 7. **ነጋዴ** 8. **ሌላ ካለይገለፅ**……	
7.	**ያገቡ ከሆነ የባለቤትዎ የትምህርት ደረጃ**?	1. **ማንበብና መፃፍ የማይችል** 2. **ማንበብና መፃፍ የሚችል** 3. **የመጀመሪያደረጃ** (ከ1ኛ-8ኛክፍል)	

		4. ሁለተኛደረጃ (ከ9ኛ-12ኛደረጃ) 5. ኮሌጅ እና ከዚያ በላይ	
8.	ያገቡ ከሆነ የባለቤትዎ ስራ ምንድን ነው?	1. የመንግስትሰራተኛ 2. የግልመስሪያቤት 3. የቀን ስራ 4. አርሶአደር 5. ተማሪ 6. ነጋዴ 7. ሌላ ካለ ይገለፅ……	
9.	በቤት ዉስጥ ስንት ሆናችሁትኖራላችሁ?	ቁጥሩን አሰገባ/ቢ……	
10.	የሚኖሩበትቦታ?	1. ከተማ 2. ገጠር	

ክፍል ሁለት: የእርግዝና እና የጤና ሁኔታ

ጥያቄቁ.	ጥያቄ	መልስ/ አማራጮች	ዝለል
1.	አሁን ያረገዙት ለስንተኛ ጊዜ ነዉ?	ቁጥሩን አስገባ/ቢ……..	
2.	ስንት ልጅ ወልደዋል?	ቁጥሩን አስገባ/ቢ……..	
3.	ከዚህ በፊት የወለዱ ከሆነ ከወለዱት ልጅና አሁን በተረገዘው እርግዝና መካከል ያለው የእድሜ ልዩነት በዓመት ስንት ነው?	……	
4.	ከዚህ በፊት በወሊድ ወቅት ልጅ ሞቶብዎትያውቃል?	1. አዎ 2. የለም	2-->6
5.	መልስዎ አዎ ከሆነ ስንትልጅ/ዎችነው/ናቸው በወሊድ ወቅት የሞተብዎት? (በቁጥርይገለፅ)	_____	
6.	ውርጃ አስዎርድዎትያውቃል?	1. አዎ2. የለም	2-->8
7.	መልስዎ አዎ ከሆነ ስንት ጊዜ አስዎርድዎትያውቃል?	_____	
8.	የእርግዝናጊዜዎ ስንትሳምንትነው?	1.12 - 16 ሳምንት 2.17 - 24 ሳምንት 3.25 -32 ሳምንት 4.33 - 36 ሳምንት 5. ከ36 ሳምንትበላይ	
9.	በዚህ የእርግዝና ወቅት ለመጀመሪያ ጊዜ የቅድመ ወሊድ ክትትል ለማድረግ ወደ ጤናተቋም የሄዱት የስንት ወር ነፍሰጡር	1. ከ3 ወር በታች 2. ከ3-6 ወር 3. ከ6 ወር በላይ	

	እያለ ነዉ?		
10.	በዚህ የእርግዝና ወቅት ስንት ጊዜ የቅድመ ወሊድ ክትትል አድርገዋል?	1. አንድ 2. ሁለት 3. ሶስት 4. አራት 5. ከአራትጊዜበላይ	
11.	የቅድመ ወሊድ ክትትል አገልግሎት ያገኙበትጤናተቋም?	1. ጤናኬላ 2. ጤናጣቢያ 3. ሆስፒታል 4. ሌላ (ይገለፅ)_____	
12.	በዚህ እርግዘና ወቅት ከደም ማነስ ዉጭ ሌላ አይነት በሽታ አሞዎት ወይም ታክመዉ ያዉቃሉ?	1. አዎ 2. የለም	2-->14
13.	መልስዎ አዎ ከሆነ ምን እንደታመሙ ወይም እንደታከሙ ቢገልፁልኝ?	----------	
14.	ከዚህ በፊት ልጅ ወልደው ከሆነ፤ በባለፊዉ እርግዝና ወቅትየደም ማነስ ነበረብዎት?	1. አዎ 2. የለም	

ክፍል ሶስት: የጤና አገልግሎት ሁኔታ

ጥያቄ ቁ.	ጥያቄ	መልስ/ አማራጮች	ዝለል
1.	በእግር ክትትል ከሚያደርጉበት ጤና ድርጅት እስከ መኖሪያ ቤትዎ ድረስ ምን ያህል ደቂቃይወስድብዎታል?	_____	
2.	በባለፊዉ ጉብኝትዎ ወቅት ከባለሙያዎች በእርግዝና ወቅት ስለሚወሰድ የደም ማነስ መከላከያ መድሃኒት ምክር ተሰጥቶዎት ነበር?	1. አዎ 2. አልተሰጠኝም	2-->4
3.	መልስዎ አዎ ከሆነ ሰለምን ተነገርዎት? (ከአንድ በላይ ምላሽ መስጠት ይችላሉ)	1. ስለጥቅሙ 2. እንዴትናለምንያህልጊዜ እንደሚወሰድ 3. ስለጎንዮሽጉዳቱ 4. ሁሉም 5. ሌላካለይገለፅ……	
4.	በአንድ የቅድመ ወሊድ ክትትል ስንት እንክብል ይሰጦታል?	_____ እንክብል	
5.	ተጨማሪ የብረት እና ፎሊክ አሲድ እንክብሉን ለማግኘት በጤና ድርጅቱ		

	ውስጥ በአማካኝ ምን ያህል ደቂቃ ቆይተዋል?	_____	
6.	እንክብሉን ለመውሰድ ሲመጡ የገጠምዎት ችግር ነበር?	1. አዎ 2. የለም	2>ክፍል 4
7.	ለጥያቄ ቁጥር 6 መልስዎ አዎ ከሆነ ምን ችግር ነው የገጠምዎት? (ከአንድ በላይ ምላሽ መስጠት ይችላሉ)	1. የብረት እና ፎሊክ አሲድ እንክብል እጥረት መኖር 2. እንክብሉን ለመስጠት ረዥም ሰዓት መቆየት 3.ከጤና ባለሙያዎች ጋርየምክክር እና ውይይት ችግር 4. ሁሉም 5. ሌላ (ይገለፅ) _____	

ክፍልአራት: ስለ ደም ማነስ እናቶችያላቸዉ የእዉቀትደረጃ

ጥያቄቁ.	ጥያቄ	መልስ/ አማራጮች	ዝለል
1.	ስለ ደም ማነስ በሽታ ሰምተው ያውቃሉ?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ክፍል 5 ይሒዱ
2.	መልስዎ አዎ ከሆነ የደም ማነስ ምልክቶችንያውቃሉ?	1. አዎ 2. የለም	
3.	ለደም ማነስ በሽታ መፈጠር ምክንያቱን ያውቃሉ?	1. አዎ 2. የለም	2-->5
4.	መልስዎ አዎ ከሆነ ምክንያቱ ምንድን ነው? ከአንድ በላይ ምላሽ መስጠት ይችላሉ	1. ያልተመጣጠነ ምግብ 2. የብረትና ፎሊክ አሲድ ማነስ 3. የደም መፍሰስ 4. ወባ 5. በሰውነት ውስጥ ትላትል መኖር 6. ሁሉም 7. ሌላ (ይገለፅ) _____	
5.	የደም ማነስ በእርግዝና ጊዜ ምን	1. አዎ	

	እንደሚያመጣ ያውቃሉ?	2. የለም	2-->7
6.	መልስዎ አዎ ከሆነ ምን ያመጣል? (ከአንድ በላይ ምላሽ መስጠትይችላሉ)	1. የእናቶች ሞት 2. ሞቶ የተወለደ ህፃን 3. የህፃን ሞት 4. በህፃን ላይ የእድገትመጎዳት 5. ያለጊዜውቀድሞመወለድ 6. ሁሉም 7. ሌላ (ይገለፅ) _____	
7.	ለደም ማነስ በበለጠ ተጋላጭ የሆነ/ኑማን/እነማን ነው/ናቸው? (ከአንድ በላይ መመለስ ይቻላል)	1. ነፍሰጡር እናቶች 2. ነፍሰጡር ያልሆኑ ሴቶች 3. ህፃናት 4. ሁሉም 5.ሌላ (ይገለፅ)_____	
8.	በዚህ እርግዝና ወቅት በጤና ባለሙያ የደም ማነስ አለብዎትተብለዋል?	1. አዎ 2. አልተባልኩም	
9.	የደም ማነስን በእርግዝና ወቅት መከላከል ይቻላል?	1. አዎ 2. አይቻልም	2-->11
10.	መልስዎ አዎ ከሆነ እንዴት እንከላከላለን? (ከአንድ በላይ ምላሽ መስጠትይችላሉ)	1. ብረትና ፎሊክ አሲድ ያላቸዉን ምግቦች በመመገብ 2. ብረትና ፎሊክ አሲድ ክኒን በመውሰድ 3. የደም መፍሰስን በመከላከል 4. ወባን በመከላከል 5. የሆድ ትላትሎችን በመከላከል 6. ሁሉም 7.ሌላ (ይገለፅ)_____	
11.	ደም ማነስን እና መከላከያውን በሚመለከት መረጃውን ከምን አገኙ?	1. ከጤናባለሙያ 2. ከሬድዮእናሌሎችመገናኛዎች 3. ከጓደኞቼ 4.ሌላ (ይገለፅ)_____	

ክፍል አምስት: እናቶች በእርግዝና ወቅት ስለሚወሰደዉ የብረትና ፎሊክ አሲድ ክኒን ያላቸዉ እዉቀት

ጥያቄቁ.	ጥያቄ	መልስ/ አማራጮች	ዝለል
1.	በእርግዝናወቅትስለሚወሰደው የደም ማነስ መከላከያ መድሃኒት የብረትና ፎሊክ አሲድ ክኒን ሰምተው ያውቃሉ? (እንክብሉንያሳዩ)	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ክፍል 6 ይሒዱ
2.	መልስዎ አዎ ከሆነ የብረትና ፎሊክ አሲድ በእርግዝና ወቅትመውሰድስላለው ጥቅም ያውቃሉ?	1. አዎ 2. የለም	2-->4
3.	መልስዎ አዎ ከሆነ ለምን ይጠቅማል? (ከአንድ በላይ ምላሽ መስጠትይችላሉ)	1. የእናቶችን ሞትይከላከላል 2. የህፃናትን ሞትይከላከላል 3. በወሊድ ጊዜ የሚከሰትን የአካል ጉድለትን ለመከላከል 4. የእናቶችን የደም መጠን ለመጨመር 5. ለህፃናት የአእምሮ እድገት 6. ሁሉም 7.ሌላ (ይገለፅ)_____	
4.	የብረትና ፎሊክ አሲድ በእርግዝና ወቅት መውሰድ ለልጅዎ አደጋ ያመጣል ብለው ያስባሉ?	1. አዎ 2. የለም	2-->6
5.	መልስዎ አዎ ከሆነ ምን ጉዳትያመጣል? (ከአንድ በላይ ምላሽ መስጠትይችላሉ)	1. የሽል እድገትን ይጎዳል 2. ሽሉን ትልቅያደርጋል 3. ወሊድን የተወሳሰበ ያደርጋል 4. ሁሉም 5.ሌላ (ይገለፅ)_____	
6.	በእርግዝና ወቅት የብረትና ፎሊክ አሲድ ታብሌት ለምን ያህል ጊዜ ነው የሚወሰደው?	1.ለአንድወር 2.ለሁለትወር 3.ለሶስትወር 4.ከሶስትወርበላይ 5.ሌላ (ይገለፅ)_____	

7.	የብረት እና ፎሊክ አሲድ እንክብል ከአንድ አንድ ምግቦች/መጠጦች ጋር አብሮ ቢወሰድ የብረት ንጥረ ነገር ወደ ደም ስር ምጠትን/መግባትን የሚቀንሱ ነገሮች አሉ ብለዉ ያስባሉ?	1.አዎ 2.የለም	2-->9
8.	ለጥያቄ ቁጥር 7 መልስዎ አዎ ከሆነ በብረት ንጥረ ነገር ከበለፀጉ ጋር አብሮ ቢዎሰድ/ዱ ወደ ደም ስር ምጠት/ መግባት የሚቀንስ/ሱ የሚበላ/ሉ እና የሚጠጣ/ጡ ነገሮች የቱ/ቮቹ/ነዉ/ናቸዉ? (ከአንድ በላይ መመለስ ይቻላል)	1.ሻይ 2.ቡና 3.አረንጓዴ ቅጠላቅጠሎች 4.ሁሉም	
9.	ስለተጨማሪ የብረትና ፎሊክ አሲድ ንጥረ ነገር እንክብል በሚመለከት መረጃውን ከምን አገኙ?(ከአንድ በላይ መመለስ ይቻላል)	1. ከጤና ባለሙያ 2. ከሬድዮ እናሌሎች መገናኛዎች 3. ከጓደኞቼ 4. ሁሉም 5. ሌላ (ይገለፅ)_____	

ክፍል ስድስት: ስለተጨማሪ የብረት እና ፎሊክ አሲድ እንክብል አወሳሰድ እና በአግባቡ እንዳይወሰድ እንቅፋት የሆኑ ተያያዥጉዳዮች የሚዳሰሱበት መጠይቅ

ጥያቄቁ.	ጥያቄ	መልስ/ አማራጮች	ዝለል
1.	ለዚህ እርግዝና የብረትና ፎሊክ አሲድ እንክብል እየወሰዱነው/ ወስደዋልን?	1. አዎ 2. አይደለም	መልስዎ አይደለም ከሆነ መጠይቁን ይጨርሱ
2.	የብረትና ፎሊክ አሲድ እንክብሉን እንዴት ነው የሚወሰዱት?	1. በየቀኑ 2. በየአንድ ቀን ልዩነት 3.በየሳምንቱ 4. ሲያመኝ 5. ሌላ (ይገለፅ) ____	
3.	በዚህ የእርግዝና ጊዜ (መረጃ እስከ		

	ተወሰደበትድረስ) ከተሰጥዎት የብረትና ፎሊክ አሲድ እንክብል ውስጥ ምን ያህሉን ወስደዋል/ውጠዋል? (በቁጥር)	_____ እንክብል	
4.	በዚህ የእርግዝና ጊዜ (መረጃ እስከ ተወሰደበትድረስ) ክትትል ከሚያደርጉበት ጤና ድርጅት ምን ያህል የብረትና ፎሊክ አሲድ እንክብልተሰጥተዎታል? (በቁጥር)	_____ እንክብል	
5.	በሳምንት 4 እና ከዚያ በላይ ወይም በሶስት ወር ውስጥ ከ48 እንክብል በላይ ወስደዋልን?	1. አዎ 2. አይደለም	2-->7
6.	ለጥያቄ5 መልስዎ አዎ ከሆነ የደም ማነስ መከላከያ መድሃኒቱን በየቀኑ እንዲወስዱ ያደረግዎት ምክንያት ምንድን ነዉ? (ምርጫዎቹን አያንብቡ፣ የሚሰጡትን መልሶች በሙሉ ያክብቡ)	1. በቀጥታ ከሌሎች ተጠቃሚዎች ስለተነገረኝ 2. ከክፍያ ነፃ መሆኑ 3. የሚያስታዉሰኝ ሰው በመኖሩ 4. የቤተሰብ እርዳታ በመኖሩ 5. ባለመዉሰዴለ ችግር እጋለጣለሁ ብዬ በመፍራት 6. ከባለሙያዎች ባገኘሁት ምክር 7. ደሜን ይጨምርልኛል ብየ በማሰብ 8. ሁሉም 9. ሌላካለይገለፅ----------	
7.	ለጥያቄ5 መልስዎ አልወሰድኩም ከሆነ በየቀኑ ለምን አልወሰዱም? (ምረጫዎቹን አታንብብ/ቢ፣ የተጠቀሱትን በሙሉ አክብብ/ቢ)	1. ብዙ መድሃኒት ለመዉሰድ ሰለፈራሁ 2. በየቀኑ ለመዉሰድ ስለምረሳ 3. ሁሉንም መድሃኒት መዉሰድ የሚሰጠዉንጥቅም አለማወቄ 4. ፅንሱ በጣም እንዳይፋፋ በመፍራት 5. ከመድሃኒቱ ጋር የተያያዙ ነገሮች (ማዕሙ፣መጠኑ፣ቀለሙ፣ሽፋኑ) 6. የጎንዮሽ ጉዳት	

		7. የደም ማነስ መከላከያ መድሃኒት እጥረት 8. ሌላ መድሃኒት እየወሰድኩ ስለሆነ 9. በእርግዝና ወቅት ከደም ማነስ ዉጭ ሌላ የጤና ችግር ስላጋጠመኝ 10. የወሰድኩት መድሃኒት በቂ ስለሆነ 11. ሁሉም 12. ሌላ ካለ ይጠቀስ……	
8.	ለጥያቄ7 መልስዎ የጎንዮሽ ጉዳት ከሆነ ያጋጠምዎትን የጎንዮሽ ጉዳት ቢገልፁልኝ? (ምርጫዎቹን አታንብብ/ቢ፣ የሚጠቀሱትን ሁሉ አክብብ/ቢ)	1. የጨጓራ ህመም መሰማት 2. ማቅለሽለሽ እና ትዉከት 3. የድርቀት 4. ልብ ማቃጠል 5. ተቅማጥ 6. ሁሉም 7. ሌላካለይጠቀስ…….	

ቃለምልልሱን ሰለጨረስን እናመሰግናለን!!!