



**St. Paul's Hospital
Millennium Medical College
Department of Obstetrics and Gynecology**

**MAGNITUDE AND FACTORS ASSOCIATED WITH ADHERENCE TO
IRON FOLIC ACID SUPPLEMENTATION AMONG PREGNANT
WOMEN ATTENDING ANTENATAL CARE AT ST. PAUL'S HOSPITAL
MILLENNIUM MEDICAL COLLEGE, ADDIS ABABA, ETHIOPIA**

BY DR. GEBRESILASSIE ANDUALEM (MD)

**A RESEARCH PAPER SUBMITTED TO ST PAUL'S HOSPITAL MILLENNIUM
MEDICAL COLLEGE, DEPARTMENT OF OBSTETRICS AND GYNECOLOGY IN
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR SPECIALTY CERTIFICATE
IN OBSTETRICS AND GYNECOLOGY**

**AUGUST, 2021
ADDIS ABABA, ETHIOPIA**



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**AUGUST, 2021
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ACKNOWLEDGEMENT

I would like to express my deepest gratitude to my mentors, Dr. Ferid Abas and Mr. Belayneh Leulseged for their consistent, valuable and constructive comments in the development of this paper. I would also like to extend my heartfelt appreciation to all midwives of ANC clinic and the department of Obstetrics and Gynecology of SPHMMC for allowing me to undertake this research. Last, but not list, I would like to extend my special thanks to all data collectors and study participants who took part in the study without whom this research wouldn't have been possible.

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ABBREVIATIONS AND ACRONYMS

ANC: Antenatal Care

EDHS: Ethiopian Demographic Health Service

IDDS: Individual Dietary Diversity Score

IFA: Iron and Folic Acid

INACG: International Nutritional Anemia Consultative Group

LNMP: Last Normal Menstrual period

NGOs: Non-Governmental Organizations

NHANES: National Health and Nutrition Examination Survey

OBGYN: Obstetrics and Gynecology

RCTs: Randomized Control Trials

SPHMMC: Saint Paul's Hospital Millennium Medical College

SPSS: Statistical Package for Social Sciences

WHO: World Health Organization

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ABSTRACT

Background. Iron deficiency is the leading nutrient deficiency globally affecting the lives of more than two billion people worldwide. Pregnant women are at higher risk of iron and folic acid deficiency due to lack of iron and folic acid or due to poor adherence. However, studies that address this area of adherence are very limited.

Objective: To assess adherence to iron and folic acid supplement during pregnancy and associated factors among pregnant women attending antenatal care at SPHMMC.

Methods. Institution-based cross-sectional study was conducted from May 1/2020 to April 30/2021. A convenience sampling technique was used to select a total of 399 pregnant women with gestational age 37 weeks and beyond at the antenatal care clinic of SPHMMC. Data were collected using a structured and pretested interviewer-administered questionnaire. Descriptive, bivariable and multivariable binary logistic regression analysis were used to identify factors associated with adherence to iron and folic acid supplement among pregnant women. Adjusted odds ratio (AOR) with a 95% confidence interval (CI) was computed to assess the strength and significance of the association. Variables with a p-value less than 0.05 had been considered statistically significant.

Results: The adherence rate was found to be 29.8% 95% CI (25%, 34%). Women who were having good knowledge about anemia [AOR; 31.07 95% CI (16.75, 57.62)] and good knowledge on iron-folic acid supplementation [AOR; 123.94 95% CI (52.79, 290.97)], ANC initiation prior to 16 weeks [AOR; 38.86 95% CI (20.88, 72.31)], and those who were having three or more antenatal care visits [AOR; 49.60 95% CI (23.55, 104.44)] were significantly associated with adherence to iron-folic acid supplementation. Urban residence [AOR; 23.40 95% CI (8.39, 65.28)], previous history of three or more child birth [AOR; 27.59 95% CI (14.48, 52.56)] as well as previous history of abortion [AOR; 36.80 95% CI (19.64, 68.94)] were also significantly associated with adherence to iron-folic acid supplementation.

Conclusion Adherence to iron and folic acid was only 29.8% in the current study. Knowledge about anemia, knowledge on iron-folic acid supplementation, ANC initiation prior to 16 weeks, having three or more antenatal care visits, urban residence, previous history of three or more

child birth and previous history of abortion were factors significantly associated with adherence to iron and folic acid supplement.

Recommendations. Anemia prevention strategy via improved iron and folic acid supplement adherence should comprise strategies of educating pregnant mothers and early antenatal care registration that can improve adherence to iron and folic acid supplement.

Keywords: Adherence, Iron-folic acid supplementation, Pregnant women

CHAPTER – ONE: INTRODUCTION

1.1 Background Information

Physiological changes during pregnancy, fetal growth and development increases the requirement for iron and folic acid (IFA). The increased demand for these nutrients is not met through diet alone due to decreased bioavailability of nutrients during pregnancy (1). Iron and folic acid supplementation has been the preferred intervention to improve iron stores and prevent anemia among pregnant women, and it may also improve other maternal and birth outcomes (1-3).

Poor adherence to IFA supplementation during pregnancy has a potential adverse maternal & fetal effect. Maternal adverse effects include anemia which is also associated with low weight gain, congestive heart failure, preterm labor, bleeding, lower resistance to infection, poor cognitive development and reduced work capacity (4). Adverse neonatal outcomes include miscarriage, stillbirth, prematurity, low birth weight, congenital anomalies and perinatal morbidity and mortality (5). Likewise, Folic Acid deficiency during pregnancy is also associated with an increased risk of neural tube defect, preeclampsia, fetal malformations and preterm delivery (6).

Compliance to iron-folic acid supplementation during pregnancy was associated with a reduced risk of anemia for the mother and hemorrhagic newborn disease and congenital anomalies for the fetus (7). It also enhances productivity and reduces iron deficiency anemia during pregnancy which minimizes the risk of hemorrhage, sepsis and maternal mortality and morbidity (8). Several studies have reported that the use of any antenatal iron and folic acid supplementation during pregnancy reduces the risk of early neonatal and childhood mortality by preventing maternal anemia, low birth weight, and preterm delivery (9).

In order to reduce the risk of maternal nutrient-deficiency anemia, the World Health Organization (WHO) recommended a daily oral dose of 60 mg iron and 400 µg folic acid supplements throughout pregnancy, to begin as early as possible as a routine part of antenatal care (8, 10). WHO's recommendation of IFA supplementation (IFAS) to pregnant women

consider the existing magnitude of anemia: women live in area with 40% anemia to take 60mg iron plus 400µg folic acid on daily basis, in area with 20% anemia intermittent oral iron 120mg + 2800µg folic acid once weekly for 6 months to prevent maternal anemia and neonatal neural tube defects (8).

In 2004, Ethiopia adopted the global iron and folic acid supplementation targeting to reduce the prevalence of iron deficiency anemia in women of reproductive age and children under five, by one third which is expected to be achieved through distributing iron folate supplementation during antenatal visits (11, 12).

Pregnant women are said to adhere to an iron-folic acid supplement if they consume IFA tablets daily for at least ninety days during their pregnancy (13). WHO recommends that 80% of pregnant women in all countries should receive the standard dose of iron-folic acid during pregnancy (14). Accordingly, in Ethiopia, the national guideline for control and prevention of micronutrient deficiencies highlights the need for daily iron supplementation for at least 6 months during pregnancy and 3 months postpartum(15). Despite the availability of such a national policy, women who are consuming IFA tablets during their pregnancy are less than 1%(16).

This low achievement may be related to poor access and lower level of antenatal care service utilization, inadequate IFAS, poor counselling and poor knowledge about anemia as well as IFAS(17). However, many studies suggested that a low level of maternal adherence to the regimen is the main reason for the ineffectiveness of the anemia prevention and control strategy(18). There is little feedback about the effectiveness of iron and folic acid supplement countrywide. Women may have low adherence to IFAS due to perceived side effects(19), forgetfulness(19), and lack of access to IFAS supplements (18). The factors associated with adherence to IFAS reported by various studies(20, 21) are not similar and there is a lack of information regarding the prevalence and associated factors of IFAS in the study area. In addition, previous studies mostly focused on adherence to IFAS and associated factors among pregnant women at the community level where it lacks assessment of organizational related factors. Different sociodemographic, pregnancy and obstetric related, health service, and

supplement related factors may contribute to adherence to IFAS (Figure 1). The level of education, cultural practices, strength of health services, and familial support vary from place to place. The current study focuses on assessment adherence and associated factors of IFAS among pregnant women at St Paul's Millennium Medical College.

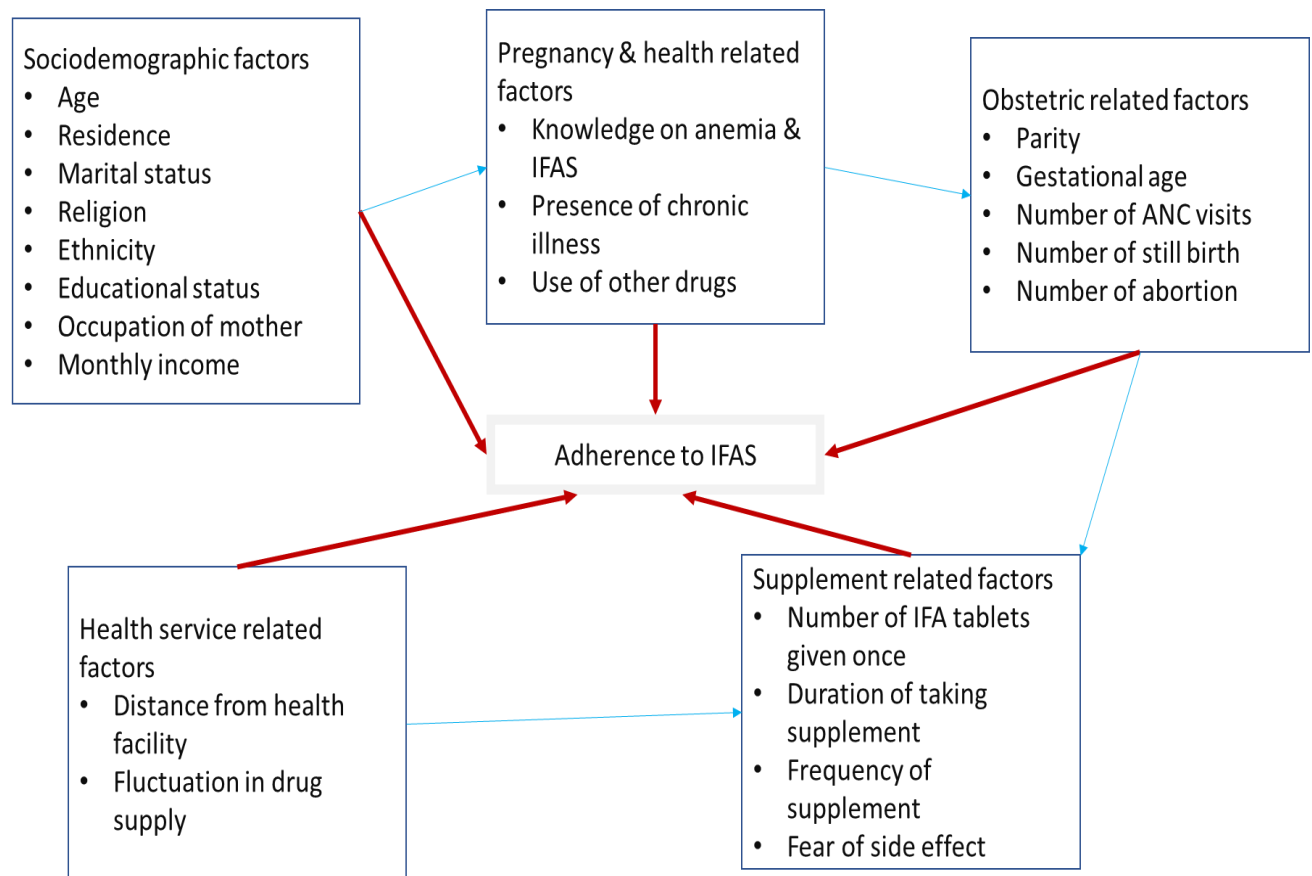


Figure 1. Conceptual framework

1.2 Statement of the problem

Iron deficiency anemia is a public health concern worldwide, especially in low and middle-income countries (1, 22). WHO estimates the number of anemic people worldwide to be around 2 billion where approximately 50% of all anemia can be attributed to iron deficiency (23, 24). The global prevalence of anemia is still high in pregnant women (38.2%) as compared with non-

pregnancy (30.2%). The prevalence of anemia in Africa is 46.3% (7) and among Ethiopian reproductive age women, it is estimated to be 24% (14, 25).

Among women with a live birth in the past 5 years, 60% took iron folic acid tablets during pregnancy, and 11% took them for the recommended period of 90 days or more during their most recent pregnancy in Ethiopia (9). Facility and community-based supplementation of IFA to pregnant women was implemented across each region of Ethiopia in order to achieve the WHO recommended level (26). Despite efforts of Ethiopian Federal Ministry of Health to sustainably avail fefol (ferrous sulfate 150 milligram and folic acid 500 micrograms), coverage of daily iron supplementation has been limited due to lack of compliance (1, 20). In a cross-sectional facility-based study conducted at St Paul Hospital Millennium Medical College (SPHMMC), the prevalence of anemia was found to be 11.6% (27).

Despite efforts made by WHO and commitment of Ethiopian Ministry of Health in sustainably availing fefol, adherence to IFA supplementation is very low (28) and there is no updated data about the level of adherence to IFA supplementation among pregnant women in the study area.

1.3 Significance of the study

Many studies have been done across the world and in Ethiopia as well on the same topic, however, the studies made in Addis Ababa are limited. Various literatures in Ethiopia showed a significantly lower adherence rate of IFA supplementation, but most of the studies were conducted in a setup with smaller source of population and there is no study made in SPHMMC to determine the magnitude and associated factors of IFA supplementation.

Taking in to account the existing poor adherence in the Ethiopia and lack of information regarding adherence rate at the study area, this facility based cross sectional study is aimed to assess magnitude of adherence and associated factors of iron and folic acid supplementation among pregnant women attending antenatal care, at SPHMMC.

The result of this study will give the current adherence status and give clue the reasons of non-compliance indirectly showing focus areas in measurements for improving the compliance. It will also help direct health care interventions to improve the compliance of IFA supplementation,

adverse effects of nutritional deficiency anemia during pregnancy, maternal mortality, and morbidity associated with it. Moreover, the study will add a value for those who want to do further research on this topic and as well for interested stakeholders working on the area of maternal & newborn care.

CHAPTER – TWO: LITERATURE REVIEW

1.1 Adherence to iron and folic acid supplementation during pregnancy

1.1.1 Global magnitude of IFA supplementation compliance during pregnancy

Despite WHO's recommendation to give all pregnant women a standard dose of 60 mg Iron and 400 µg folic acid supplementation for 6 months on a daily basis to prevent maternal anemia and neonatal neural tube defects, adherence to IFA supplement during pregnancy is poor and has not improved significantly in the last decades among low- and middle-income countries (28).

A study done in South Australia showed that 23% of pregnant mothers adhered to IFA supplementation (29). In Malawi 37% of the pregnant mothers consumed the ideal minimum of 90 IFA tablets (30). Studies conducted in India, Nigeria, and Sudan revealed that overall compliance with IFA tablets among pregnant women were 64.7%, 65.9% and 91.1% respectively (28).

1.1.2 Magnitude of IFA supplementation compliance during pregnancy in Ethiopia

The Ethiopian national guideline for control and prevention of micronutrient deficiencies has endorsed WHO's micronutrient deficiency prevention protocol, to prevent and control anemia and neural tube defect. So, the strategy being implemented currently is universal supplementation of IFA for pregnant women and IFA supplement is fundamental component of ANC. In the public health institution IFA supplementation is free of charge which is uncoated and the brand name is fefol (14).

Despite the above program, in Ethiopia, 0.3–0.4% of pregnant women took iron folate supplement for the recommended period (90 days or more) during their pregnancy (31) where, the WHO recommendations were not met due to poor adherence to iron-folate supplement and lack of regular refilling (32).

According to the 2016 Ethiopian Demographic and Health Survey (EDHS) report in southern part of the country only 4.2% of pregnant women took IFA for 90 days and more (14). Studies done at different parts of the country revealed that 20.4% in Amhara region, and 74.9% in Tigray region, and 37.1% in South region were pregnant women compliance with IFA (33).

Another study done at the University of Gondar, in Northwest, Ethiopia, reported that 55% of pregnant women adhered to the recommended Iron and Folic Acid supplementation (9). The rate of IFA supplementation adherence in a facility based cross sectional studies done at Aykel town health centers, North Wollo Zone, West Dembia district, Eritrean Refugee Camps and at Debre Tabor General Hospital was 47.6%, 43.1%, 52.9%, 64.7% and 44% respectively (9, 34).

1.2 Factors affecting adherence to iron and folic acid supplementation during pregnancy

Literature finding in South-East Asia, Latin America, and a few African countries showed that factors which lead to poor adherence to IFA supplementation among pregnant women were; intolerance of gastrointestinal side effects that can occur with taking iron, inadequate supply of tablets, poor counseling of healthcare providers regarding the utilization of tablets and possible temporary side-effects to clients, inadequate utilization of prenatal health-care services, lack of awareness about the advantage of iron-folic acid and community believes, attitudes, and practices associated with women's perception on up taking of iron-folic acid tablets (35).

Literatures in Ethiopia showed that factors for poor compliance of IFA supplementation during pregnancy were: prescribing large doses, fear of side effects, lack of awareness about the antenatal care (ANC) follow up, forgot taking medications at regular time, irregular ANC follow up, insufficient health education, number of tablets dispensed during ANC follow up, access to supply and scares of health facility and others leading to persistent high prevalence of anemia in pregnant women (3, 36, 37). The right time to start supplementation for better adherence to iron-folate is not studied and there is a paucity of data in referral and teaching hospitals (34, 38).

CHAPTER – THREE: OBJECTIVES

3.1 General objectives

- To assess magnitude and factors associated with adherence to iron folic acid supplementation

3.2 Specific objectives

- To assess magnitude of adherence to iron folic acid supplementation during pregnancy
- To determine factors associated with adherence to iron folic acid supplementation during pregnancy

CHAPTER – FOUR: METHODOLOGY

4.1 Study area and period

This study was conducted at Saint Paul’s Hospital Millennium Medical College in Addis Ababa, Ethiopia, in the period of 12 months (from May 1/2020 to April 30/2021), while, data was collected from January 1 to March 31/2020).

Saint Paul’s Hospital Millennium Medical College is tertiary teaching referral hospitals located in Addis Ababa, Ethiopia and provides the highest maternity service of the country. The hospital handles complicated obstetric cases and referring normal or less complicated pregnant mothers to other hospital and health centers for birth. It gives nearly more than 10,000 antenatal care services and around 9000 deliveries per year. The antenatal clinic runs from Monday to Friday from 8:00 AM to 5:00 PM and is visited by more than 3000 pregnant mothers monthly.

4.2 Study Design

A facility based cross sectional study was conducted.

4.3 Populations

Source of Population: The source population were all pregnant women attending antenatal care at the department of obstetrics and gynecology, SPHMMC during the data collection period.

Study population: All pregnant women attending antenatal care at SPHMMC satisfying the inclusion criteria.

Sample population: Those pregnant women selected by convenience sampling technique until the calculated sample size reaches.

4.4 Inclusion and Exclusion Area

Inclusion criteria:

- All pregnant women whose gestational age is 37 weeks and beyond

Exclusion criteria:

We excluded all pregnant women whose gestational age was below 37 weeks and all critical and sick mothers who were not able to undergo interview.

4.5 Sample Size

The required sample size was determined using a single population proportion formula with a 95% confidence interval and 5% marginal error. The proportion of adherence rate 55% was taken from a research done in Aykel town, Northwest Ethiopia in 2019 (9). After considering a 5% non-response rate the final sample size was calculated to be 399.

4.6 Sampling technique

A convenient sampling method was used to identify and include all the study participants.

4.7 Variables

Dependent Variables

- Adherence to iron-folate supplementation

Independent Variables

- *Socio-demographic factors*
 - ~ Age, religion, marital status, place of residence, educational status, occupations, income
- *Pregnancy and health related factors*
 - ~ Parity, history of still birth, history of abortion, number of ANC, place of ANC, number of ANC visit, knowledge of anemia, knowledge of benefits of IFAS
- *Health care and system related factors*
 - ~ Distance from health service
 - ~ Gestational age at starting supplementation
 - ~ Number of supplements per visit
 - ~ Health education at the time of supplement collection
 - ~ Number of iron and folate supplement collected per visit

4.8 Data collection method and instrument

Data collection

Data was collected through an exit interview of sampled women using a structured and pretested questionnaire. A structured questionnaire was adapted from a research done at Addis Ababa

University, College of Health sciences (39). The data collection tool was prepared in English and translated into Amharic and translated back to English again to check for consistency

Data processing and analysis

All the filled questionnaires were verified by the principal investigator. Consecutive code was given to each case and the data was explored again for inconsistencies and missing values. After completeness and coding of questionnaires were checked, data were analyzed using IBM SPSS Statistics for Windows, version 25.

Univariate analyses were carried out to describe the data. Variables with a p-value of less than 0.2 in binary logistic regression were selected as candidates for multivariate logistic regression. Finally, multivariate logistic regression was computed to assess the presence and strength of factors affecting adherence for IFAS. A p-value of less than 0.05 was taken as statically significant.

Data quality control

Data collectors and supervisor were trained for two days on data collection tools, study objectives, and ethical issues on how to approach to interview pregnant women. There were two data collectors (interns) and two supervisors (midwives). Prior to the actual data collection, pretesting of the questionnaire was conducted on fifteen women and appropriate modification was applied. The Purpose of pre-test was to ascertain patient understanding of the items asked and the appropriateness of responses & time requirement to fill out the questionnaire. Finally, ambiguous and unclear questions were modified. At the end of each data collection day the check list was checked for consistency and completeness and close supervision was carried out by supervisors and the principal investigator.

4.9 Operational Definitions

Knowledge to anemia: Those who respond at least three questions out of five knowledge assessment questions on anemia. And those who score less than three are considered as having poor knowledge of anemia (13).

Knowledge to IFA supplementation: Those who respond at least two questions out of four knowledge assessment questions regarding IFAS. And those who score less than two are considered as having poor knowledge (13).

Adherence to IFAS: defined as taking iron folic acid supplement for the recommended period (for at least ninety days daily) (13), (31).

Early registration to ANC clinic: was measured as those pregnant women who visit the ANC clinic before 16 weeks of gestation (13)

4.10 Ethical Consideration

The study was approved by the institutional review board of Saint Paul's Hospital Millennium Medical College. Permission to collect data was obtained from the Department of Obstetrics and Gynecology. All participants were provided written informed consent. Participants were also informed they have the right to withdraw at any time and/or to refrain from responding to any questions. Confidentiality of their response were kept using codes instead of any personal identifiers.

4.11 Dissemination of findings

The study findings were communicated and submitted to the college's scientific communities and concerned body. After approval the study findings and recommendations will also be communicated by preparing forum for workshops and panel discussion with concerned stakeholders and hard copies and soft copies will be disseminated to all stakeholders. Finally, the publication on scientific journal will be considered.

CHAPTER – FIVE: RESULTS

5.1 Socio-Demographic Characteristics

Among 399 study participants approached, 386 women were interviewed with completely filled questionnaire making the response rate 96.7%. The mean age of respondents was 31.02 (SD $\pm$ 3.7) years. A total of 341 (88.3 percent) of the participants were in the age group of 20 to 35 years. The majority of respondents (66.8%) were urban dwellers. One hundred thirty-five (35%) of the study subjects were followers of Orthodox Christianity. The majority of respondents (93.5%) were married.

Table 1: Socio-Demographic and economic related characteristics of respondents attending antenatal care clinics in OBGYN department, SPHMMC, 2021 (n = 386)

Variables	Frequency	Percent (%)
Age		
Under 20	0	0%
20 - 35	341	88.3%
Above 35	45	11.7%
Religion		
Orthodox	135	35%
Muslim	67	17.4%
Catholic	79	20.5%
Protestant	105	27.2%
Marital status		
Single, divorced or widowed	25	6.5%
Married	361	93.5%
Place of residence		
Rural	128	33.2%
Urban	258	66.8%
Maternal Educational status		
Can't read and write	148	38.3%
Can read and write	194	50.3%
Completed secondary and above	44	11.4%
Mother's Current Occupation		

Variables	Frequency	Percent (%)
Housewife	91	23.6%
Government employee	133	34.5%
Private employee	90	23.3%
Daily Laborer	27	7%
Merchant	45	11.7%
Husband's educational level		
Can't read and write	32	8.3%
Can read and write	277	71.8%
Completed secondary and above	77	19.9%
Current occupation of her husband		
Government Employee	117	30.3%
Private employee	140	36.3%
Daily laborer	54	14%
Merchant	75	19.4%
Family's average monthly income		
601 - 1650 Birr	14	3.6
1651 -3200 Birr	38	9.8
3201 - 5250 Birr	65	16.8
5251 - 7800 Birr	117	30.3
7801 - 10900 Birr	104	26.9%
> 10,000 Birr	48	12.4%

5.2 Obstetrics and health related characteristics of respondents

Of the total respondents, 42% were having previous delivery of three and more. Of the total respondents, 137 (35.5%) were having a history of still birth. Only 43 respondents (11.1%) visit ANC four times and above. Most of the respondents (66.3%) started ANC visit at a gestational age of beyond 16 weeks. Two hundred fifty (64.8%) women started ANC visits at a health center. A total of 70 women (18.1%) were having an additional health problem (Table 2).

Table 2: Obstetrics and health status related characteristics of respondents attending antenatal care clinics in OBGYN department, SPHMMC, 2021 (n = 386)

Variables	Frequency	Percent
How many deliveries have you had till now		
Below three	224	58%
Three and above	162	42%
History of Still birth		
No	249	64.5%
Yes	137	35.5%
History of abortion		
No	248	64.2%
Yes	138	35.8%
Antenatal care for the current pregnancy		
Two or less visits	228	59.1%
Three or more visits	158	40.9%
Time of registration for ANC services		
≥ 16 weeks	256	66.3%
< 16 weeks	130	33.7%
Place of initial visit for follow-up		
Health post	0	0%
Health center	250	64.8%
Hospital	93	24.1%
Private	43	11.1%
Additional health problem during this pregnancy		
No	316	81.9%
Yes	70	18.1%
Did you take for these mentioned problems (medication other than IFA)		
No	364	94.3%
Yes	22	5.7%

5.3 Knowledge on anemia and related characteristics of respondents

All the interviewed mothers (100%) were aware of the disease called anemia. But, only 144 (37.3%) respondents were knowledgeable about anemia. The source of the information was mainly from healthcare providers (76.4%) (Table 3).

Table 3: Knowledge on anemia and related characteristics of respondents attending antenatal care clinics in OBGYN department, SPHMMC, 2021 (n = 386)

Variables	Frequency	Percent
Do you know any illness called anemia?		
Yes	386	100%
No	0	0
Do you know the cause?		
Yes	344	89.1%
No	42	10.9%
Do you know that anemia can complicate pregnancy?		
No	233	60.4%
Yes	153	39.6%
Do you know the most susceptible groups to anemia		
Yes	204	52.8%
No	182	47.2%
Is anemia during pregnancy preventable?		
Yes	368	95.3%
No	18	4.7%
Knowledge about anemia		
Poor	242	62.7%
Good	144	37.3%
Your source of information regarding anemia		
Health workers	295	76.4%
Media	37	9.6%
Friends	36	9.3%
School	18	4.7%

5.4 Knowledge about Iron-folic acid supplementation

A total of 367 women (95.1%) knows the drug called iron-folic acid and only 138 women (35.8%) of respondents were knowledgeable about IFAS. The source of information was from healthcare providers (100%) (Table 4).

Table 4: Knowledge about Iron-folic acid supplementation of respondents attending antenatal care clinics in OBGYN department, SPHMMC, 2021 (n = 386)

Variables	Frequency	Percent
Do you know the drug called iron/folate?		
No	19	4.9%
Yes	367	95.1%
Do you know the benefit of iron/folate supplement?		
No	19	4.9%
Yes	367	95.1%
Do you think that iron/folate supplement has risk?		
No	329	85.2%
Yes	57	14.8%
For how long does the supplement should be taken?		
< 3 months	77	19.9%
≥ 3 months	165	42.7%
I don't now	144	37.3%
Knowledge about IFAS		
Poor	248	64.2%
Good	138	35.8%
Source of information about iron/folate supplement		
Health workers	386	100%
Media	0	0
Friends	0	0
School	0	0

5.5 Iron-folic acid supplementation related characteristics of the respondents

From a total of 386 participants included in this study, only 115 (29.8%) 95% CI (25%, 34%) adhered to IFAS. The reason that most mothers reported for not adhering to IFAS were forgetfulness (15.3%), fear of fetal big weight (10.1%) and fear of side effects (9.8%). Heartburn and vomiting were mentioned as a side effect by 9.8% and 4.9 % of interviewed women respectively (Table 5).

Table 5: Iron-folic acid supplementation related characteristics of the respondents, SPHMMC, 2021 (n = 386)

Variables		Frequency	Percent
Have you taken iron-folic acid supplementation for your current pregnancy?			
Yes		386	100%
No		0	0%
Adherent for IFA	Not adherent (took < 90 tablets)	271	70.2%
	Adherent (too $\geq$ 90 tablets)	115	29.8%
Possible factors for poor compliance to IFAS	Forget fullness	59	15.3%
	Poor health care provider communication	33	8.5%
	Lack of information about how long to take	32	8.3%
	Too many pills	5	1.3%
	Fear of side effects	38	9.8%
	Fear of fetal big weight	39	10.1%
	Failure to get adequate supplement in the health facility	29	7.5%
	Long waiting time at health facility	36	9.3%
Side effects mentioned	Vomiting	19	4.9%
	Diarrhea	0	0
	Constipation	0	0
	Heartburn	38	9.8%
	Abdominal cramp	0	0

5.6 Health care and system related factor

All interviewed women (100%) were given health education and all were informed about follow-up visits, where as 80.3% and 66.6% were advised about the purpose of the supplement and possible side effects of the supplement respectively. A total of 350 women (90.7%) were given 30 tablets per visit . The average waiting time to collect iron/folate was 10 – 20 minutes in 66.8% of interviewed women and more than 30 minutes in 23.6% of women. There was no problem in collecting iron/folate in 276 women (71.5%) while the remaining 28.5% were having long waiting times (14%), poor communication with care provider (9.6%) and a shortage of supplements (4.9%).

Table 6: Adherence to iron/folate supplement related characteristics of respondents attending antenatal care clinics in OBGYN department, SPHMMC, 2021 (n = 386)

Variables		Frequency	Percent
How long it takes to reach Health institution from your residence? (With public transport)	Less than an hour	37	9.6%
	1 – 3 hours	239	61.9%
	Half a day	92	23.8%
	Days	18	4.7%
Is there any health education about iron/folate supplement during collecting your supplement?			
Yes		386	100%
No		0	0%
If there was health education, what was the issue?			
Purpose of supplement		310	80.3%
Duration of the supply		149	38.6%
Side effect		257	66.6%
Follow up visit		386	100%
Tablets collected per visit	30 table	350	90.7%
	60 table	36	9.3%
	90 table	0	0%
	> 90 table	0	0%

Variables		Frequency	Percent
Average Waiting time to collect iron/folate supplement	Less than 10 minutes	37	9.6%
	10 – 20 Minutes	258	66.8%
	More than half hour	91	23.6%
Any problem in the facility while you are collecting your supplement?			
Yes		110	28.5%
No		276	71.5%
If there was a problem, what was that?	Shortage of supplement in the facility	19	4.9%
	Long waiting time in the health institution	54	14%
	Poor health care provider communication	37	9.6%

5.7 Factors Associated with Adherence to IFAS

A bivariate binary logistic regression model was used to choose variables for final multivariate logistic regression on the basis of a p-value less than 0.2. Age, religion, marital status, residence, educational status of the woman & her husband, current occupation of the woman & her husband, family's average income, the previous delivery, previous history of stillbirth & abortion, the number of ANC given on the current pregnancy, the time of registration & place of initial visit, the presence of any health illness and knowledge about anemia as well as IFAS were variables selected for analysis.

Variance inflation factor (VIF) was calculated considering one independent variable as the dependent variable turn by turn to test interactions between variables to minimize the effect of multicollinearity. The test result showed that VIF for all variables was below 3 and tolerance above 0.1, which indicates that there is no multicollinearity effect between independent variables.

Table 7: Factor associated with IFAS adherence, SPHMMC, 2021 (n = 386)

Variables	Category	IFA adherence status		Bivariate Analysis (80% CI)	Multivariate Analysis (95% CI)
		Non-adherent	Adherent	COR & CI	AOR & CI
Residence	Rural	124 (32.1%)	4 (1%)	1	1
	Urban	147 (38.1%)	111 (28.8%)	23 (0.01, 0.06)	23.40 (8.39, 65.28)
How many deliveries you had till now	Below three	211 (54.7%)	13 (3.4%)	1	1
	Three and above	60 (15.5%)	103 (26.4%)	27.59 (18.10, 42.05)	27.59 (14.48, 52.56)
History of Still birth	No	239 (61.9%)	10 (2.6%)	1	1
	Yes	32 (8.3%)	105 (27.2%)	78.42 (48.14, 127.74)	78.42 (38.14, 165.39)
History of abortion	No	232 (60.1%)	16 (4.1%)	1	1
	Yes	39 (10.1%)	99 (25.6%)	36.80 (24.41, 55.48)	36.80 (19.64, 68.94)
Antenatal care for the current pregnancy	Twice or less visits	219 (56.7%)	9 (2.3%)	1	1
	three times and more visits	52 (13.5%)	106 (27.5%)	49.60 (30.48, 80.71)	49.60 (23.55, 104.44)
Time of registration for ANC services	≥ 16 weeks	238 (61.7%)	18 (4.7%)	1	1
	< 16 weeks	33 (8.5%)	97 (25.1%)	38.86 (25.89, 58.33)	38.86 (20.88, 72.31)
knowledge about anemia	Poor	226 (58.5%)	16 (4.1%)	1	1
	Good	45 (11.7%)	99 (25.6%)	31.07 (20.75, 46.53)	31.07 (16.75, 57.62)
Knowledge about IFAS	Poor	241(62.4%)	7 (1.8%)	1	1
	Good	30 (7.8%)	108 (28%)	123.94 (70.93, 216.55)	123.94 (52.79, 290.97)

CHAPTER – SIX: DISCUSSION

Compliance with iron supplementation plays a major role in the prevention and treatment of iron deficiency anemia particularly among pregnant women. Iron and folic acid supplementation have been a major strategy to reduce iron/folic acid deficiency anemia. However, issues of poor adherence remain a challenge. Among women participating in this study, only 115 (29.8%) were adherent to iron/folate acid supplementation which is lower than studies conducted in Cambodia(40), studies done among pregnant women in Eritrean refugee camps, Northern Ethiopia(11), among pregnant women attending ANC at University of Gondar hospital(29), Governmental Health Centers in Akaki Kaliti Sub City(41), among pastoralist pregnant women in Burji districts, Southern Ethiopia(19), among pregnant woman in west Dembia (34), and among pregnant women attending antenatal care follow up at Debre Tabor General hospital, Ethiopia(42). This difference could be due to the sampling technique used and the study setting being a tertiary hospital which focuses on subspecialty services, where most of the pregnant women came with a referral from health centers. This rationale is supported by several studies as in well-organized setups adequate counselling and sustainable product availability are better (34).

The adherence rate in this study was similar to the adherence reported for rural women by Gebre et al. (37) studies conducted in Kenya(43). This could be due to similarities in the socioeconomic status of the study populations.

The adherence in this study is higher than results from studies conducted in 8 rural districts of Ethiopia (21), a study conducted in Mecha district in Amhara region(33) and a study conducted in Lay Armachiho Health Centers (13). This could be due to differences in training level of health care professionals regarding IFAS and the professional skill of care providers regarding the health benefit of IFAS and standard of the health care institution.

The factors statistically significantly influencing the iron-folic acid adherence were having good knowledge about anemia, previous history of abortion, urban residence, ANC initiation prior to 16 weeks of gestation, previous delivery of three or more children, having three or more visits in the current pregnancy and having good knowledge about IFAS.

This study revealed that women who are more knowledgeable on anemia (AOR 31.07 (16.75, 57.62)) as well as IFAS (AOR 123.94 (52.79, 290.97)) were more likely to be adherent. This is consistent with studies done in Nigeria and Ethiopia (21, 33, 44). This might be related with the knowledge they had on anemia and IFAS, the consequences resulted in and the prevention strategy. Pregnant women who received information about the importance of iron supplementation during pregnancy were more likely to be compliant than those who were not. This is consistent with studies done in India and Sudan (45, 46). Education is more likely to enhance female awareness of micronutrient deficiency and ways to overcome these deficiencies. Overall, educated women have a greater ability to stick to health care inputs such as IFA which offer better care for both the infant and the mother.

According to the present study finding history of abortion showed a significant association with Iron and Folic Acid supplementation adherence (AOR, 36.80 95% CI (19.64, 68.94)). This evidence is supported by a study conducted in Maputo, Mozambique(47). This might be because pregnant women who had a history of abortion may have a fear that abortion can happen again. Consequently, this may encourage them to give more emphasis to their antenatal care and the supplement too. In addition, they might be exposed to health-related information during abortion and post abortion care from health care providers in which they might be aware that abortion is caused by nutritional deficiency anemia and can be prevented by consumption of IFA tablets as recommended.

Pregnant women from urban were more adherent to IFAS (AOR 23.40 95% CI (8.39, 65.28)) than women from rural. The negative association between adherence to iron supplementation and living in rural areas could be due to disparities in access to iron supplementation despite having antenatal care.

Pregnant women who started their ANC follow up prior to 16 weeks, were more adherent to IFAS as compared to first ANC visit after 16 weeks (AOR 38.86 (20.88, 72.31)). This finding is consistent with a study done in Kenya (43). This could be due to more time for optimal counselling by the care providers.

The number of ANC visits was having a significant effect on adherence with IFA supplementation. This finding is consistent with studies conducted in North Western Zone of Tigray, Ethiopia (21). The reason might be that health providers could help women during their ANC visits by discussing adherence to IFA supplements, encouraging them to take the tablet as prescribed, and educating them on the health benefit of taking IFA supplements. This result might be linked to the fact that women who receive health education about adherence to iron and folic acid by the health professionals during their regular follow-up period.

Forgetting to take drugs and fear of side effects are among the common reasons for lack of adherence to IFA in this study. The finding of this study is supported by other studies done in Ethiopia (48). Health care providers in charge of ordering IFA during pregnancy should apply detail counseling about the possible mild side effects of the drug and convince them that these side effects are limited and self-managed. Regarding the issue of how to minimize forgetfulness, women should be continuously counseled to use different mechanisms like correlating with natural occurrences, sunrise or sunset, lunch or dinner, toilet use or hand washing so on and so forth.

6.1 Limitation of the study

This study has several limitations. One of the limitations of this paper is the adherence level of iron and folic acid among pregnant women is simply determined by a self-report mechanism (the women's response). This might affect the actual adherence level of the target population. Not all potential barriers to IFA adherence had been investigated and the measurement of the knowledge level of respondents about IFA is somehow subjective. The cross-sectional nature of the study does not allow establishing a strong cause-effect relationship. The smaller sample size in a single institution and convenience sampling technique made this study lack generalizability.

6.2 Conclusion

The adherence of IFAS among antenatal care attendant women in SPHMMC was low and significant proportion of women do not adhere to IFAS. This points out that the WHO and

FMOHE recommendations were not met despite the fact that IFA supplementation program during pregnancy is used to prevent iron deficiency anemia during pregnancy. Good knowledge about anemia, previous history of abortion, urban residence, ANC initiation prior to 16 weeks of gestation, previous delivery of three or more children, having three or more visits in the current pregnancy and having good knowledge about IFAS were identified as factors significantly associated with adherence to IFAS. Educating pregnant mothers and early ANC registration can improve adherence to IFAS. Government and other stakeholders should continue promoting the advantages of timely ANC follow-up, improve the quality of counseling in ANC service delivery and creating awareness and knowledge about anemia during pregnancy.

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ANNEXES

Annex – 1: Informed Consent Form (English)

Hello. My name is **Gebresilassie Andualem**, and I am conducting a research entitled *MAGNITUDE AND FACTORS ASSOCIATED WITH ADHERENCE TO IRON – FOLIC ACID SUPPLEMENTATION AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE AT ST. PAUL'S HOSPITAL MILLENIUM MEDICAL COLLEDGE, ADDIS ABABA, ETHIOPIA*, in partial fulfillment of the requirement for specialty certificate in Obstetrics and Gynecology.

You have been selected by chance among other participants. Participation in this survey is voluntary and you can choose not to take part. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planner's concerning IFA supplements among pregnant women. There will be no injections, drawing of blood or anybody fluid involved. The interview will take about 20 minutes. So, I kindly request you to spare me this time for the interview and I would like to thank you for your time and help.

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.

If you have any questions about the survey, feel free to ask me. Do you mind if we proceed?

Respondent agreed to be interviewed: ☐ Yes ☐ No

Interviewer

Full Name: _____

Signature: _____

Annex – 2: Informed Consent Form (Amharic)

የጥናቱ ተሳታፊዎች መረጃ መስጫ እና ፈቃደኝነት መጠየቂያ ቅፅ

እንደምን አሉ! ገብረስላሴ አንዱአለም እባላለሁ። በቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ሜዲካል ኮሌጅ የማህፀንና ጽንሰ ህክምና ክፍል የእረግዝና ክትትል በሚያደርጉ ነፍሰጡር እናቶች የሚወሰደው የብረት እና ፎሊክ አሲድ ታብሌት መድሃኒትን በትክክል መወሰዱንና አለመወሰዱን እነዲሁም ላለመወሰዱ አመላካች ነገሮች መለየት፣ አዲስ አበባ፣ ኢትዮጵያ የተሰኘ ጥናት እያካሄድኩ የምገኝ ስሆን ለጥናቱ አስፈላጊውን መረጃ ለማግኘት እርዎን ቃለ-መጠይቅ ልናደርግልዎ መርጠነዎታል።

ይህ ቃለ-መጠየቅ እርስዎ ፈቃደኛ ከሆኑ ብቻ የሚከናወን ሲሆን በዚህ ጥናት በመሳተፍዎ በቀጥታ የሚያገኙት ክፍያ የለም ። ነገር ግን የዚህ ጥናት ውጤት በጤናው ዘርፍ እቅድ ለሚያወጡ የመንግስት አካላት ጠቃሚ መረጃ ሊሰጥ ይችላል። ጥናቱን ለማካሄድ ምንም አይነት በመድፌ መወጋት፣ ደም ወይም ሌላ የሰውነት ፈሳሽ መስጠት የማያስፈልግ ሲሆን ቃለ መጠይቁ 20 ደቂቃ ያክል ስለሚወስድ ይህንን ጊዜ እንዲሰጡኝ በትህትና እጠይቃለሁ።

የሚሰጡን መረጃ ሚስጥራዊነቱን የሚጠበቅ ሲሆን እንደ ግለሰብ ተለይቶ የሚወሰድ መረጃ የለም። የጥናቱ ውጤት የህብረተሰቡን አጠቃላይ ሁኔታ እንጂ የአንድን ግለሰብ ምንም ነገር አያንጸባርቅም። የተሳታፊዎችን ስም ላለማሳየት ለመጠይቆቻችንን የራሳችን ቁጥር ስጥተናቸውል። የጥናቱ ተሳታፊዎችን ከምርምሩ ጋር በማጣቀስ የሚሰጥ የቃልም ይሁን የጽሁፍ ሪፖርት የለም።

በማናቸው ጊዜ ስለ ጥናቱ ምንም አይነት ጥያቄ ካልዎት ሊጠይቁን ይችላሉ። ጥያቄ ከሌለዎት ቃለ-መጠየቁን መቀጠል እንችላለን?

የተሳታፊ መልስ:- ☐ አዎ መቀጠል እንችላለን ☐ መቀጠል አንችልም

የመረጃ ሰብሳቢ

ስም: _____

ፊርማ: _____

Annex – 3: Questionnaire (English)

I. Socio-Demographic and economic Characteristics

Question	Response categories					
1) Age in years	1.					
2) Current Marital status	1. Single, divorced or widowed		2. Married		3.	
3) Religion you are following	1. Orthodox	2. Muslim	3. Catholic	4. Protestant	5. Others(specify):	
4) Place of residence	1. Rural			2. Urban		
5) Educational status	1. Can't read and write		2. can read and write,		3. Completed secondary and above	
6) Current Occupation	1. Housewife	2. Government employee	3. Private employee	4. Laborer	5. Merchant	6. Farmer
7) Husband's educational level	1. Can't read and write	can read and write,	Completed secondary and above			
8) Current occupation of her husband	1. Farmer	2. Government Employee,	3. private employee	4. Daily laborer	5. Merchant	
9) Family's average monthly income	_____ Birr (Ethiopian)					

II. Pregnancy and health status characteristics

Question	Response categories
10) How many deliveries you had till now	1. Below three 2. Three and above
11) History of Still birth?	1. Yes 2. No

12) History of Abortion?	1. Yes 2. No
13) Did you receive antenatal care for the recent pregnancy?	1. Yes 2. No
14) If yes for (13), how many times	1. Two or less visits 2. Three or more visits
15) At what gestational age did you start ANC?	1. ≥ 16 weeks 2. < 16 weeks
16) Where did you receive the ANC?	1. Health post 2. Health center 3. Hospital 4. Other (Specify): _____
17) Any health problem during this pregnancy	1. Yes 2. No
18) If yes for (19), what problem	1. Hypertension 2. Diabetes mellitus 3. Heart disease 4. Antepartum hemorrhage 5. Tuberculosis
19) Have you taken Medication for the problem during	1. Yes 2. No
20) Do you know any illness called anemia?	1. Yes 2. No
21) Do you know the cause?	Yes / No
22) Do you know that anemia can complicate pregnancy?	1. Yes 2. No
23) Do you know the most susceptible groups to anemia	1. Yes 2. No

24) Is anemia during pregnancy preventable?	1. Yes 2. No
25) What is your source of information	1. Health workers 2. Media 3. Friends 4. School 5. Other (specify): _____

III. Knowledge on iron/folate supplement categories

Question	Response categories
26) Do you know the drug called iron/folate? (Show the strip)	1. Yes 2. No
27) Do you know the benefit of iron/folate supplement?	1. Yes 2. No
28) If yes for (27) what is its benefit of taking iron/folate supplement (more than one answer is possible)	1. Prevent Maternal Death 2. prevent infant mortality 3. Prevent Birth defects 4. increase maternal blood 5. Give strength for the mother 6. Other (specify): _____
29) Do you think that iron/folate supplement has risk?	1. Yes 2. No
30) If yes for (29), What are the risk of supplementing iron/folate supplement	1. Harm fetus growth 2. cause bigger fetus 3. Result in complicated delivery 4. Other (specify): _____
31) For how long does the supplement should be taken?	1. < 3 months 2. $\geq$ 3 months 3. I don't now

32) What is your source of information about iron/folate supplement (> 1 answer is possible)	1. Health workers 2. Media 3. Friends 4. School
--	--

IV. Adherence to iron/folate supplement related factor

Question	Response categories
33) Have you taken iron/folate supplementation for current pregnancy?	1. Yes 2. No
34) How many tablets did you take totally?	1. took < 90 tablets 2. Adherent (too $\geq$ 90 tablets)
35) If, you had taken < 90 tablets, what was reason for not taking the supplement properly? (> 1 answer possible)	1. Forget fullness 2. Because of Too many pills 3. Fear of side effects 4. Unpleasant test 5. Fear of big weight 6. Difficulty in delivery 7. Fear of harm to fetus 8. Failure to get adequate supplement in the health facility 9. Long waiting time at health facility 10. Service is Far from residence 11. Poor health care provider communication 12. Lack of information about how long to take
36) If the answer to question No 35 is due side effect, which side effects were responsible (> 1 answer is possible)	1. Vomiting 2. Diarrhea 3. Constipation 4. Heartburn 5. Abdominal cramp

V. Health care and system related factor

Question	Response categories
37) How long it takes (in hour) to reach Health institution from your residence with public transport?	Less than an hour 1 – 3 hours Half a day Days
38) Is there any health education about iron/folate supplement during collecting your supplement?	1. Yes 2. No
39) If your answer to question No 38 is yes, what was the issue?	1. Purpose of supplement 2. Duration of the supply 3. Side effect 4. Follow up visit
40) How many tablets did you collect per visit	1. 30 table 2. 60 table 3. 90 table 4. > 90 table
41) What is the average Waiting time in the health facility while you were collecting iron/folate supplement	Less than 10 minutes 10 – 20 Minutes More than half hour
42) Do you face any problem in the facility while you are collecting your supplement?	1. Yes 2. No
43) If the answer to question number 42 is yes, which problem do you face?	1. Shortage of supplement in the facility 2. Long waiting time in the health institution 3. Poor health care provider communication

Thank you for your Participation

Annex – 4: Questionnaire (Amharic)

ቃለ መጠይቁ የተደረገበት ቀን	ቀን	ወር	አመት
	_____	_____	2013 ዓ.ም
የጤና ተቋሙ ስም	ቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ሜዲካል ኮሌጅ የማህፀንና ጽንሰ የህክምና ክፍል		
መለያ ቁጥር (001 - 399)			
የመረጃ ሰብሳቢዉ	ስም _____	ፊርማ _____	
የተቆጣጣሪዉ	ስም _____	ፊርማ _____	

I. መሃበራዊ፣ ኢኮኖሚያዊ እና ስነ ህዝባዊ መረጃ ማሰሻ ጥያቄዎች

ጠያቂ	መልስ/ አማራጮች						
1) እድሜዎ?	_____						
2) የጋብቻ ሁኔታ?	1. ያላገባች, የፈታች ባሏ የሞተ					2. ያገባች	
3) ሃይማኖትዎ ምንድን ነው?	1. ኦርቶዶክስ	2. ሙስሊም	3. ካቶሊክ	4. ፕሮቴስታንት			
4) የት ነው የሚኖሩት?	1. ገጠር			2. ከተማ			
5) የትምህርት ደረጃዎት ምንድን ነው?	1. መጻፍና ማንበብ የማትችል		2. መጻፍና ማንበብ የምትችል		3. የመጀመሪያ ደረጃና ከዛ በላይ		
6) ስራዎት ምንድን ነው?	1. የቤት አመቤት	2. የመንግስት ሰራተኛ	3. የግል ሰራተኛ	4. የቀን ሰራተኛ	5. ነጋዴ	6. ገበሬ	7. ሌላ
7) የባለቤትዎ የትምህርት ደረጃ?	መጻፍና ማንበብ የማትችል		☐ መጻፍና ማንበብ የምትችል		☐ የመጀመሪያ ደረጃና ከዛ በላይ		
8) የባለቤትዎ ስራ ምንድን ነው?	1. ገበሬ	2. የመንግስት ሰራተኛ	3. የግል ሰራተኛ	4. የቀን ሰራተኛ	5. ነጋዴ	6. ሌላ	
9) የቤተሰብዎ ወርሃዊ ገቢ	_____ ብር						

II. ከእርግዝናና ጤንነትዎ ጋር የተያያዙ ጉዳዮች

ጠያቂ	መልስ/ አማራጮች
10) እስካሁን ስንት ጊዜ ወልደዋል?	1. ከሶስት በታች 2. ሶስትና በላይ

11) ህይወት የሌለው ልጅ ወልደው ያውቃል?	1. አዎ 2. አልወለድኩም
12) ውርጃ ኖሮዎት ያውቃል?	1. አዎ 2. አያውቅም
13) ለአሁኑ እርግዝናዎ ክትትል አድርገው ያውቃል?	1. አዎ 2. አላውቅም
14) ለ (13), መልስዎ አዎ ከሆነ፣ ስንት ጊዜ?	1. ሁለትና በታች 2. ሶስትና ከዛ በላይ
15) በስንት ጊዜዎ ክትትል ጀመሩ?	ከ 16 ሳምንት (4 ወር) በላይ ከ 16 ሳምንት (4 ወር) በፊት
16) ክትትል የት ነው የጀመሩት?	1. የጠየና ኬላ 2. ጤና ጣቢያ 3. ሆስፒታል
17) በዚህ እርግዝና የጤና ችግር ነበረ?	1. አዎ 2. አልነበረም
18) ለ (19), መልስዎ አዎ ከሆነ፣ ምን ችግር ነበረ?	1. የደም ግፊት 2. የስኳር በሽታ 3. የልብ ህመም 4. ቅድመ ወሊድ ደም መፍሰስ 5. የቲቢ መሽታ 6. ሌላ
19) ለተገኘው ችግር መድሀኒት ወስደሽ ነበር?	1. አዎ 2. አልወሰድኩም
20) ደም ማነስ ሲባል ሰምተዉ ያውቃል?	1. አዎ 2. አላውቅም
21) የደም ማነስ መንስኤዎች ያውቃል?	1. አዉቃለሁ 2. አላውቅም
22) የደም ማነስ እርግዝና ላይ ችግር እንደሚያመጣ ያውቃል?	1. አዎ 2. አላውቅም
23) ለደም ማነስ ተጋላጭ የትኞቹ እንደሆኑ ያውቃል?	1. አዎ 2. አላውቅም

24) በእርግዝና ጊዜ የሚከሰትን የደም መከሰት መከላከል እንደሚቻል ያውቃሉ?	1. አውቃለሁ 2. አላውቅም
25) ይህን መረጃ ከየት አወቁ?	1. ከጤና ባለሙያ 2. ከሚዲያ 3. ከጓደኛ 4. ከትምህርት ቤት 5. ሌላ

III. የብረት እና ፎሊክ አሲድ ታብሌት እና አወሳሰድ እዉቀትን የተመለከቱ ጥያቄዎች

ጥያቄ	መልስ/ አማራጮች
26) የብረት እና ፎሊክ አሲድ ታብሌት ሲባል ሰምተዉ ያዉቃሉ?	1. አዎ 2. የለም
27) የብረት እና ፎሊክ አሲድ ታብሌት በእርግዝና ጊዜ መዉሰድ ለእናትዮዋ ጠቃሚ ነዉ?	1. አዎ 2. አይደለም
28) ለ (27) መልስዎ አዎ ከሆነ፣ የትኞቹ?	3. የእናትን ሞት ይከላከላል 4. የህጻናትን ሞት ይከላከላል 5. የአፈጣጠር ችግርን ይከላከላል 6. የእነትዮዋን የደም መጠን ይጨምራል 7. ለእናትዮዋ ጥንካሬ የስጣታል
29) የብረት እና ፎሊክ አሲድ ታብሌት በእርግዝና ጊዜ መዉሰድ ጉዳት አለዉ?	1. አዎ 2. የለውም
30) ለ (29), መልስዎ አዎ ከሆነ፣ እነዚህ ችግሮች የትኞች ናቸው?	1. ጽንሱን መጉዳት 2. ጽንሱን ማፋፋት 3. ወሊድን ማክበድ 4. ሌላ
31) የብረት እና ፎሊክ አሲድ ታብሌት ለምን ያህል ጊዜ መዉሰድ አለበት?	1. < 3 ወር 2. ≥ 3 ወር 3. አላውቅም
32) ይህንን መረጃ እንዴት አወቁ?	1. ከጤና ባለሙያ 2. ከሚዲያ

	3. ከጓደኛ
	4. ከትምህርት ቤት

IV. የብረት እና ፎሊክ አሲድ ታብሌት አዎሳሰድ እና ተያያዥ የጤና ሁኔታን ለማስሰ የተዘጋጁ ጥያቄዎች

ጠያቂ	መልስ/ አማራጮች
33) የብረት እና ፎሊክ አሲድ ታብሌት በዚህ እርግዝና ወስደው ያውቃሉ?	1. አዎ 2. አልወሰድኩም
34) ለ (33) መልስዎ አዎ ከሆነ፣ ጠቅላላ ስንት ታብሌት ወሰዱ?	1. ከ 90 እንክብል ቦታች 2. ዘጠናና ከዛ በላይ እንክብል
35) በዚህ እርግዝናሽ ወቅት በአጠቃላይ ከ 90 እንክብል ቦታች ከወሰድሽ፣ ምክንያትሽ ምን ነበረ? (ከ 1 በላይ መልስ ይቻላል)	1. እየረሳሁ 2. ብዙ መድሀኒት ስለምወስድ 3. የጎንዮሽ ችግር ስላመጣብኝ 4. ጣዕሙ ደስ ስለማይል 5. ክብደት እንዳይጨምርብኝ 6. ምጤን እንዳያከብድብኝ 7. ጽንሱን እንዳይጎዳብኝ 8. ከጤና ተቋሙ አነስተኛ መድሀኒት ስለተሰጠኝ 9. ጤና ተቋሙ ጋር አገልግሎት ለማግኘት ረጅም ሰዓት ስለሚፈጅ 10. ጤና ተቋሙ ከቤቴ ሩቅ ስለሆነ 11. የጤና ባለሙያዎች ነግግር ደስ ስለማይል 12. እነዴትና ምን ያህል እንደሚወስድ መረጃ ስለሌለኝ
36) ለ (35) መልስዎ የጎንዮሽ ችግር ስላመጣብኝ ከሆነ፣ የትኛው ችግር? (ከ 1 በላይ መልስ መስጠት ይቻላል?)	1. ማስታወክ 2. ተቅማጥ 3. የሆድ ድርቀት 4. ሆዴን ማቃጠል 5. የሆድ ቁርጠት 6. ሌላ _____

V. እርግዝና እና ጤና ተቋም ያላቸው ተያያዥነት

ጠያቂ	መልስ/ አማራጮች
37) በህዝብ መኪና ቢመጡ ከቤተ እስከ ጤና ተቋሙ ስንት ሰዓት ይፈጃል?	ከ 1 ሰዓት በታች ከ 1 – 3 ሰዓት ግማሽ ቀን ከ 1 ቀን በላይ
38) በባለሙያ የብረትና ፎሊክ እንክብል መውሰድ እንዳለብዎት ተነግሮዎታል?	1. አዎ 2. አልተነገረኝም
39) ለ (49) መልስዎ ተነግሮኛል ከሆነ፣ ስለምን ነበር?	1. እንክብሎችን መውሰዱ ለእርግዝናዬ ስለሚሰጠኝ ጥቅም 2. እንክብሎችን መውሰድ ስላለብኝ ጊዜያት 3. ስለሚኖረው የጎንዮሽ ችግር 4. ማድረግ ስላለብኝ ክትትል
40) በእያንዳንዱ ክትትልሽ ምን ያህል እንክብል ትወስጃ ነበር?	1. 30 እንክብል 2. 60 እንክብል 3. 90 እንክብል 4. > 90 እንክብል
41) እንክብሎች ለማግኘት ምን ያህል ደቂቃ ይፈጃል?	ከ 10 ደቂቃ በታች ከ 10 – 20 ደቂቃ ከ 30 ደቂቃ በላይ
42) እንክብሎችን ስትወስጃ ችግር አጋጥሞሽ ነበር?	1. አዎ 2. አላጋጠመኝም
43) ለ (42) መልስዎ አዎ ከሆነ፣ ችግሩ ምን ነበረ?	1. የመድሀኒት እጥረት 2. መድሀኒቱን ለማግኘት ረጅም ሰዓት ይፈጃል 3. የጤና ባለሙያዎቹ ንግግራቸው ደስ አይልም

ለነበረን ቆይታ አመሰግናለሁ

DECLARATION

I, the undersigned declare that this thesis is my original work in partial fulfillment of the requirement for the postgraduate study in OBGYN. I also declare that it has never been presented in this or any other university and that all resources and materials used in the thesis have been duly acknowledged.

Resident's Name: Dr Gebresilassie Andualem

Signature: _____

Date of submission: August 20, 2021

This thesis has been submitted for examination with approval by advisor.

<u>Advisor</u>	<u>Signature</u>	<u>Date</u>
Dr. Ferid Abas	_____	_____
Mr Belay Leulseged	_____	_____

Date of submission: August 30, 2021