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ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF ALLIED HEALTH SCIENCE

DEPARTMENT OF NURSING AND MIDWIFERY

FACTORS ASSOCIATED WITH ADHERENCE TO IRON AND FOLATE SUPPLEMENT  
AMONG PREGNANT WOMEN ATTENDING AT SELECTED PUBLIC HEALTH  
INSTITUTIONS IN GOBA TOWN, SOUTH EAST ETHIOPIA, 2015

A THESIS TO BE SUBMITTED TO SCHOOL OF GRADUATE STUDIES ADDIS ABABA  
UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE DEGREE  
OF MATERNITY AND REPRODUCTIVE HEALTH

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## **ACRONYMS**

**ANC:** Antenatal Care

**CHW:** Community Health Worker

**EDHS:** ETHIOPIA Demographic Health Service

**IDDS:** Individual Dietary Diversity Score

**IF:** Iron & folate

**INACG:** International Nutritional Anemia Consultative Group

**NGOs:** Non-Governmental Organizations

**NHANES:** National Health and Nutrition Examination Survey

**SPSS:** Statistical Package for Social Sciences

**WHO:** World Health Organization.

## **ABSTRACT**

**Back ground:** Anemia is the leading causes of morbidity and mortality among pregnant women

The coverage of the study by EDHS 2011 was (0.4%) which is very low than this study.

**Objective:** To assess associated factors and adherence of iron and folate supplementation among pregnant women attending antenatal clinic. At selected public health institutions, in Goba town, south east Ethiopia 2015.

**Methodology:** Institutional based cross-sectional study was conducted at selected public health institutions, in Goba town, south east Ethiopia 2015. from April 14 to June 2015. Data were collected by pretested questionnaires' A total of 405 pregnant women were included in the study. Data were entered and analysis using SPSS version 20. Both Bivariate and multivariate logistic regression analysis was carried out to see significant association, a P-value less than 0.05 was considered as significant association

**Result:** In the study 18% of the studied subject had adhered to iron/folate supplement. Educational status of mother, knowledge on anemia (AOR =.41 (95% CI .20,84)), knowledge on benefit of iron folic acid (AOR =.38 (95% CI .20-0.77)), health Education during antenatal care (AOR 4.03 (95% CI 1.4- 11.5) and history of abortion ( AOR 3.79(1.68-8.55) were found to be factors associated with adherence to iron folate supplement.

**Conclusion:** In this study the adherence rate to iron/folate supplements is 18% among pregnant women. Comparing the national result (0.4%) it is higher, needs high effort by other researchers.

**Recommendation:** Sensitization of pregnant women by health providers to continue supplements of iron and folate throughout pregnancy. Provision of health education on anemia and importance of visits at least four times during pregnancy and establishment of mobile clinics

**Key words:** Anemia, Adherence to iron/folate Supplement, pregnant women.

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# CHAPTER ONE

## 1.1 BACK GROUND OF THE STUDY

Anemia is a global public health problem with major consequences for human health (1). Half of anemia burden is assumed to be due to iron deficiency (2). It is a reduction of hemoglobin concentration less than 11g/dl, with physiological disorder if one of the following micronutrient is absent. Iron, vitamin B12 or folic acid. Many studies documented the adverse effects of maternal anemia, 12.8% and 3.7% of maternal mortality in Asia and Africa respectively is directly attribute-able to anemia (3, 4).

Women in developing countries are always in a state of precarious iron balance during their reproductive years with 30% estimated prevalence of anemia, (5).The prevalence varies widely in different settings and accurate data are often lacking, in resource- limited area. In sub-Saharan Africa where iron deficiency is common, the prevalence of anemia has often been used as a proxy for iron deficiency anemia (IDA) (6, 7).

.In Africa 57.1% of the pregnant women were anemic, in pregnant women anemia is a severe global problem of 62.7% (8).Geographically, those living in Africa are at the risk.(9). Studies conducted in South-East Asia, Latin America and in only a few African Countries anticipated is associated with a number of factors, one of the main reason why these programs have been less effective than:

1.gastrointestinal side effects that can occur with taking iron; (2) inadequate Supply of tablets (including limited resources to purchase tablets); (3) inadequate counseling of patients by healthcare providers concerning the utility of tablets and possible transient side-effects; (4) poor utilization of prenatal health-care services; (5) lack of knowledge and/or patient fears about the tablets; and (6) community beliefs, attitudes and practices that affect women's perception regarding tablet use(10,11).

In Ethiopia; anemia is the severe problem affecting 62.7% of pregnant mothers and 52.3% non-pregnant women (12).To combat Iron deficiency anemia, many developing countries including Ethiopia have systems for delivery of iron and folic acid and have a national policy to prevent and treat anemia in pregnancy. This includes the provision iron/folate supplement to all pregnant

women (13).

The recommended dose by the Ministry of Health in Ethiopia is 60mg/day for 90 days for iron and 400µg of folic acid daily (14). For women, the consequences of anemia include reduced energy and capacity for work poor pregnancy and birth outcomes including premature delivery, low birth weight, and increased prenatal mortality, and increased risk of death during delivery and postpartum. It is estimated that as many as 20% of maternal deaths are caused by anemia and that anemia may be an associated cause in as many as 50% of maternal deaths worldwide (15)

## **1.2 STATEMENT OF THE PROBLEM**

Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health. Around two billion people accounting over 30% of the world's population are anemic, mainly due to iron deficiency (16). In addition to this most of the Africa and South East Asia are in the range of anemia, The report of Ethiopian Demographic Health Survey in 2011 shares the serious outcomes of iron and folate deficiency with sub-Saharan countries followed with maternal and children morbidity and mortality (17).

However, it would be the best reply to the question of vulnerable group as a national level. Assessing the factors adherence to iron and folate helps, to reform the national public policy in the future and shows a future direction for sustainable training, for the reducing of maternal mortality . World Health Organization recommended daily dose of Iron: 30–60 mg of elemental iron and Folic acid: 400 µg (0.4 mg) On daily bases throughout pregnancy (18).

Assessing the factors adherence to iron and folate helps, to reform the national public policy in the future and shows a future direction for sustainable training, for the reducing of maternal mortality. In Ethiopia the recommended dose by the ministry of health is 60mg/day for 90 days and 400ug/day for folate. According to the demographic health survey of (2011), adherence to iron/folate supplements for pregnant women in Ethiopia is very low (0.4%) in National level comparing to other studies (19).

The national Nutrition Strategy adopted key target of increasing the proportion of pregnant women who get Iron/folate for more than 90 days during pregnancy and the post-partum period to 50% by 2015 in there discrepancy in the ANC coverage and the iron/folate intake level. There for, Eighty-three percent of women did not take iron tablets during their last pregnancy and Fifteen percent took them for less than 60 days, and less than 1 percent took them for 90 days or more during their last pregnancy. Generally, the proportion of women who took iron during each length of time increases with educational level (20).

### **1.3 Significance of the study**

Anemia is a global public health problem affecting both developing and developed countries of human health (21). Anemia is the most widespread nutritional problem among pregnant women and has severe consequences for both productive and reproductive roles. Maternal and infant mortality rate and the incidence of prematurity among anemic women are significantly higher. However, anemia is often associated with inadequate maternal weight gain and labor complications with an increased risk of maternal mortality (22).

The major strategy to reduce iron deficiency anemia in pregnancy is iron supplementation. The strategy is used for control of nutrition problems need regular review to maintain and improve their effectiveness. Ethiopia is on the track of achieving the goal of preventing anemia with supplementation of iron/folate during pregnancy. This will create awareness for the pregnant women and the community during ANC. However, there are still more challenges to maintain and to reach the target with in designated time frame. (23).

This study shows the anemia outcomes and the associated factors which are direct contributing to anemia. The finding of this study will be used for further researchers and policy makers while designing an intervention to combat the anemia out comes during pregnancy and to improve supplementation of micronutrients for vulnerable groups in the study area (24).

## CHAPTER TWO

### 2.1 LITERATURE REVIEW

Anemia is the most prevalent nutritional problem in the world due mainly to iron deficiency that affects about one third of the population, women suffering the most. The global prevalence of anemia in pregnant women is 42%, in addition to Africa accounts 68% prevalence of anemia in the pregnant women (25).

In Ethiopia, anemia is the severe problem affecting pregnant mothers largely (26). According to EDHS report of 2011, 17% of Ethiopian women age 15-49 are anemic, with 13% mild anemia, 3% having moderate anemia, and 1 % having severe anemia(26). A higher proportion of pregnant women are anemic 22% than women who are breastfeeding (19 %) and women who are neither pregnant nor breastfeeding 15 %.( 27).

Unfortunately most of iron supplementation program has been less effective than expected. According to Ethiopian Demographic health Survey 2011 In Ethiopia 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 1 percent took them for 90 days or more during their last pregnancy (28).

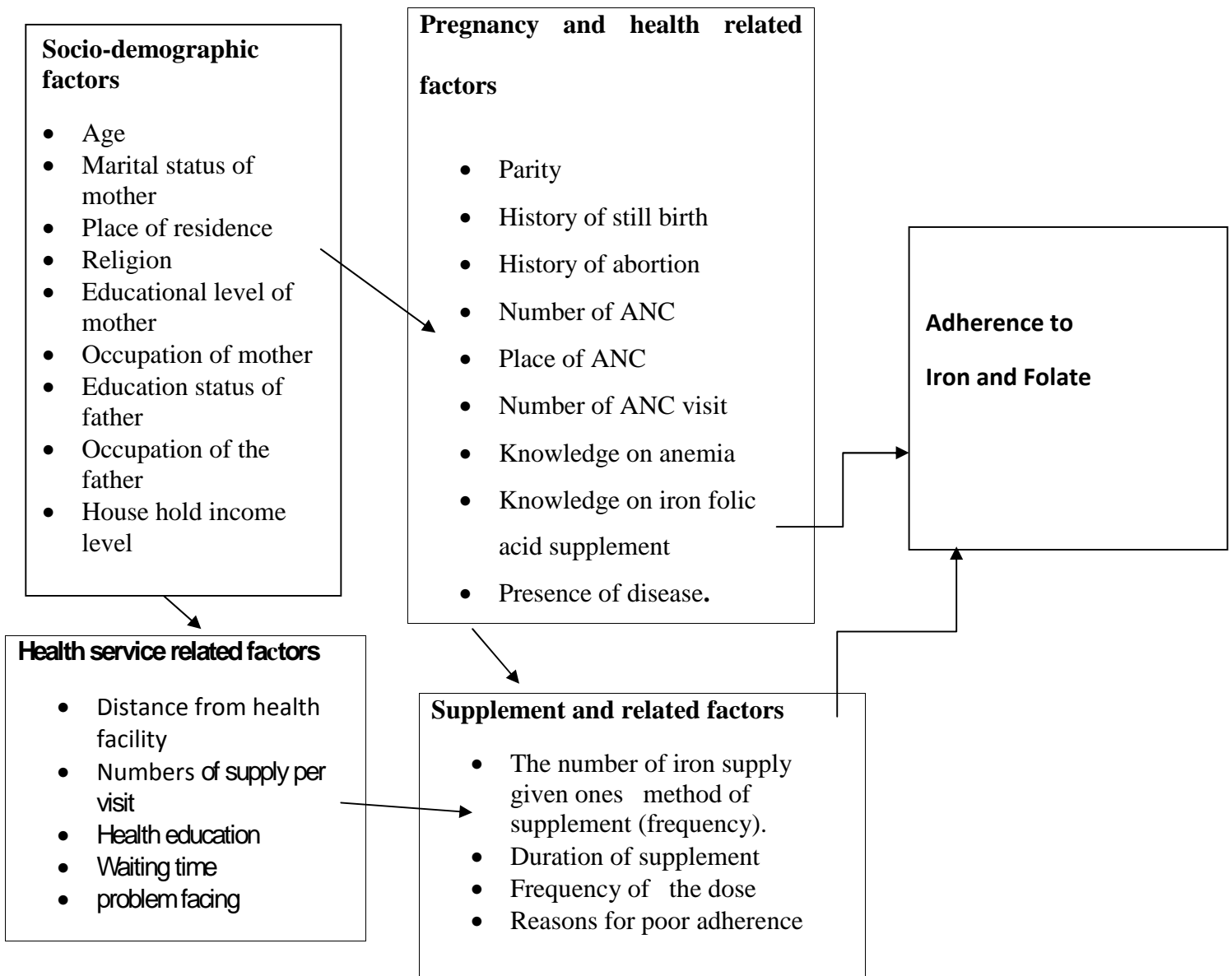
There are very small differences in daily iron supplements between urban and rural women and among regions(29). In general, the proportion of women who took iron during each length of time increases with educational level (30). An institutional based study conducted among pregnant women attending antenatal clinic at Thika district hospital of Kenya show 24.5% adherence rate to iron/folic acid supplements(31). Another quantitative and qualitative study conducted in Cambodia show adherence rate of 47 %.(32).

And a study in India Shows that women with higher education and better income are more likely to adhere for IFA supplement. Distance was also identified as an important *environmental factor* of taking iron/folic acid supplement. A study conducted In Senegal on two hundred and twenty-one pregnant women reveals that (58%) were motivated by: (1) the perception of improved health upon taking the tablets (2) the insistence by midwives that they take the tablets; and (3) the mention that the tablets would improve health (33).

Although a study And a study done in rural Bangladesh shows that knowledge of mothers about anemia and IFA was very low and the level of women's knowledge has increased after awareness-raising activities are done. Women who have provided the awareness creation were more likely to adhered Iron and folate compared to those who did not receive. This finding is in favor of the assumptions that women's knowledge on anemia, iron and folate is important in influencing iron and folate supplement.

Women with low compliance (42%) reported: (1) the experience of side-effects that they associated with the tablets (2) misunderstanding that they needed to continue taking the tablets throughout pregnancy (and (3) forgetfulness. Pregnant women show 34.4% adherence rate. Anemia results from non-nutritional factors, such as hemorrhage, infection, chronic disease states and from nutritional ones, including deficiencies of iron, certain vitamins, copper, and protein. Iron deficiency remains the major cause of anemia and is the most (34).

## Conceptual frame work



**Figure 1: Conceptual frame work showing the linkage between Women's experiences and attitude to iron and folate and other factors developed from literature review.**

## **CHAPTER THREE**

### **3. OBJECTIVE**

#### **3.1 GENERAL OBJECTIVE**

The general objective of this study was to assess adherence to iron/folate supplement and its associated factors among ANC attendant mothers.

#### **3.2 SPECIFIC OBJECTIVES**

The specific objectives of this study were:

- To assess adherence to iron/folate supplement among ANC attendants.
- To identify factors affecting adherence to iron/folate supplement among ANC attendant.

## **CHAPTER FOUR**

### **METHODOLOGY**

#### **4.1 STUDY AREA AND PERIOD**

The study was conducted At selected public health institutions, in Goba town, south east Ethiopia 2015. Which is located 445 km from Addis Ababa? The altitude of the town was 2510 to 2800 meters above sea level. The town has one urban and six rural Keble's. According to 2007 national census reported a total population for this woreda was 40,757, of whom 20,615 were men and 20,142 were women, around 76.89% of the inhabitants were Muslim, while 22.89% of the population practiced Ethiopian Orthodox Christianity & 1.04% were Protestant. The three largest ethnic groups reported were the Oromo (91.2%), the Amhara (5.7%) and the Somali (1.44%). The study was conducted from April 14 to June 17, 2015(28)

#### **4.2. STUDY DESIGN**

Institutional based cross sectional study design to determine the adherence rate and factors affecting to iron/folate supplements among pregnant women At selected public health institutions, in Goba town, south east Ethiopia 2015.

#### **4.3. SOURCE OF POPULATION**

The source population could all pregnant women attending ANC At selected public health institutions, in Goba town, south east Ethiopia 2015.

#### **4.4. Study population:**

Sampled pregnant women having ANC follow up in the study period

## 5. INCLUSION AND EXCLUSION CRITERIA

### 5.1 Inclusion criteria:

All pregnant women who have ANC follow up during the study period At selected public health institutions, in Goba town, south east Ethiopia 2015.

### 5.2 Exclusion criteria:

Mothers who were seriously ill at the time of data collection excluded from the study.

## 6. SAMPL SIZE DETERMINATON

Sample size was computed based on the formula used to estimate a single population proportion formula with a 95 % confidence interval and 5 % marginal error. Since current actual adherence rate is not known, a rate of 50% is preferred to obtain the large possible sample size.

### 6.1 S ample size calculation.

The actual sam ple size for the study was determined using the formula used to estimate a single population proportion formula with a 95% confidence interval and 5% marginal error. Since c by assuming 5% marginal error and 95% confidence interval ( (alpha)=0.05) Since current actual adherence rate is not known, a rate of 50% is preferred to obtain the large possible sample size (prevalence of ANC follow up is 50% Or  $p= 0.5$  using the following formula).

$$n = \frac{\left( Z \frac{r}{2} \right)^2 p(1-p)}{d^2} = \frac{Z^2 p(1-p)}{d^2} = \text{Were}$$

$n$ = is the minimum sample required

$P$ = the prevalence rate adherence to iron/folate supplement (50 % = 0.5)

$D$  = the margin of error (the required precision) assume to be = 5% = 0.05

Z= the upper percentile of the normal distribution 1.96

$N = (1.96)^2 (0.05) (0.05) / 0.05^2 = (384 + 38) = 422$  the final sample size is 405

The desired sample size calculated using the following correction factor formula as follows:  $n = n / (1 + [n/N])$ , where N= study population, sample size = 405

## **6.2 Sampling technique**

Selected public health institutions was chosen purposively because it had high ANC coverage and Arada health center was selected from the three health centers by simple random technique, and then desired numbers of study participants were computed proportionally for each study site. In addition study units were selected by simple random sampling technique until the desired sample size (n= 405) was obtained from the entire study site.

## **6.3 Data collection instrument**

A structured questionnaire were used and prepared in English and translated into Amharic and then, translated back in to Affan Oromo to check for its consistency for quantitative data. Main points included in the questionnaire was socio demographic characteristics, knowledge on anemia, benefits of iron/folate, health related characteristics and health education during supplement collection in the health facility. The issue addressed was assessing associated factors with adherence to iron/folate among pregnant women.

## **6.4 Data collection procedure**

Data were collected using pretested questioner by interview in Robe town, Robe Hospital and Wosha health center from two health centers in the town based on client flow. the questioner were prepared in English and translated in to affan Oromo and then to Amharic. A total of six diploma midwives data collector and two BSC nurses supervisors were participated in the study

## **6.5 Data quality assurance**

To ensure quality of data, three days training was provided to data collectors and supervisors, data collection material were pretested using 5% of similar population of Kebeles of other Robe Woreda. Regular supervision was made during data collection. Collected data were manually checked for completeness, accuracy and clarity on daily basis.

## **6.6 pretest**

Pretest were conducted on ANC follow up thirty five women at Robe town, in Robe Hospital and Wosha health center 14Km far away from Goba, but it had similar situation with to test its variability and subjects, who were involved in the pre-test excluded from the study, then the questionnaire was assessed for its clarity, length and completeness and the necessary correction was done accordingly.

## **6.7 data processing and analysis**

Data were entered into a computer by SPSS version 20 for analysis. Description of means frequency, proportion and rates of a given data for each variable was calculated. Bivariate analysis was done to see the association of each independent variable with the outcome variables and those predictor variables which have a p value  $> 0.2$  was entered in to Multivariate logistic regression model to identify the effect of each explanatory variable on the outcome variables. A p-value  $< 0.05$  was considered as statistically significant variables and adjusted odds ratio with 95%CI was calculated to see the association.

## **7.VARIABLES OF THE STUDY**

### **7.1 Dependent Variables:**

Adherence to iron/folate supplement

### **7.2 Independent variables:**

- Socio-demographic factors
- Age
- Religion
- Marital status of the mother
- Educational status
- Occupations

## **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 IFA

### **Health care and system related factors**

- Distance from health service
- Number of supplement per visit
- Health education at the time of supplement collection
- Number of iron and folate supplement collected per visit

## **8. ETHICAL CONSIDERATION**

Ethical clearance obtained from departmental review board of Nursing and Midwifery, College of Health Science, Addis Ababa University and Offered to Bale zone health burea and Goba town health office. Then the Woreda health office sends official letters to local authority of all kebeles. The purpose and the importance of the study explained and informed concent secured. Confidentiality maintained at all level of the study. Participants involvement in the study is on voluntary bases and that they can withdraw any time if they want. All the information given by the respondents are used for research purposes only. confidentiality and privacy was maintained by omitting the name of the respondents during data collection procedure

## **9. OPERATIONAL DEFINITION OF VARIABLES**

**Knowledge to anemia:** Those who score mean value and above of questions asked about cause, consequence, risk group and method of prevention of anemia are considered as having good knowledge of anemia. And those who score less than mean value of questions asked about cause, consequence, risk group and method of prevention of anemia are considered as having poor knowledge of anemia.

**Knowledge to benefits of Iron/folic acid:** Those who score mean value and above of questions asked about benefits of iron/ folic acid are considered as having good knowledge of benefits of iron folic acid.

**Antenatal services** -pregnancy check-up by health personnel, provision of iron/folic acid supplements, tetanus toxoid vaccination and health education and counseling.

**Adherence:** mothers are said to be adhered to IFA supplement if they took 65% or more of the supplement, equivalent to taking supplement at least 4 days a week during three months period.

**Non adherence:** pregnant mother is said to be not adhered to IFA supplement if they took less than 65% of the supplement, equivalent to taking supplement less than 4 days a week during three months period.

## **10. DISSIMINATION & UTILIZATION**

The result of the study will be disseminated to Nursing and midwifery department, university of Addis Ababa as part of MSC in adherence to iron and folate thesis, Oromia Health and other responsible bodies.

The result would be presented in different seminars, meeting conference and workshops. Moreover effort done to publish the findings of the study in different scientific Journal publishing sites.

## CHAPTER FIVE

### RESULT & DISCUSSION

#### 5.1 RESULTS

##### 6.1 Socio-demographic characteristics

In this study 405 (100%) of the required sample pregnant women attending antenatal care were participated in the study. The mean age of the respondents was 26.3 ( $\pm 5.1$ ) years. Around 35.6% of respondent were in age group of 21-25 years and about 6.9 % were in age group of 36-40 years. Majority of the women interviewed were married (91.4 %) and rural dwellers (83.2 %). About (30.1%) of the respondents were unable to read and write, (28.9%) can read and write, (13%) had primary school level and (20.7%) had secondary school level, the percentage of pregnant women who had college and university level were (7.2 %). Regarding occupation majority of the respondent were house wives (72.6). (Table 1)

**Table1: Socio-demographic and economic characteristics of respondent of pregnant women, At selected public health institutions, in Goba town, south east Ethiopia 2015.**  
(n=405)

	FREQUENCY	Percent ( 100%)
<b>Age in years</b>		
16-20	51	12.6
21-25	144	35.6
26-30	132	32.6
31-35	50	2.7
36-40	28	6.9
<b>Marital status</b>		
Single	15	3.7
Married	370	91.4
Divorced	4	1.0
Widowed	16	4.0
<b>Religion</b>		
Orthodox	174	43.0
Catholic	6	1.5
Muslim	213	52.6

<b>Protestant</b>	12	3.0
<b>Residence</b>		
<b>Rural</b>	337	83.2
<b>Urban</b>	68	16.8
<b>Family size</b>		
<b>&lt; 4 family</b>	71	17.5
<b>4-7 family</b>	253	62.5
<b>&gt;7 Family</b>	81	20.0
Educational level of mother		
<b>Can t read and write</b>	122	30.1
<b>Can read and write</b>	117	28.9
<b>Primary</b>	53	13.1
<b>Secondary</b>	84	20.7
<b>Above secondary</b>	29	7.2
Occupation of mother		
<b>House wife</b>	294	72.6
<b>Governmental employee</b>	41	10.1
<b>Private employee</b>	18	4.4
<b>Daily laborer</b>	11	2.7
<b>Merchant</b>	24	5.9
<b>Farmer</b>	17	4.2
Educational level of husband		
<b>Can t read and write</b>	80	19.8
<b>Can read and write</b>	116	28.6
<b>Primary</b>	59	14.6
<b>Secondary</b>	117	28.9
<b>Above secondary</b>	33	8.1
Occupation of husband		
<b>Governmental employee</b>	58	14.3
<b>Private employee</b>	47	11.6
<b>Daily laborer</b>	12	3.0
<b>Merchant</b>	27	6.7
<b>Farmer</b>	261	

## 6.2 Pregnancy and Obstetric related characteristic of respondent

Half of the respondents had less than three times ANC visit. Around eleven point six(11.6%) percent of the respondents have history of abortion and 3% have history of still birth. Among the respondents 21.7% have started ANC while their pregnancy is less than 12weeks gestation, and 26.7% have started after 24 week of gestation (Table 2).

**Table 2: pregnancy and obstetric related characteristic of respondent at selected public health institutions, in Goba town, south east Ethiopia 2015 (n=405)**

<b>Variables</b>	<b>Frequency</b>	<b>100 %</b>
<b>Gravidity</b>		
< 3	302	74.6
>=3	103	25.4
<b>Still birth</b>		
Yes	12	3
No	393	97
<b>Abortion</b>		
Yes	47	11.6
No	358	88.4
<b>Number of ANC</b>		
>3	199	49.1
<= 3	206	50.9
<b>Time of start ANC</b>		
<12weeks	88	21.7
12- 24weeks	209	51.6
>24weeks	108	26.7
<b>Place of ANC</b>		
Health post	73	18
Health center	55	13.6
Hospital	277	88.4
<b>Presence of diseases during Pregnancy</b>		
Yes	23	5.7
No	382	94.3

### 6.3 Respondent's knowledge of anemia and benefit of Iron and folate supplement

Around two third of respondents (62.5%) had Good knowledge on cause, consequence, risk group, and method of prevention on anemia, while (60.7%) of respondents had Good knowledge on benefits of Iron and folate (Table 3)

**Table 3: Respondents knowledge about anemia and benefit of Iron and folate supplement**

**At selected public health institutions, in Goba town, south east Ethiopia 2015 (n=405).**

Variables	Frequency	Percent( 100%)
Knowledge Category on anemia		
<b>Good</b>	253	62.5
<b>Poor</b>	152	37.5
Knowledge on benefits of IFA		
<b>Good</b>	246	60.7
<b>Poor</b>	159	39.3

### 6.4 Service related characteristics

About 78.3% were provided Health education and 21.7 were not provided about iron/folic acid supplements. Regarding dispensing of supplement majority of respondent 81.5 % was collected thirty tablets and 18.5% were collect more than thirty tablets per visit.

**Table 4: Service related characteristics', at selected public health institutions, in Goba town, south east Ethiopia 2015. (n=405).**

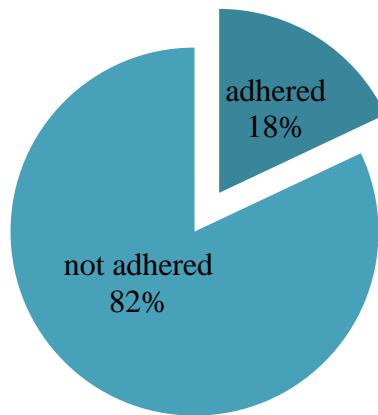
Variables	Frequency	Percent ( 100%)
Health education		
<b>Yes</b>	319	78.8
<b>No</b>	86	21.2
Waiting time		
<b>&lt;30 MINUTS</b>	354	87.4
<b>&gt;=30MINUTS</b>	51	12.6
Problem faced		
<b>Yes</b>	93	23
<b>No</b>	312	77
Number of tabs supplement per visit		

**30 tabs**  
**>30 tabs**

353  
52

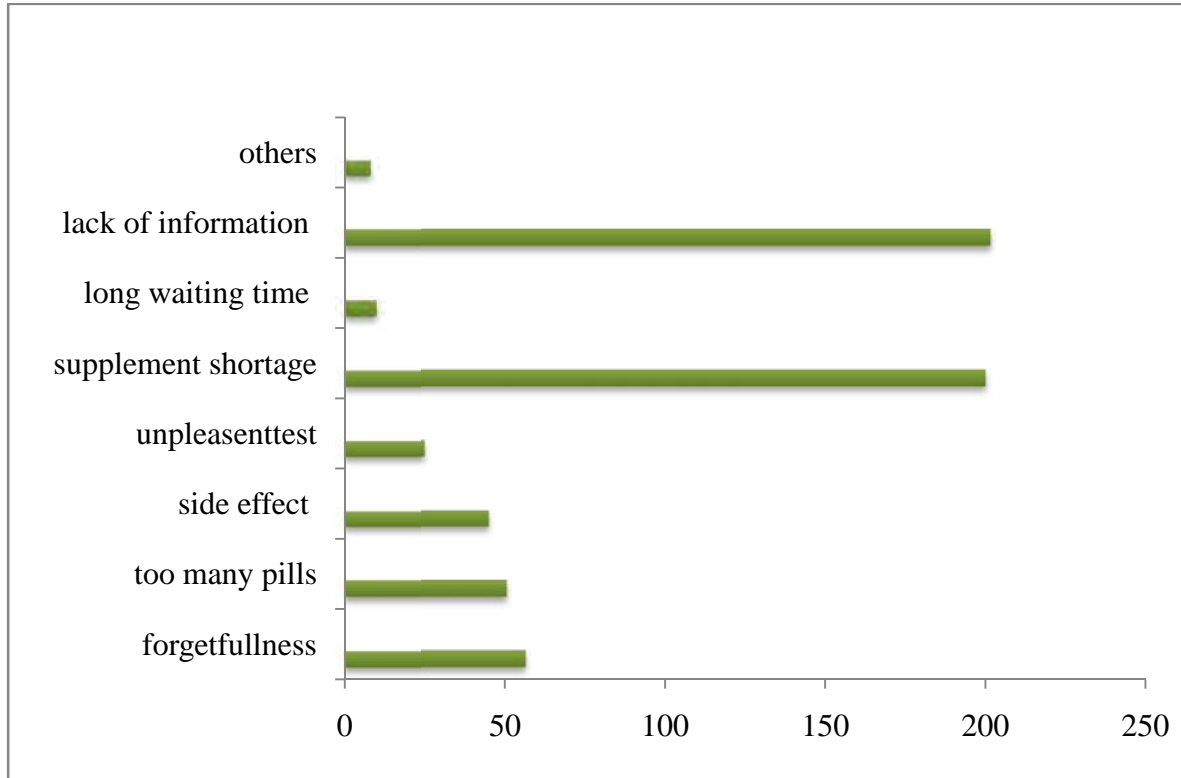
87.2  
12.8

### Sales



### 6.6 Reasons for not taking the supplement

The study Shows that the reasons for poor adherence to IFA supplement includes supplement shortage at Health facility (49.3%), lack of information about how long to take the supplement(49.3%), forgetfulness(13.8%) and due to fear of side effect(11.1%).



**Figure 3: Reasons for not taking missing the supplement At selected public health institutions, in Goba town, south east Ethiopia 2015.**

### 6.7 Factors Associated with Adherence

Bivariate analysis reveals that place of residence educational status of mother, Education level of husband, history of abortion, knowledge on anemia, knowledge on benefits of iron folic acid and health education at the time of supplement collection have shows association with adherence at p value 0.2.

Multivariate logistic regression reveals Educational status of mother, history of abortion, knowledge on anemia, knowledge on benefits of iron folic acid and health education at the time of supplement collection have significant association with adherence at p value 0.05.(Table 5)

**Table 5: Factor associated with adherence to iron and folate At selected public health institutions, in Goba town, south east Ethiopia 2015.n=405)**

Factors		Adherence status of respondent		COR at 95 % CI	AOR at 95 % CI
		Adhered	Not adhered		
<b>Place of residence</b>	Rural	54	283	0.49(0.26-0.90)	0.69(0.31-1.5)
	Urban	19	49	1	1
<b>Educational status of mother</b>	Can't read and write	9	113	0.20(0.7-0.60)	<b>0.11(0.026-0.47)</b>
	Can read and write	20	97	0.54(0.21-1.390)	<b>0.23(0.064-0.87)</b>
	Primary education	8	45	0.46(0.15-1.4)	<b>0.24(0.063-0.97)</b>
	Secondary education	28	56	1.31(0.51-3.33)	0.97(0.32-2.8)
	Above secondary	8	21	1	1
<b>Educational status of husband</b>	Can't read and write	10	70	0.38(0.13-1.04)	1.31(0.34-4.9)
	Can read and write	16	100	0.42(0.16-1.08)	1.30(0.37-4.4)
	Primary education	13	46	0.75(0.28-2.75)	3.3(0.90-12.3)
	Secondary education	25	92	0.72(0.29-1.75)	0.85(0.30-2.3)
	Above secondary	9	24	1	1
<b>History of abortion</b>	Yes	15	32	2.4(1.23-4.7)	<b>3.79(1.68-8.55)</b>

	No	58	300	1	1
<b>Knowledge on anemia</b>	Good	58	195	1	<b>1</b>
	Poor	137	15	0.36(.20-.67)	<b>0.41(.20-.84)</b>
<b>Knowledge on benefits of iron folic acid</b>	Good	56	190	1	<b>1</b>
	Poor	17	142	0.40(0.22-0.72)	<b>0.38(0.20-0.77)</b>
<b>Health education at the time of supplement collection</b>	Yes	68	251	4.3(1.71-11.2)	<b>4.03(1.4-11.5)</b>
	No	5	81	1	1

This study shows that only 18 % of the studied subjects had adhered to Iron and folate supplement.

This figure is lower than a study conducted in Kenya which is 24.5% and India 35.5%.

A study conducted in Cambodia also showed 47% adherence rate.

This could be due to the present study based on urban population and differences in socioeconomic status of the study populations.

Even though the adherence rate is low compared with other country, it is much higher than 0.4% founded by EDHS 2011. This could be due to

The present study has been conducted among ANC followers.

Time Gap between the present study and EDHS 2011.

Educational status of mother show significant association.

The adherence rate increases with educational status.

Mothers who can't read and write were 91 (AOR 0.11 (95% CI 0.26-0.47), mothers who can read and write were 77 (AOR =0.23(95% CI 0.064-0.87), and who had primary education were

76 (AOR =0.24(95% CI 0.63-0.97) times less likely to adhere than mother who had above secondary education

This could be due to:

When women are educated, they might have access to information and advices from different sources about Iron and folate threats of anemia

Knowledge on cause, consequence, risk group and method of prevention for anemia have significant association (AOR =0.41 (95% CI 0.20-0.84)

The other factor which have strong association between adherence is knowledge on benefits of IFA, (AOR =0.38 (95% CI 0.20-0.77).

This finding is similar with the study done in India.

This could be due to Good level of knowledge about anemia Iron and folate promote individuals

To preventing iron deficiency anemia

✓ to properly taking of supplement and

✓ to follow recommendation.

This finding is similar with the study done in India.

This could be due to Good level of knowledge about anemia Iron and folate promote individuals

✓ To preventing iron deficiency anemia

✓ To properly taking of supplement and

✓ To follow recommendation.

The other factor that show association with adherence is provision of health education at time of supplement collection (AOR 4.03 (95% CI 1.4- 11.5) in study conducted in Senegal and Nigeria

reveals, failure to provide Health education by health care providers as major barrier to adherence .This could be due to health education at the time of supplement provide important information on iron/folic deficiency anemia and importance of Iron and folate supplement.

History of abortion has also show association (AOR 3.79 (95% CI 1.68- 8.55) this may because at health institution mothers with abortion are counseled and supplemented with Iron and folate this may improve their knowledge and practice

## 5. 2. DISCUSSION

The study shows that only 18 % of the studied subjects had adhered to Iron and folate supplement. This figure is lower than a study conducted in Kenya (which is 24.5% (25). Another study conducted Cambodia showed 47% adherence (26). And another study in India reveals adherence rate of 35.5% adherence to Iron and folate among pregnant women (29). This could be due to the present study include both rural and urban population and differences in socioeconomic status of the study population. But the finding is much higher than 0.4% founded by EDHS 2011. This could be because of the present study has been conducted among ANC follower and health extension worker were assigned in urban too. The other factor could be the present study includes mothers who were attendant of antenatal care (27).

Educational status of mother was important socio demographic factor which showed significant association. The adherence rate significantly increases with educational status. Mothers who can't read and write were 91% (AOR 0.11 (95% CI 0.26-0.47), mothers who can read and write were 77% (AOR =0.23(95% CI 0.064-0.87), and mothers who had primary education were 76% (AOR =0.24(95% CI 0.63-0.97) times less likely to adhere to Iron and folate when compared with those who had above secondary education.

Women with better education level are more likely to adhere; this might be because, when women are educated, they might have accessible to information and advices from different sources about IFA and threats of anemia.

Another important variable that have shown significant association is knowledge of cause consequence risk group and method of prevention of anemia. The rate of adherence to iron and folate is 59% (AOR =0.41 (95% CI 0.20-0.84) times less likely among women with poor

knowledge. This finding is similar with the study done in Bangladesh which identifies high proportion of adherence among pregnant mother with good knowledge ((34). This could be due to reason that knowledge of pregnant women about anemia in respect of causes consequence and method of prevention affect their adherence of Iron and folate In addition good level of knowledge about anemia was a factor which could promote individuals in preventing iron deficiency anemia and following recommendation.

It was found that there was a significant association between respondent's knowledge on benefit of Iron folat and adherence. A woman with poor knowledge on benefit of Iron and folate were 62% (AOR =0.38 (95% CI 0.20-0.77) times less likely to adhere than women with poor knowledge on benefit of Iron and fola teThis could be due to Good level of knowledge benefits of Iron and folate promote individuals in preventing iron deficiency anemia properly taking of supplement and to follow recommendation.

The other important factor which has association with adherence was health Education during antenatal care. This study show that mothers who were provided with health education at the time of dispensing supplement have about 4.0 (AOR 4.03 (95% CI 1.4- 11.5) times more likely to adhere to Iron and folate supplement than those who were not provided.

A study conducted in Senegal reveals, Failure to provide Health education by health care providers as major barrier to adherence.

Another study conducted in Nigeria show that a strong association between counseling and adherence. This could be due to health education at the time of supplement provide important information of Iron and folate supplement The other factor which has association with adherence was abortion; mothers with history of abortion were 3.7(AOR 3.79 (95% CI 1.68-8.55) time adhered to Iron and folate compared with those without this may because at health institution

mothers with abortion counseled and supplemented with Iron and folate this may improve their knowledge and practice.

### **5.2.1 STRENGTH AND LIMITATION OF THE STUDY**

#### **5.2.2 Strength**

- The sample size was large enough with precision of 5%.
- Intensive training and day-to-day supervision were conducted for data collectors.
- Data collection was carried out by same sex (female) health professional
- The study incorporated health institutions at the grass root level

#### **5.2.3 Limitation**

- Gold standard method of measuring adherence like electronic and pills counting method were not used as it is expensive and due to time constraint

#### **5.2.4 Recall bias**

- The adherence rate to Iron and folae supplements is low among pregnant women attending ANC
- Educational status of mother, Knowledge on anemia, Knowledge on benefits of iron folic acid, and Health education at the time of supplement collection are Factors with significantly associated with adherence to Iron and folate

## **CHAPTER SIX**

### **6. CONCLUSION AND RECOMMENDATION**

#### **6.1. CONCLUSION**

The adherence rate to Iron and folate supplements is low among pregnant women attending ANC. Educational status of mother, Knowledge on anemia, Knowledge on benefits of iron folate, and Health education at the time of supplement collection are Factors with significantly associated with adherence to Iron and folate.

#### **6.2 RECOMMENDATION**

##### **6.2.1 for community Leaders**

- Increase awareness of the community about importance of Iron/folate supplementation during pregnancy.

##### **6.2.2 for ministry of Health and the regional health Bureau**

- should ensure continuous and timely supply of Iron and folate
- should conduct training courses on anemia and benefits of IFA during pregnancy for health personnel working in ANC

##### **6.2.3 Woreda health office**

- Sensitization of the community about anemia and Iron and folate supplement during pregnancy through health Education.
- Outreach services to enhance access of supplements
- Engaging the extension health workers in distribution of the supplements

**6.2.4 Other sectors (Education Bureau, women and children's Affair and none governmental organizations working in the area)**

- Improving the educational status of women

**6.2.5 Researcher and scientific community**

- Further researches on adherence to Iron and folate using Gold slandered method

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# ANNEXES

## 1. ENGLISH VERSION INFORM CONSENT & QUESTIONNAIRE

Questionnaire

Hello. My name is \_\_\_\_\_ I am conducting a survey on the factors associated with adherence to Iron/folate supplementation among pregnant women as part of the requirement to graduate with master's degree in maternity and reproductive health.

You have been selected by chance among other participants. I would like to ask you some questions related to this study.

Participation in this survey is voluntary and you can choose not to take part.

There will be no injections, drawing of blood or any body fluid involved. All information you will give will be confidential and will be used to make a general report. No names will be included in the report and there will be no way to identify you as one of the people who gave information.

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

Respondent agreed to be interviewed: Circle one

1. Yes 2. No

Name of interviewer \_\_\_\_\_

Signature of interviewer \_\_\_\_\_

Questionnaire No: \_\_\_\_ *University of Medawolabo* factors associated with adherence to iron/folate supplementation during pregnancy Goba town Bale zone Oromia regional state

Name of interviewer\_\_\_\_\_ Date of interview\_\_\_\_\_

Name of respondent\_\_\_\_\_. \_Place of residence of respondent\_\_\_\_\_

**Socio-Demographic and economic Characteristics**

S/N	Questions	Response categories	Skips
101	Age in years		
102	What is your current Marital status?	Single..... Married..... Divorced.....Widowed.....	
103	Which Religion you are following?	Orthodox..... Catholic..... Muslim..... Protestant..... Others(specify)-----	
104	Place of residence	Rural..... Urban.....	
105	Total Family size		
106	What is your educational status?	Can't read and write ... Can read and write..... Primary (grade 1-8) Secondary (9-12) ..... Above secondary (college university)....	
107	What is your current Occupation?	Housewife..... Government employee Private employee..... Laborer..... Merchant..... Farmer..... Others (Specify).....	
108	What is the educational level of your Husband?	Ca not read and write- Can read and write..... Primary (grade 1}..... Secondary (9-12)..... Above secondary .....	
109	What is the current occupation of your husband?	Farmer----- Government Employee... private employee --- Daily laborer .... Merchant..... Others (specify).....	
110	What is the average Monthly income of your family	Ethiopian Birr	

## II. Pregnancy and health status characteristics

S/N	Questions	Response categories	Skips
201	How many pregnancy have you had till now?(in number)		
202	How many deliveries you had till now?		
203	Did you have history of Still birth?	Yes..... No.....	-- >...204
204	If yes, How many still births did you have?		-
205	Did you have history of Abortion?	Yes ..... No.....	----- >207
206	If yes, How many abortions do you have?		
207	Did you receive antenatal care for the recent pregnancy?	Yes..... No --	2----- >211
208	How many times did you receive ANC?	1..... 2.....3..... 4..... >4.....	---->skip to 301
209	At what gestational age did you start ANC?	.....weeks	
210	Where did you receive the ANC?	Health post... Health center..... Hospital..... Other(Specify)	
211	Did you have any health problem during this pregnancy?	Yes..... NO...	2----- >skip to 301
212	Tell me which health problem you have faced?	Hypertension... Diabetes mellitus... Heart disease..... Antpartuhemorrahge Tuberculosis..... Other (Specify)...	
213	Have you taken Medication for the problem during?	Yes ..... No .....	
214	For how long did you take the drugs during pregnancy?	.....days	

### Knowledge on anemia and its prevention

S/N	Questions	Response categories	SKIPS
301	Do you know any illness called anemia?	Yes..... No.....	2----- >304
302	Do you know the cause?	Yes..... NO.....	----->304
303	What is the cause?	Unbalanced diet iron/folate-Deficiency - Loss of blood ... Being worried..... Other (specify).....	
304	Do you know what anemia resulted in pregnancy (consequence)?	Yes..... No.....	----->306
305	What are they? (more than one answer is possible)	Maternal mortality... Still birth... Infant mortality.... Impaired development Consequences children are Increased Blood pressure. Other(Specify) .....	
306	Who are the most susceptible groups to anemia (more than one answer is possible)	Pregnant women..... Children's..... None pregnant women.... Male ----- adults... Other.....(Specify) ...	
307	Is anemia during pregnancy can be prevented?	Yes ..... No .....	----->401
308	How dose anemia in pregnancy can be prevented?(more than one answer is possible)	Supplementation with iron/folate table-- Consumption of food rich in dietary iron/folate... Avoidance of food that interfere with bioavailability to iron/folate.....Other.....(specify)... ..	
309	What is your source of information	Health workers.... .Media... Friends .... School... Other..... (specify).....	

### Knowledge on iron/folate supplement categories

S/N	Questionnaire	Response	skip
401	Do you know the drug called iron/folate? (show the strip)	Yes..... No.....	----->404
402	Do you know the benefit of iron/folate supplement?	Yes..... No .....	----- >404

403	what is its benefit of taking iron/folate supplement (more than one answer is possible)	Prevent Maternal Death.... Prevent infant mortality..... Prevent Birth defects..... Increase maternal blood.... Give strength for the mother Other (specify).....	
404	Do you think that iron/folate supplement has risk?	Yes..... No .....	--->405
405	What are the risk of supplementing iron/folate supplement	Harm fetus growth ..... Cause bigger fetus..... Result in complicate delivery..... Other(specify)-----	
406	For how long does the supplement should be taken?	One month..... Two months..... Three months..... More than three months .... I don't now ... .Other (specify).....	
407	What is your source of information about iron/folate supplement(more than one answer is possible)	Health workers... Media... Friends..... School..... Other.....specify).....	

### Adherence to iron/folate supplement related factor

Ser.No	Questions	Response categories	
501	Have you taken iron/ foliate supplementation for current pregnancy?	Yes..... No.....	
502	For how long did you take the supplement?	One month two months.... Three months.... More than three months Other (specify)...	
503	How did you take your supplement?	On daily base..... Weekly..... When I think am sick..--- Other(specify)...	

504	For the first month of supplement How many tablet/days did you take in the first month of supplement?	.....tabs.	
505	For the second month of supplement How many tablet/days did you take in the second month of supplement?	.....Tabs.	
506	For the third month of supplement How many tablet/days did you take in the third month of supplement?	.....tabs	
507	How many tablets/day did you took totally?	.....tablet/day....	
508	If, you had taken < 48 tablets( < 4 tabs per a week) (or less than 48 days),What was reason for not taking the supplement properly?(more than one answer possible, but choice doesn't allowed to read)	<ol style="list-style-type: none"> <li>1 Forget fullness...</li> <li>2 Because of Too many pills</li> <li>3 Fear of side effects.....</li> <li>4 Unpleasant test.....</li> <li>5 Fear of big weight</li> <li>6 Difficulty in delivery</li> <li>7 Fear of harm to fetus</li> <li>8 Failure to get adequate supplement in the health facility</li> <li>9 Long waiting time at health facility</li> <li>10 Service is Far from residence</li> <li>11 Poor health can provide communication...</li> <li>12 Lack of information about</li> <li>13 How long to take</li> <li>14 Other(specify)...</li> </ol>	
509	If the answer to question No 508 is due side effect (choice 3 ), which side effects were responsible(more than one answer is possible)	Vomiting ..... Diarrhea ..... Constipation... Heartburn..... Abdominal cramp..... Other (specify).....	

### Health care and system related factor

Ser.No	Questions	Response categories	
601	How long it take to reach Health institution from your residence	.....hour	
602	Is there any health education about iron/folate supplement during collecting your supplement?	Yes ..... No .....	
603	If your answer to question No 602 is yes, what was the issue?	Purpose of supplement..... Duration of the supply Side effect ... Follow up visit.....	

		Other (specify).....	
604	How many tablets did you collect per visit	30 table..... 60 table..... 90 table....., >90 table..... Other (specify).....	
605	What is the average Waiting time in the health facility while you were collecting iron/folate supplement	.....(minute)	
606	Do you face any problem in the facility while you are collecting your supplement?	Yes ..... No .....	
607	If the answer to question number 606 is yes, which problem do you face	Shortage of supplement in the facility ... Long waiting time in the health institution Poor health care provider communication.... Other (Specify).....	

**Thank you for your Participation**

## **2. OROMIC VERSION CONCENT AND QUESTIONNAIRE**

Annex Gaffin ulfaa dabalata hanqu egaa haalaa fudatmuu fii sababni adaabasuuf kaan g

vafatamuu

Oboo/adaaMaqaa koo.....kaan jedama unvirsiy Addis Ababa keesa

kaan hojedhu dha messensa qoranoo dha.Gaafiin Qooranoo kuun kaan irraatii xiyyafaatu

motummaa naaanoo oromiyaa zonni baalee

magaallaa Goobaa kessatii hadhootaa ulffaa iratii wayee hanqiinaa dhigaatiifi toofataa ittin

ittasanniifi maalife dabalaatan qorssa hanqiinaa dhigaatiif keenamu

malifee akka hin fudhatee addan basuu ilaala. Akkum Oliratii ibsus ebsameeti qoranoon kuun

kaan xiyyafatu hadholeen ulfaa tani fii dalatanii bulii 45 kaan

hin calee faydamuma qoricha dabalataa hanqena egaa kaan ilaaletu dha. Issinlee qoranoo kaanaraa akka hiormattan afeeremtani jirtu.debee issin kenitaan

hichittin kaan qabatamu akka tau issinfi ibssa saabab kaanf maqaa kesaan warqaa irratii akaa hin galmoofene issa ibssa, gafille kaa yarro daqiqa sodoma fudachu malee rakoo tokoo lee issiniraa akaa hin modatuu akka tae eta u ibbsa Qoraano irra hirmachuuf  waligaltanii j Mittii  EYEE

Annex 4: Oromic Questionnaires

maqaa gafilee kaan guratuu----- malatoo----- guyaa-----

Oromic Questionnaires

maqaa gafilee kaan guratuu----- malatoo----- guyaa-----

koodii..... lakk. manaa .....

Hadoleen kininaa dabalataa hanqeinaa egaa fudataa haalaa akami akka fayaadaman gafilee ilaalaan

I. gaafilla hawwasuma fii dinegdee

Lakkofsaa	Gafiwaan	Debii fi ramadii	
101	Urmii meqaa\hangaamiil kee	.....(yrs)urmii	
102	Heemittaa?	kan hermitee.....kanhikkite..... kana ban manaa irradudhee..... kanhinheruminee.....	
103	Amantaan keemaal	Ortodoosii..... Katolikii..... Musilimaa..... Protesitaanitii..... Kan biraa yoo jiratee..... ibsii...	
104	Jirun kee esaa	Badeya..... Magala.....	
105	Walii galaan mateen kee meqaa		
106	Hangambaretee\hanga	baresufi dubisu...kanhidandenye...	

	meqaa barratee?	Baresufdubiisudanda'u..... Sadarkka tokkoffa) KUtaa 1-8 kan baratee..... Sadarkkalamaffa (9-12) kutaa 9-12kanbaratee..... Kutaa kudhaa lammaoli.....	
107	Hojii kee maal?	Hadhaamana.....Hojetaa mootumaa .....Mitiimootumaa..... Hojiiguyaa.....Daldaalaa..... Qonaa.....Kan biraa ibsii.....	
108	Abaa mana kee hangaa meqaa baratee?	baresufi dubisu kanhidandenye..... Baresufdubiisudanda'u..... Sadarkka tokkoffa) KUtaa 1-8 kan Baratee..... Sadarkka lammaffa (9-12) kutaa 9-12kan baratee.....Kutaa kudhaa lamma.....Oliikanbarate.....Kanbiraa ibsii...	
110.	Jidhaan qarshii hangam argata?Qarshiin hangamii		

## II. gafilaa ulfaa fii fayaa ilaalan

Lakkofsaa	Gaafiwaan	.....ulfaa	
201	yeroomeqaa dhulfootee hanga ammattii	.....daimaa	
202	Ijolee meqaa qabidaa?		
203	Kaan gara keesa due dhalatee jiraa	Eeyenii..... Mltii.....	
204	Eeyeni yoo jatee meqaa		
205	Daimaa kaan garaa kessa bade jiraa jiraa	Eeyenii..... Mltii.....	
206	Eeyeni yoo jatee meqaa		
207	Dhulfaa amma kanaf yalaa dahumisa durra wordoftee?	Eeyeni.....Mitti,.....	
208	Yeroo meqaaf yalaa dahumisa durra wordoftee?	1..... 2..... 3..... 4..... >4.....	
209	Ulfaa tatee yaroo kamiin meqaaf yalaa dahumisa durra wordoftee?	.....samutaa	
210	Yalaa\tajajila\ dahumisan durra dhulfaa amma kanatifi essa fudhatee?	Kelaa fayaa..... Bufata fayyaa..... Hosiipitaal.....Kan irra yo jiratee ibisii.....	

211	Rakkon fayya siiqonamee jiraa yeroo dulfaa amma kana?	Eeyenii ..... Mitti.....	
212	Yoo debii gaffi lakkofsa210 Eeyenii tahee, isaa kamii?	dabalaadhigaa.....debiishuqaraa..... debii wane... dibee dagalyuu..... dibeesonbaa.....kan birr yoo jirrateeibisii.....	
213	Rakkon fayya siiqonamee jiraa yeroo dulfaa amma kana?	Eeye..... Mitti.....	
214	yeroo hangamifii fudhatee?		

### III. gafilee bekumssa hanqinaa egaa halii ittib abaramsu

Lakkofsaa	Gafiwaan	Debii fi ramadii	
301	Dibee hanqinaa egaa jadhamu beeketa?	Eeyenii..... Mitti.....	
302	Yoodebii gaffii lakkofsa eeyenii jete maaltu akka dhukkubaa kanaa fiidu nii beekitaa?	Eeyenii..... Mitti.....	
303	Yoo debii gaffiilakkofsaa 01eeyenii jete isaa kmii?	Hanqinaa nyataairaa.....Hanqinaa albudaa iraaa.....Dangalawu digaa.....Bayinna yaduu iraa.....Kaan biraa ibsaa.....	
304	Midhaa dhukkubinni kunii dhulfaa irraatii fiduu maal akka ta'ee nibekkitaa?	Eeyenii..... Mitti.....	
305	jete isaa kamii?	Duaa hadholee.....Duaaa Ijoolee Duaa ..... daimanii.....Gudataa ijoolee rakoo fiduu.....Egaa dabaluu .....Kaan biraa ibsaa.....	
306	Yaroo baynaan dibee kaanf kaan sxlamayaan enu fa	Dubaree ulfaa.....Daimanii..... Dubaroon ulfaa kaan hintane... Dhiraooni.....Kaan biraa yoo jiratee lbsa.....	
307	Dubaree ulfaa hanqinaa egaa akaa bararsuu nidandatii	Eeyenii..... Mitti.....	
308	Akaame bararsu dandaema	Dabalataa albudaa kenuu dhani..... Nyataa dhani..... Nyata albudaa kaan dowaan hanbisuu dhaan ...Kaa biraa yoojiratee ibsaa.....	
309	Odefanoo kaan esaan argatee	Ogeesafayyaa.....Odefanoo irraa..... Wayiilaa .....Manaa barmotaa..... Kan biraa yoo jiratee ibisii	

#### IV. Gafilee Bekumsaa qorichaa hanqinaa egaa ilaalu

Lakkofsaa	Gafiwaan	Debii fi ramadii	
401	Kinni dhigaa dabalata niobeytaa?(qoricha agarsisaa)	Eeyenii ..... Mtii .....	
402	Faydaa Kinni dhigaa dabalata nibaytaa?	Eeyenii..... Mitti .....	
403	Gafii lak 402 eeyanii you jatee malfaa?	Duaa hadholee nihanbisaaa..... Duaaa Ijoollee ni hanbisaaa ..... Rakoo Gudataa ijoollee niseressa ... Egaanidabalu....Kanbiraaisaa.....	
404	Kinn dhigaa dabalata kenaamu rakko fayya nifidaa	Eeyrni..... Mitti... ...Hinbertuu.....	
405	Kinn dhigaa fudhachini haadhaafi rakoo fidu mali?	Daima akaa gudatu dowu ..... Daiman likii mala akka gudatu gochu.....Daumsaa iraa rakoo fidaa..... Kanbiraa ibsaa.....	
406	Kinn dabalatta hanqinaa dhigaa yarro meqaaf fudhtamsa	Jiatookoof.....Jialaamafe..... Jia sadiif .....Jia sadii olii.....	
407	Odefanoo kaan esaan argatee	Ogeesafayyaa.....Odefanoorra--- Wayiilaa..... Manaa barmotaa..... Kan biraa yoo jiratee ibisii	

#### VI. Gafilee Halee qorichaa fudhatamee kaan ilaaletuu

501	Ulfaa kannaf dabalataa qorichaa hanqinaa egaa fudhatee jirtaa	Eeyenii..... Mitti.....	
502	Yaroo meqaaffudhatee	Jiaa tokoof ..... Jiaa lammafee..... iaa sadifee..... Jiaa sadi ol;eef.....	
503	Qoricha akamii fudhachaa turtee	Guyaa dhan.....Samutaadhan..... Dhukubaaywaytaanaadagyamu..... Kabiraa yoo jirate e .....ibsa	
504	Jia tokoofa dabalataa qorichaa hanqinaa egaa fudhchu ilala Yaroo meqaa fi fudhate	Kininaa.....	
505	Jia lammafa dabalataa qorichaa hanqinaa egaa fudhchu ilala Yaroo meqaa fi fudhate	Kininaa.....	

506	Jia sadafaa fa dabalataa qorichaa hanqinaa egaa fudhchu ilala Yaroo meqaa fi fudhate	Kininaa.....	
507	Waluma galatee kinina meqaa fudhatee	Kininaa.....	
508	Kininaa 48 (guyaa 48) gadii yokiin samutatii kinina 4 gadii yoo fudhatee sababini isaa malee?( tokko olii debisuu ni dandamaa)	Dagachudhan ..... Kininibayaawataaef..... Rakoo kinin fiduu sodachu dhan....Kinninin waamararu..... Dhaimini halaa malee nifurdataa jadhee waan sodadeef..... Dainsaa iraa rakoo fidaa jadhee wasodadee..... Diemma nimida jadhee waan sodadeef..... Manaa hakimma kesa qorichaa waan argachu waan hin dandeenef..... Qoricha fudhachuuf wayitaa demuf waan bayaa natursisaani..... Manaa hakimaa mana kiyaa iraa byaa waanfagatuuf..... Ogessa fayaa waali galtee qabuu laaf waan taeeef..... Yaroo meqaaf qorichaa akaa fudhtamu waan hin bekneef..... Kaan biraa yoojiratee ibsaa.....	
509	Gafii lqkk deebi issa Rakoo kinin fiduu sodachu dhan 3 yoo taee saaba kamii	Bulgafachuu... Bassa ..... Garragoguu... .Lapeegubuu..... Garaa muruu.....Kaan biraa yoojiratee ibsaa.....	
510	Kininaa 48 (guyaa 48) olii yokiin samutatii kinina 4 olii yoo fudhatee sababini isaa malee?( tokko olii debisuu ni dandamaa)	Qoricha bilisaan waan keenmu Qorichaaa fudhachuuf yadanoo waan faydamu..... Dhibee waan sodadu..... Ogesii akaa sirtii fudadu waannajajeef... Egaa akaa dablu waa bekuuf..... Kaan biraa yoojiratee ibsaa.....	

**VII.Gafilee kununsaa fayaa fii systemii issaa kaan ilalatu**

S.No	Gaffiwaan	Dibii fi ramadii	
601	Bakaa tadjajilii fayaa itti keenamuu hangamii sii irra fagata	.....Daqiqa	
602	Barumsaa yeroo kinni dabalata fudhatan argatan	Eeyenii..... Mittii..... Hinbekuu.....	
603	Gafii lakofsa 602 eyaa yoo taee	1.Fyeeda qorichaa dabalata egaa..... 2.Yaroo meqaaf akaa	

	waayaa maalifii	fudhtamu.....3.Dabalataa rakoo fiduu.....4.Bufataa faatii irr ayarro maqatiin akasa argamu.....5.Kan biraa yo jiratee ibsaa.....	
604	Yaroo tokoon Dawwa meqaa argata ?	1.Kinina ..... 2.Kinina ... 3.Kinina ..... 4. >Kinina .....	
605	Bakaa tajjajilii fayaa itti hagaam turtaa		
606	Taajjilaa argachuuf waytaa damituu rakoo sitii qunamee beketuu?	1.Eeyenii..... 2.Mittii..... .3.Hinbekuu.....	

### **Approval by the Board of Examiners**

This thesis by Girma shiferaw is accepted by the Board of Examiners as satisfying thesis requirement for the Degree of Master of Science in maternity and reproductive health.

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## **Declaration**

I the undersigned declare that this MSc. thesis is my original work and it has not been presented for a degree in any other university. All source materials used for the thesis have been duly acknowledged.

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