ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

FERROUS SULPHATE AND FOLIC ACID CONSUMPTION AMONG PREGNANT WOMEN IN YEKA SUB-CITY.

By:

HELEN AMTATAW (BSc)

A thesis submitted to the school of Graduate Studies of Addis Ababa University, College of Health Sciences, School of Public Health, in Partial fulfillment of the requirements for the Master's degree of Public Health.

September 2021

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DECLARATION

I, Helen Amtataw, declared that this thesis was my original work in partial fulfillment for the requirement for the degree of Master's in public health. All source material used for this thesis work and all people and institution who gave support during this thesis work was fully acknowledged.

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ACRONYMS /ABBREVIATIONS

ACOG	American Congress of Obstetricians and Gynecology
ANC	Ante Natal Care
ARHB	Addis Ababa Regional Health Burro
BBS	Bangladesh Bureau of Statistics
DALYS	Disability Adjusted Life Years
EDHS	Ethiopian Demography and Health Survey
FANC	Focused Ante Natal Care
HC	Health Center
IDA	Iron Deficiency Anemia
IFA	Iron and Folic Acid
IFAS	Iron Folic Acid Supplementation Program
SPSS	Statistical Packages for Social Science
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

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ABSTRACT

Background: Ferrous sulphate and folic acid deficiency is a serious public health problem in the world including Ethiopia. Lack of ferrous sulphate and folic acid causes severe anemia and birth defects (hydrocephalus, spinal bifida) respectively. Considering these nutrients deficiencies health consequence on women and newborn health, both nutrients are recommended to prevent the adverse maternal and perinatal outcomes; however, Women consumption of both nutrients during pregnancy is not well estimated/described in the study setting. Therefore, the objective of this study was to assess the magnitude of ferrous sulphate and folic acid consumption and associated factors during Pregnancy in public health center of Yeka sub city.

Objective: To assess the magnitude of ferrous sulphate and folic acid consumption and associated factors during Pregnancy in public health center of Yeka sub city.

Methods: A facility based cross sectional study was conducted from August 2020 to October 2020 in health centers providing antenatal care services in Yeka sub city, Addis Ababa. Data were collected from sample of 619 fourth visit pregnant women through interviewer-administered structured questioners. Respondents were selected by systematic sampling method. Descriptive statistics like frequency, table and graph were used to describe the data. In bivariate regression analysis crude odds ratio was calculated to evaluate the association between a single independent variable and the dependent variable. In multivariable regression analysis adjusted odd ratio was used to determine the presence of statically significant association at 95% CI between the explanatory variables and outcome variable.

Results: A Total of 595 of pregnant women participated in the study. The result showed that 59.8% of pregnant women have taken iron and folic acid supplement for 90 days and above during pregnancy. Access to health center within short distance (AOR=1.868, 95%CI: 1.223-2.852), having first ANC visit before 16 weeks of gestational age (AOR=3.155, 95%CI: 2.061-4.828) and side effect of iron and folic acid (AOR=2.505, 95%CI: 1.159-5.415) were significantly associated with iron and folic acid utilization for the recommended 90 days and above.

Conclusion: Access to health facility, ANC visit before 16 wks gestation, and side effect were associated with iron and folic acid utilization for the recommended 90 and above days.

Key words: Pregnancy, Ferrous sulfate, Folic acid, Antenatal care

1. INTRODUCTION

1.1. Background of the study

Ferrous sulphate and folic acid are nutritional supplements that are given to women planning to conceive, during pregnancy and after delivery, in order to prevent anemia in mothers and birth defects (hydrocephalus, spinal bifida) in new born babies(8).

World Health Organization (WHO) strongly recommends that daily oral iron and folic acid supplementation as part of antenatal care (ANC), to reduce the risk of low birth weight, maternal anemia and iron deficiency anemia (9). All pregnant women has to take 30-60mg iron daily while the American Congress of Obstetricians and Gynecology (ACOG) recommends taking 27mg of dietary ferrous iron daily (10).“In Ethiopia, 60mg elemental iron and 0.40mg folic acid, one tablet per day, are prescribed for all pregnant mothers during their antenatal visits and given for free” (11).

Most ministries of health in developing countries have policies to give pregnant women either iron by itself or combined with folic acid in tablet form. Thus, the most suitable mass intervention for iron supplementation during pregnancy is administering iron along with folic acid in the form of tablets (12). All pregnant women receive standard dose of 30-60 mg iron and 400 micro gram folic acid beginning in first trimester, which means ideally taking 180 tablets before delivery. However, money countries aim for women to receive 90 or more tablets during pregnancy (13).

Anemia left moderate to severe public health problems in 142 countries around the world (14).The prevalence of anemia during pregnancy is approximately 41.8% in the world, 24.1% in America, 48.2% in south East Asia, 25.1% in Europe, 44.2% in East mediterian,30.7% in west Pacific, 57.1% in Africa (15). In Ethiopia prevalence of anemia in pregnancy is 29% (16) ,which seems lower than most of the fore mentioned global and regional prevalence. However, report shows “Ethiopia is among countries in the world where the highest maternal and child mortality are documented, which may be due to poor maternal service utilization like micronutrient supplementation” (17).

Anemia prevalence (40% and more) in preschool age children and pregnant women is considered as sever public health concern and prevalence of (20-39%) in adolescent girl and non-pregnant women of reproductive age is considered as moderate problem (18). According to BBS/UNICEF (2004), anemia affects 46% of pregnant women, 64% of children aged 6-23 months, 42% of children aged 24-59 months, 30% of adolescent girls and 33% of non-pregnant women (18).

"Different studies conducted in Ethiopia also showed that the prevalence of anemia among pregnant women was ranged from 21 to 54%" (19). According to Ethiopian demographic and health survey, (EDHS) 2011 report, the prevalence of anemia among pregnant women was 22%. Moreover, the EDHS survey conducted in 2016 reported the prevalence of anemia among pregnant women to be 29.1% (16).

Anemia is the sign of both poor nutrition and poor health (20). Nearly 50% of anemia cases are because of iron deficiency anemia (IDA) (21). Iron deficiency anemia during pregnancy is a serious public health problem across the globe that adversely affects maternal and perinatal health. It is the major cause of anemia in both developed and developing countries (12). According to WHO and World Bank-supported analysis of global burden of disease findings, iron deficiency anemia ranked as the third leading cause of loss of disability adjusted life years (DALYS) in female's aged 15 to 44 around the world (22). In 2002, iron deficiency anemia was considered to be among the most important contributing factors to the global burden of disease and most prevalent in pregnant women (1). Approximately, 99% of maternal deaths occur in low-resource settings and most can be prevented (23). According to WHO 2015 report, each day around the world approximately 830 women die from preventable causes related to pregnancy and childbirth and 95% of all maternal deaths occur in low and lower middle income countries (24). Recent 2019 World Health Statistics report shows that maternal mortality ratio are 29 times higher in low income countries than in high income countries and one women out of 41 dies from maternal causes (25).

Iron and folic acid supplementation program is a vital global intervention for control of anemia in pregnancy (26). Daily iron supplementation reduce the risk of maternal anemia at term by 70% and iron deficiency at term by 57% (9). According to secondary analysis of national demographic and health survey data sets in 19 African countries found that when pregnant women received at least 90 iron and folic acid supplements through antenatal care, the risk of neonatal mortality decrease by 34% (27).

Iron folic acid supplementation is the most popular strategy to ease iron deficiency anemia and neural tube defect both globally and nationally. WHO aimed to reach 50% reduction of anemia in women of reproductive age group by 2025. Ethiopia adopted the global iron and folic acid supplementation strategy in 2004 by targeting to reduce the prevalence of iron deficiency anemia in women of reproductive age and children under five by one third (28).

Ethiopia's health sector and transformation plan of 2015-16 on maternal and newborn health was the top government priorities. Ethiopian health sector transformation plan 2015/16 - 2019/20 of reproductive health program goal is to reduce the maternal mortality ratio to 199 maternal deaths per 100,000 live births and the neonatal mortality rate to 10 per 1,000 live births by 2020

(16). Standard guidelines for (ANC) in Ethiopia emphasis that every pregnant mother should receive antenatal care component from a skilled provider (16). Despite Iron folic acid supplement is one of the ANC components, currently antenatal care is in effective platform for distributing iron and folic acid tab late for pregnant women as recommended by World Health Organization (13).

ANC utilization has increased since the introduction of World Health Organization antenatal care model in 2002, known as focused ANC (FANC). However, currently antenatal care is an underutilized platform for distributing iron folic acid in Ethiopia (13). A currently conducted mini-EDHS 2019 report shows that 60% of pregnant women took iron and folic acid tablets during pregnancy, and only11% took them for the recommended period of 90 or more days (3).

Although the reality shows that bad pregnancy outcomes are common among anemic mother than non-anemic mother, the prevalence of maternal anemia remains unacceptably high. At the same time, the proportions of pregnant women who consume iron and folic acid tablets during

pregnancy stay low in developing countries. Globally, 70% of women, 41% in Nepal, 58% in Ethiopia did not take iron and folic acid tablets supplements during their most recent pregnancy (19).

1.2. Statement of the problem

According to Ethiopian national anemia profile report done by USAD's Strengthening partnerships results, and innovation in nutrition globally (Spring) project, less than 1 % of pregnant women in Ethiopia consumed 90 or more iron and folic acid (IFA) tablets in 2011 (29). Other Study done in September 2014 shows that less than one percent of pregnant women received and took the ideal minimum number of tablets (13). A mini-EDHS 2019 also revealed that 60% of pregnant mothers took iron folic acid tablets during pregnancy (3).

In all countries around the world, 83% of all pregnant women had at least one ANC visit 81% of whom received IFA tablets from this 8% consume 180 or more IFA tablets. In Ethiopia ,31%of pregnant women having received ANC and IFA tablets (30).

Different studies showed that Gestational age at first ANC, use of antenatal care, time of registration, number of ANC visits, availability of supplements, providers counseling on IFA supplement are factors associated with compliance of iron folic acid utilization and major reasons identified for low consumption of iron and folic acid tablet during pregnancy were IFA related side effect, forgetfulness and non-availability of IFA supplement. (5-7)

In Ethiopia money studies witnessed the public health significance of maternal anemia (31) and nutrition is integrated in the health sector transformation plan in the form of micronutrient interventions(32). Pregnant women in Ethiopia take a daily oral IFA supplement as part of the ANC but the prevalence of anemia increased from 22% in 2011 to 29% in 2016 (11).Therefore, this assessment is designed to fill the gap by estimating or describing consumption of iron folic acid tablet during pregnancy, identifying key factor influencing iron folic acid consumption. This will help to prevent the occurrence of anemia and improve the nutritional status of mother during pregnancy.

1.3. Significance of the study

Ethiopian health sector transformation plan 2015/16 - 2019/20 of reproductive health program goal is to reduce the maternal mortality ratio to 199 maternal deaths per 100,000 live births and the neonatal mortality rate to 10 per 1,000 live births by 2020 (16). Nutrition is integrated in the health sector transformation plan in the form of micronutrient interventions(32). This study will help to estimate or describe consumption of iron folic acid during pregnancy and this will help to reduce nutrients deficiencies health consequence on women and newborn health outcomes that helps to meet goal of health sector transformation plan. In addition study will support micronutrient interventions which have been running by different heath facilities in the country by giving scientific evidence on magnitude of iron and folic acid utilization and in identifying factors associated with IFA utilization in the study area. Once findings identified, then targeted strategies to address them will be formulated to improve micronutrient interventions. Furthermore, researchers can use this study as a reference to conduct further studies.

2. LITERATURE REVIEW

2.1. Magnitude of iron-folic acid utilization

In all countries around the world, 83% of all pregnant women had at least one ANC visit, 81% of whom received IFA tablet. Among those who received iron and folic acid tablets, 95% consumed at least one. However, the overall adherence to the ideal supplementation regimen was very low.

A study that was conducted in Bahir-Dar special zone, Northwest Ethiopia, by Ejigu and his friends with the design of facility based cross-sectional study found that pregnant mothers attending antenatal care clinics were found to receive only part of recommended care components. 64% of the mothers missed the opportunity of receiving iron/folic acid supplement during their antenatal care visit (33).

A study that was conducted in West Dembia district, northwest Ethiopia, by Molla and his friend with the design of cross sectional study found that adherence to iron-folic acid supplementation was 52.9%. The study indicated that there was a low level of adherence to iron and folic acid supplementation among pregnant women who had less than four antenatal care visits (34).

Another study that was conducted in Debre Tabor General Hospital, Ethiopia by Gebremariam and his friends with the design of institution-based cross-sectional study found that adherence of iron and folic acid supplementation among pregnant women was low 44% (35).

A household-based cross sectional study that was conducted in Pakistan found that only 45% of pregnant women consumed antenatal iron and folic acid supplements in their most recent pregnancy and supplementation initiation was late on average during the fifth month of pregnancy and 17% of women consumed 90 or more supplements throughout their pregnancy (36).

A cross-sectional study that was conducted in Khartoum, Sudan found that 92.1% of pregnant women used iron-folic acid supplementation during pregnancy and 65.4% used folic acid. There was a high rate of iron-folic acid supplementation use among pregnant women in Khartoum, Sudan (37).

A study that was conducted in Austria by Kainz and his friends with the design of cross-sectional study found that 67% of pregnant women took iron-containing compounds ,irrespective of whether they were deficient in iron (10).

A study that was conducted in India by Wendt and his friends with the design of District Level Household Survey found that 37% of women received any IFA during their last pregnancy. Of those, 24% consumed IFA for 90 or more days (38).

2.2. Factors associated with iron-folic acid utilization

2.2.1. Pregnant women related factors

Studies done by Abdullahi et al, 2014 showed that the common pregnancy related factors associated with compliance of IFA use were Primparity and use of antenatal care (37).

Other study done by Wendt et al, 2015 indicates that timing and frequency of ANC play a key role in facilitating IFA receipt and consumption. According to this study, women were more likely to receive any IFA when they received additional ANC service, counseling, attended earlier and more frequently (38).

The study conducted by Gebremariam et al, 2019 showed that gestational age at first ANC visit, early ANC attendant and pregnancy history were statistically associated with adherence to IFA among pregnant women (7).

Cross-sectional study conducted in eight rural district of Ethiopia on coverage, compliance and factors associate with utilization of iron supplementation during pregnancy by Gebremedhin et al, 2014 found that compared to women who had 4 or more ANC visits, those with 0,1,2 and 3 visits had 0.04,0.33,0.50 and 0.60 times less odds of iron supplement utilization, respectively. The leading reported reason for non-adherence was side effect (63%) and forgetfulness (16.7%) (31).

According to a study conducted by Mithra p et al, in 2013 forgetfulness and both perceived as well as experienced side effect of IFA therapy were the important factor for non-compliance and Pregnant women related factors which positively influence for taking the drugs, were maternal health (32%) and fetal health (30%) (12).

Another study done by Kassa et al, 2019 showed that IFA related side effects during the previous pregnancy had 8.5 times higher odds to decrease compliance than those who did not experience IFA related side effects (39).

Mothers who visited antenatal care (ANC) for more than four days were more likely to take iron-folic acid supplements for 90+ days and be supplemented for more days (40).

2.2.2 Health service related factors

A study conducted by Nisar Y et al, in 2014 found that the positive health service and related factors that promote adherence of iron and folic acid supplementation were trust in the healthcare providers and the availability of supplements, while the non-availability of supplements promoted non-compliance (36). In addition, those who were not informed about the importance of iron supplementation during the pregnancy had significantly lower utilization (31).

Mithra P et al, in 2013 indicated that there was an association between consumption and awareness created by the explanation of the health workers. Consumption is more (82.4%) among mothers who were explained than those who were not (51.5%) by the health worker (12).

According to study conducted by Shewasinad S et al, in 2017, the most important reason for adherence were clinicians counseling (15).

2.2.3. Socio demographic factors

According to the Ethiopian Mini-Demographic and Health survey of 2019, the use of iron tablets increases with levels of education and household wealth (3).

Maternal ages 45 years and above , no maternal education, no paternal education, belonging to the lowest household wealth index quartile are socio demographic factors significantly associated with non-use of antenatal IFA supplementation (4).

Community-based cross -sectional study design employed in Mecha district of Western Amhara regein from June 25 to July 15/2013. The study was done to investigate factors associated with compliance of prenatal iron-folic acid supplementation. After multivariable analysis, age and educational status of mothers were significantly associated with compliance to iron-folic acid supplementation (2).

Summary of the literature

According to my review from different literatures conducted on iron and folic acid consumption and associated factor among pregnant women, the prevalence of maternal anemia remains high, adverse pregnancy outcomes are common among anemic mother than non-anemic mother and the proportions of pregnant women who consume iron and folic acid tablets during pregnancy stay low. Age, educational status, gestational age at first ANC visit, use of antenatal care, early initiation of ANC, increasing ANC service, availability of supplements, providers counseling on IFA supplement are factors associated with IFA use .On the other hand, experienced IFA related side effect, occupation, maternal age 45 years and above ,no maternal education, no paternal education, belonging to the lowest household wealth index quartile and non-availability of supplement are associated with non-use of IFA.

3. Conceptual framework

After reviewing different articles, the conceptual framework had been modified and developed. Utilization of ferrous sulfate and folic acid was developed based on different factors as shown in figure1.1, the pregnant women related factors, health service related factors and socio-demographic factors are interrelated to affect one another and have a link with IFA utilization. (Figure 1.1)

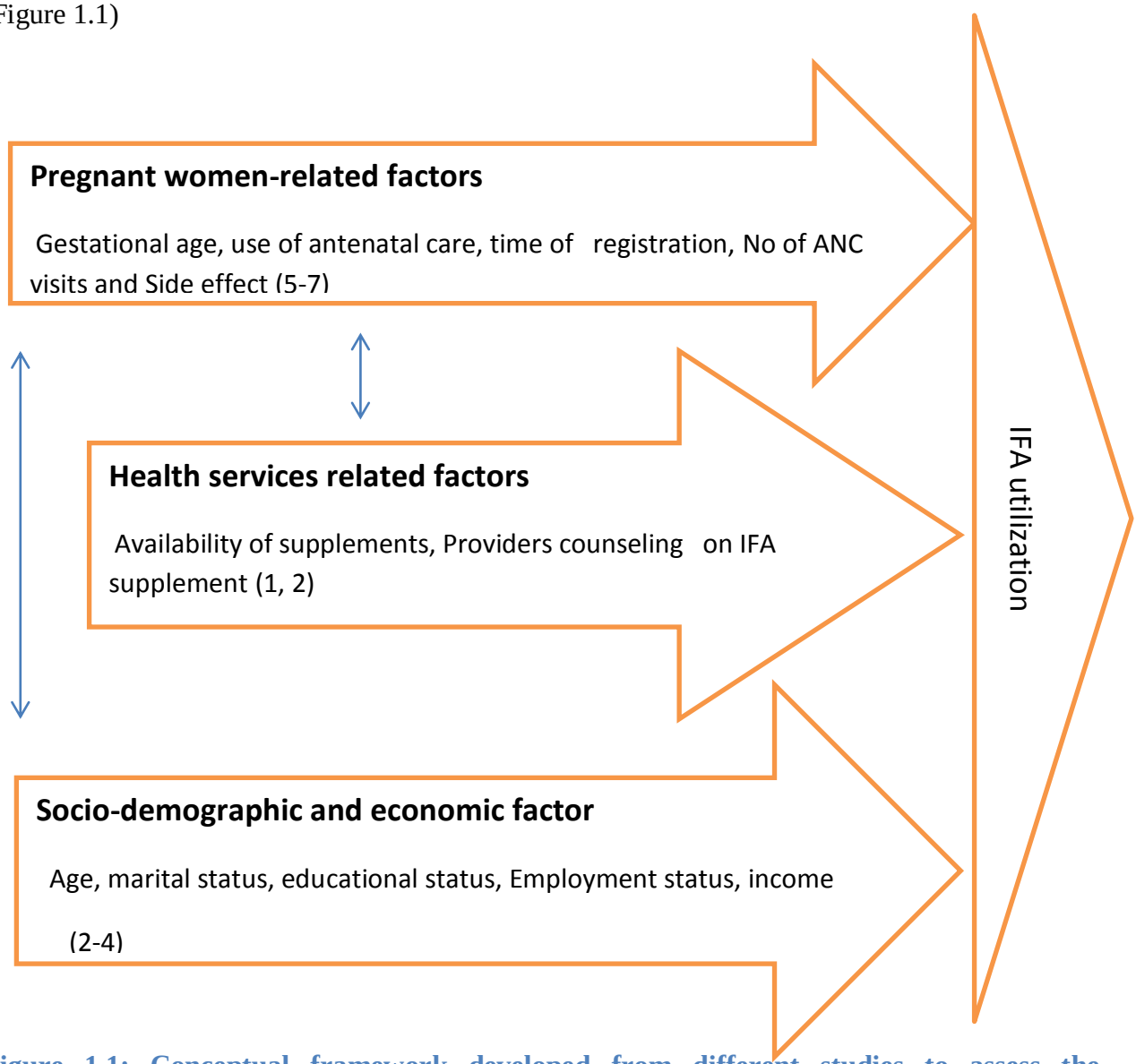

Figure 1.1: Conceptual framework developed from different studies to assess the magnitude of ferrous sulfate and folic acid utilization during pregnancy in health centers of Yeka sub-city.

4. OBJECTIVES

4.1 .General objective

- To assess ferrous sulphate and folic acid consumption among pregnant women in public health centers, Addis Ababa, Yeka sub city, from August to October 2020.

4.2 .Specific objectives

1. To assess ferrous sulfate and folic acid consumption among pregnant women in health centers in Yeka sub-city.
2. To assess associated factors with ferrous sulfate and folic acid consumption among pregnant women in Yeka sub-city.

5. METHODS

5.1. Study area

The study was conducted in Addis Ababa administration. Addis Ababa has 10 sub cities where Yeka is one of the sub cities in Addis Ababa. There are 98 health centers in Addis Ababa. Yeka sub city is one of the sub cities that have more health center than other sub cities. There are fifteen public health centers providing antenatal care service in yeka sub city. The total population of the sub city was 465,505 according to data from sub city health bureau, 2019. There are fourteen (14) woreda's, which has fifteen (15) public health centers and all health centers provide focused ANC.

5.2. Study design

A facility based cross sectional study design was employed.

5.3. Source population

All pregnant women who have ANC follow up in selected health centers of Yeka sub city.

5.4. Study population:- All randomly selected pregnant women who have ANC follow up in selected health centers of Yeka sub city that have 4th visit from August to October 2020.

5.5. Eligibility Criteria

5.5.1. Inclusion criteria: All pregnant women with 4th visit in public health centers.

5.5.2. Exclusion criteria: Pregnant women less than 4th visit and those who are critically ill during data collection were excluded from the study.

5.6. Variables

5.6.1. Dependent variable

- Iron and Folic Acid Utilization

5.6.2. Independent variables

- Socio demographic
  - Age
  - Marital status
  - Educational status
  - Employment status
  - Income
- Pregnant women related factors
  - Gestational age
  - Use of antenatal care
  - Time of registration,
  - No. of ANC visits
  - Side effects
  - Medical illness
- Health service related factors
  - Availability of supplements
  - Providers counseling on IFA supplement

5.7. Sample size determination

The sample size for the first specific objective was determined using the formula for single population proportion. Assuming 4% marginal error (d), 95% confidence level (alpha = 0.05),1.5 design effect(DE) and using19.4% proportion of pregnant women who used IFA tablets for 90 days and above in Addis Ababa (3).

Where:

DE = Design effect=1.5

Z=1.96 (95% confidence level)

p=19.4% = 0.194

q=1-p=0.806

d=marginal error 4%=0.04

$$n = \frac{(Z\,\alpha/2)2\ p\ (1-p)}{d2} = 375$$

375 x 1.5 = 562.5 + 10% non-response

= 618.75 = 619

Table 1. 1: Sample size for specific objective two

Factors	CI	Power (1-β)	Ratio	Proportion of outcome among unexposed	Proportion of outcome among exposed	OR	Sample size	
							N	Sample size including 10% NR
Educational status(3)	95 %	80%	1:1	7%	27%	4.91389	246	271
Wealth quintile(3)	95 %	80%	1:1	6%	17%	3.20884	350	385
ANC counseling(38)	95 %	80%	1:1	15.4	34.3	2.86801	231	254

619 is the sample size obtained after calculating for prevalence by single proportion and 385 is the largest sample size obtained for factors by using epi info software. Finally, by comparing sample sizes of prevalence and factors, the final sample size taken the largest, which are 619.

5.8. Sampling procedure

Yeka sub city is one of the sub-cities in Addis Ababa that has more health centers than other sub cities. There are fifteen health centers providing antenatal care service in Yeka sub-city. By grouping the health centers into three high, low, and medium based on their service coverage .Then the study was conducted on nine health centers that were randomly selected from each group. The total calculated sample size was allocated to the selected study health centers based on number of pregnant women who have at fourth visit. Respondents were selected by systematic random sampling method. The first respondent was selected by lottery method.

To get proportional number of study subject for each facility, the following formula was used

nj is sample size of the jth stratum.

Nj is population size of the jth stratum

n=n1+n2+…+nk is the total sample size

N=N1+N2+…+Nk the total population size

K=number of strata

$$N = \sum_{j=1}^{k} Nj$$

N=660+249+76=985=total population size

nj=(n⁄N)Nj

Stratum 1= (619⁄985) 76=48

Stratum 2= (619⁄985)249=156

Stratum 3= (619⁄985)660 =415

$$\mathrm{n} = \sum_{j=1}^{k} nj$$

n=415+156+48=619

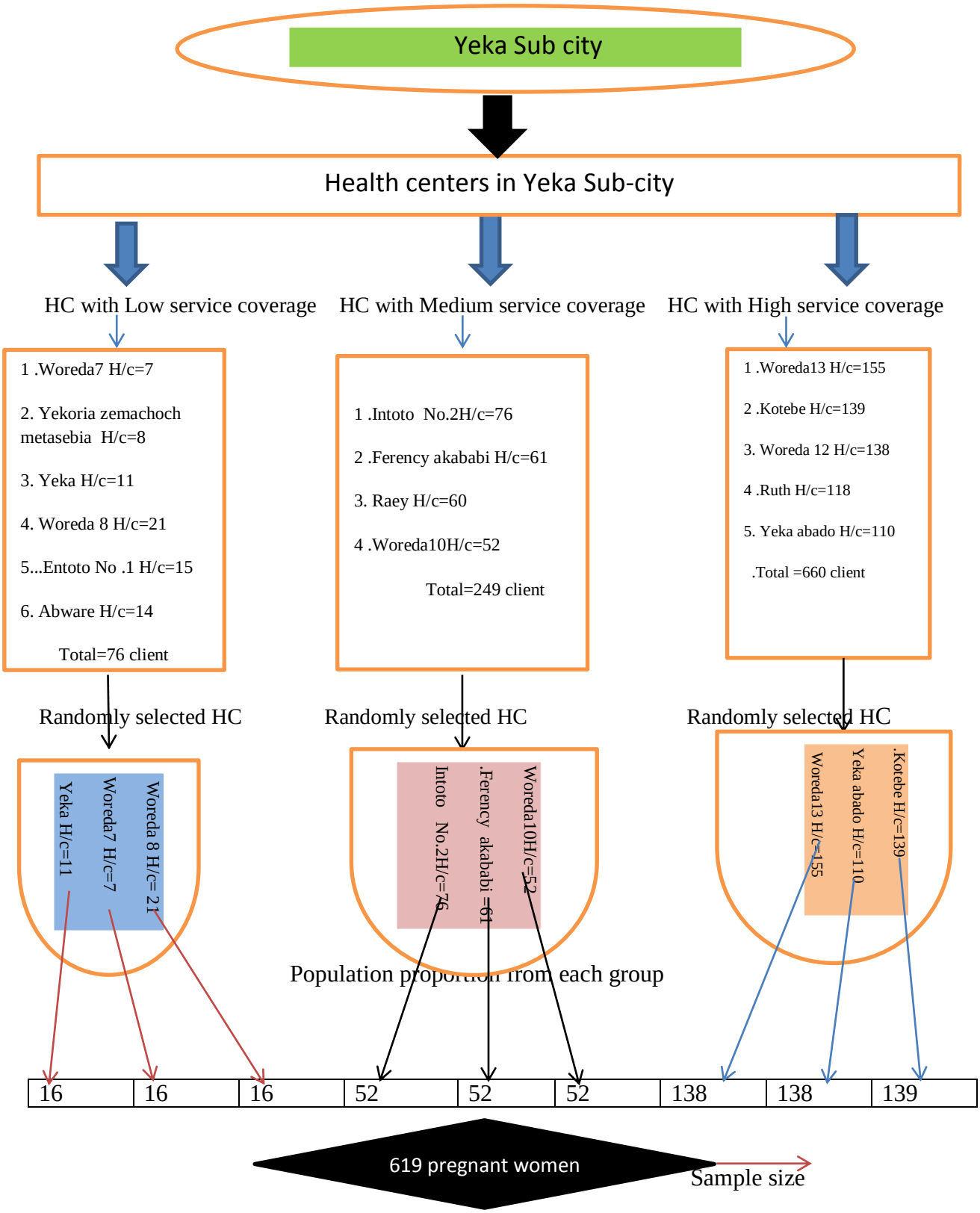

Figure 2. 1: Schematic presentation of sampling for the study to assess the magnitude of ferrous sulfate and folic acid supplementation and utilization during Pregnancy in public health center of Yeka sub city.

5.9. Data collection procedures and tools

A structured and pretested questionnaire was used to collect the data. The data collection tool was prepared in English after reviewing related literatures and then translated to Amharic language, which was pre-tested with pregnant women in one public health center outside of the study site for the purpose of validating data collection tool and to be familiar with the vocabulary /terms. It was done one week before the beginning of data collection. The questionnaire contained information on demographic data, pregnant women related questionnaire, and health facility related questionnaire. Interviewer administered technique was used to collect data by two enumerators, trained by the investigator. The training includes technique of the interviewing and terminologies. Data was collected at the facilities every day until the allocated number for each institution was attained.

5.10. Operational definitions/ definition of terms

WHO recommends that all pregnant women receive standard dose of 30-60 mg iron and 400 micro gram folic acid beginning in first trimester, which means ideally taking 180 tablets before delivery. However money countries aim for women to receive 90 or more tablets during pregnancy (13). In the context of this study, utilization is measured based on number of tablet taken during pregnancy time.

Recommended IFA Utilization: 30 mg to 60 mg of elemental iron and 400 g (0.4 mg) of folic acid taken one tablet daily for 90 days and above.

Below recommended utilization: Taking IFA supplement less than 90 days during pregnancy time.

IFA receipt: Pregnant women received 30 mg to 60 mg of elemental iron and 400 g (0.4 mg) of folic acid during their antenatal care visit.

Adherence to 180 days of supplementation: Taking proper dosage of 180 tablets.

Ferrous Sulfate: 30 mg elemental iron equal to 150 mg of ferrous sulfate.

5.11. Data quality Management

Structured and pre-tested questionnaire was used to collect the data. The questionnaires was originally prepared in English, translated to Amharic, and back to English to keep consistency of the question and increase understanding with the respondents. It was pretested in one health facility other than the actual site. One day training was given for data collectors by the investigator. Collected data was checked manually for completeness accordingly and reviewed and checked by investigator and supervisor on the day of data collection and before data entry.

5.12. Data processing and analysis

Data were entered to Epi data and transferred to SPSS version 20 for analysis. After data entry, it was cleaned and coded before analysis. Descriptive statistics including frequency, chi-square and logistic regression (bivariate and multivariate) was done accordingly. The outcome variable was categorized as recommended utilization and below recommended utilization. The bivariate logistic regression was used to see the association between independent and dependent variables, and variables with p value <0.25 was selected for multivariable logistic regression. The degree of association between independent and dependent variables was assessed using odds ratio with 95% confidence interval and P-value /<0.05/. Results were presented in tables and graphs.

Bivariate analysis was performed for association of iron and folic acid utilization with each independent variable. Crude odds ratio was calculated to evaluate the association between a single independent variable and the dependent variable. Associations detected at p value less than 0.25 at bivariable analysis were included in multiple logistic regressions to control confounders and then adjusted odd ratio was used to determine the presence of statically significant association at 95% CI between the explanatory variable and outcome variable.

5.13. Ethical Considerations

Ethical clearance letter was obtained from Addis Ababa Public Health Research and emergency management directorate. Then support letter was provided to Addis Ababa city administration Health Bureau (ARHB) and responsible body was informed about the data collection to get permission to conduct the study. Before data collection, individuals were informed about the objective of the study, procedures of selection and assurance of confidentiality and informed written consent was obtained from the study participants. Participants were free to withdraw from the study at any time. Participants were not facing any harm nor receive any monetary incentive for participating and it was voluntary based. Confidentiality was assured by not taking the names of the respondents and was labeled only with a number. Also, information collected from the study participants was stored in a protected place as a file and it was not revealed to anyone except the principal investigator.

5.14. Dissemination of result

The result of the study will be disseminated to the College of Health Sciences at Addis Ababa University. Then, the copies of the report finding will be disseminated to Addis Ababa City Administration Health Bureau, Addis Ababa Public Health Research and Emergency Management Directorate, and Yeka Sub-city Health Bureau. It will also be shared with non-government organization and other interested body, and soft copies of the research report will be submitted to the University library. In addition, it will be in peer-reviewed journals.

6. RESULTS

Socio-demographic characteristics of the study participants

From 619 study participants, 595 of them were involved in the study this would make the response rate of 96.1%. The mean age of study participants was 28 (SD= 4.996) years and 395 (66.4%) were in the age range between 25-34 years and 28.8% (`172) of respondent was in the age range 34- 45 years. Two hundred ninety two (49.1%) of study participants attended primary school and 26.4% (157) attended secondary school. Moreover 5.7% did not attend formal school and 89 (15%) attended tertiary school. Four hundred eleven (69.1%) were unemployed and (55) 9.2% were employed .One hundred three (17.3%) of the participants were daily labors. Of study participants 24 (4%) were never married and.558 (93.8%) were married. Mean (SD) monthly income of participants was 4,359.90(SD=3232) Ethiopian Birr. Four hundred ninety-five (83.2%) of respondents income was above 6,000 Ethiopian birr. (Table 2.1)

Table 2. 1**: Socio- Demographic characteristics of respondent attending antenatal care in public health center of Yeka sub city, Addis Ababa, Ethiopia 2021**

Variables	Frequency (No)	Percent (%)
Age of respondent in (years)		
15-24	28	4.7
25-34	395	66.4
35-45	172	28.9
Marital status		
Never married	24	4
Married/living together	558	93.8
Divorced/separate	13	2.2
Highest level school attended		
No formal education	34	5.7

Read and write	23	3.9
Primary school	292	49.1
Secondary school	157	26.4
Tertiary	89	15
Maternal occupation		
Employed	55	9.2
Unemployed	411	69.1
Daily labored	103	17.3
Other	26	4.4
Husband education		
No formal education	16	2.7
Read and write	17	2.9
Primary school	166	27.9
Secondary school	250	42
Tertiary	116	19.5
Husband occupation		
Employed	115	19.5
Unemployed	56	9.4
Daily labore	369	62
Other*	24	4
Monthly income		
At and bellow 6000	521	87.6
Above 6000	74	12.4

*Others include:-self-employed, student

According to this study, 313 (52.6%) of pregnant women use at public transport during their ANC follow up. Two hundred eighty two (47.4%) was found around the health centers and 547(91.9 %) reach to the health centers within 30 min. Five hundred eighty (97.5%) have the service within 30 minute. Five hundred ninthly two (99.5 %) of pregnant women were given or prescribed IFA supplement and 532 (89.4%) of them got IFA without charge. Majority 444 (74.6%) of pregnant women have ever received/heard information about the important of iron folic acid during pregnancy. From those who got information, 397 (66.7%) of pregnant women gain information from health facility (HCP). Three hundred eighty seven (65%) of pregnant women obtain counseling on importance of iron folic acid during ANC visit. Five hundred twenty four (88.1%) of respondent said that there was no IFA shortage in the health facility. Poor health care provider counseling in public health facility was reported by 99 (16.6 %) of pregnant women. (Table 3.1)

Table 3. 1: Health Facility related characteristics of respondent attending antenatal care in public health center of Yeka sub city, Addis Ababa, Ethiopia 2021

Variables	Frequency (No)	Percent (%)
Use public transportation to come to this health facility		
Yes	313	52.6
No	282	47.4
Time it takes to reach this health facility		
≤ 30 min	547	91.9
> 30 min	48	8.1
IFA prescription during current pregnancy		
Yes	592	99.5
No	3	0.5
Time to collect the prescribed IFA		
≤ 30 min	580	97.5
> 30 min	15	2.5
Charge for IFA		

Yes	63	10.6
No	532	89.4
Received any information about use of iron and folic acid during pregnancy		
Yes	444	74.6
No	151	25.4
Received any information from health care provider.		
Yes	397	66.7
No	198	33.3
Received any information from health extension worker		
Yes	9	1.5
No	586	98.5
Received any information from media		
Yes	11	1.8
No	584	98.2
Received any information from reading material		
Yes	46	7.7
No	549	92.3
Obtained counseling service on important of IFA during your ANC visit		
Yes	387	65
No	208	35
Shortage of IFA tablet in the health facility		
Yes	71	11.9
No	524	88.1
Poor health care provider counseling		
Yes	99	16.6
No	496	83.4
Poor health care provider knowledge		
Yes	3	0.5

No	592	99.5

Three hundred twenty (53.8%) of pregnant women started their ANC follow up before 16 weeks of gestation .Where majority 323 (54.3%) of pregnant women had 1-3 pregnancy and 259 (43.5%) of them have no previous pregnancy. Five hundred seventy nine (97.3%) of participants received iron folic acid supplement during their follow up time and 348 (58.5%) received iron folic acid before 16 weeks of gestation .Five hundred fifty five (93.3%) got iron folic acid from health center. Pregnant women reported that they took IFA for different reason. Two hundred forty (40.3%) for making the baby healthy, 344 (57.8%) to prevent anemia, 138 (23.2%) based on health care provider advice, and 12.6% did not know. Pregnant women reason for not taking IFA supplement. Two hundred forty seven (41.5%) forget to take the supplement, 55 (9.2%) due to side effect,585 (98.3 %) of women took IFA daily and 528 (88.7%) took before bed time .Two hundred seventy (45.4%) miss iron folic acid and 180 (30.3%) experience iron folic acid related side effect. Heart burn was the commonly occurred IFA related side effect in pregnant women 157 (26.4 %). Bed times taking IFA tablet decrease the occurrence of IFA related side effect 165 (27.7%). Four hundred seventy five (79.8%) of pregnant women said that they accept and apply the information and counseling that has given on IFA by health care provider. (Table 4.1)

Table 4. 1: Pregnant women related characteristics of respondent attending antenatal care in public health center of Yeka sub city, Addis Ababa, Ethiopia 2021

Variable	**Frequency (No)**	**Percent (%)**
First ANC visit		
Before 16 weeks	320	53.8
At or after 16 weeks	275	46.2
Number of children		
0	259	43.5
1-3	323	54.3
4-6	13	2.2

Received iron folic acid supplement during the current pregnancy		
Yes	579	97.3
No	16	2.7
Time at iron folic acid tablet received		
<16 weeks	348	58.5
24-28 weeks	233	39.2
30-32 weeks	13	2.2
36-38 weeks	1	0.2
Place of iron folic acid supplementation		
Private clinic	3	0.5
Health center	555	93.3
Pharmacy	59	9.9
Other	2	0.3
Reason to take iron folic acid		
For the health of baby	240	40.3
To prevent anemia	344	57.8
Prevention of infection	5	0.8
Advice of health worker to take it	138	23.2
Don't know	75	12.6
Reasons for not using the iron folic acid tablet as prescribed.		
I don't know important of IFA	4	0.7
I forget to take the IFA supplement	247	41.5
Due to religious or cultural belief	2	0.3
Due to side effect	55	9.2
Frequency of taking IFA tablet		
Daily	585	98.3
Day after day	8	1.3
Other	2	0.3

Time of IFA tablet taking		
Before meal	15	2.5
Before bed time	528	88.7
In the morning	21	3.5
With meal	31	5.2
Missed the tablet to take		
Yes	270	45.4
No	325	54.6
Experience of side effect related to IFA		
Yes	180	30.3
No	415	69.7
Type of side effect experienced		
Vomiting	40	6.7
Constipation	4	0.7
Heart burn	157	26.4
Convenient time of taking IFA for decreasing the side effect		
Before meal	4	0.7
Before bed time	165	27.7
In the morning	10	1.7
With meal	2	0.3
Acceptance and apply the information and counseling given on IFA by health care provider		
Yes	475	79.8
No	120	20.2

Factors associated with ferrous sulphate use among pregnant women

Out of 595 pregnant women, 356 (59.8%) take iron folic acid for 90 days and above where as 239 (40.2%) take iron folic acid below 90 days.

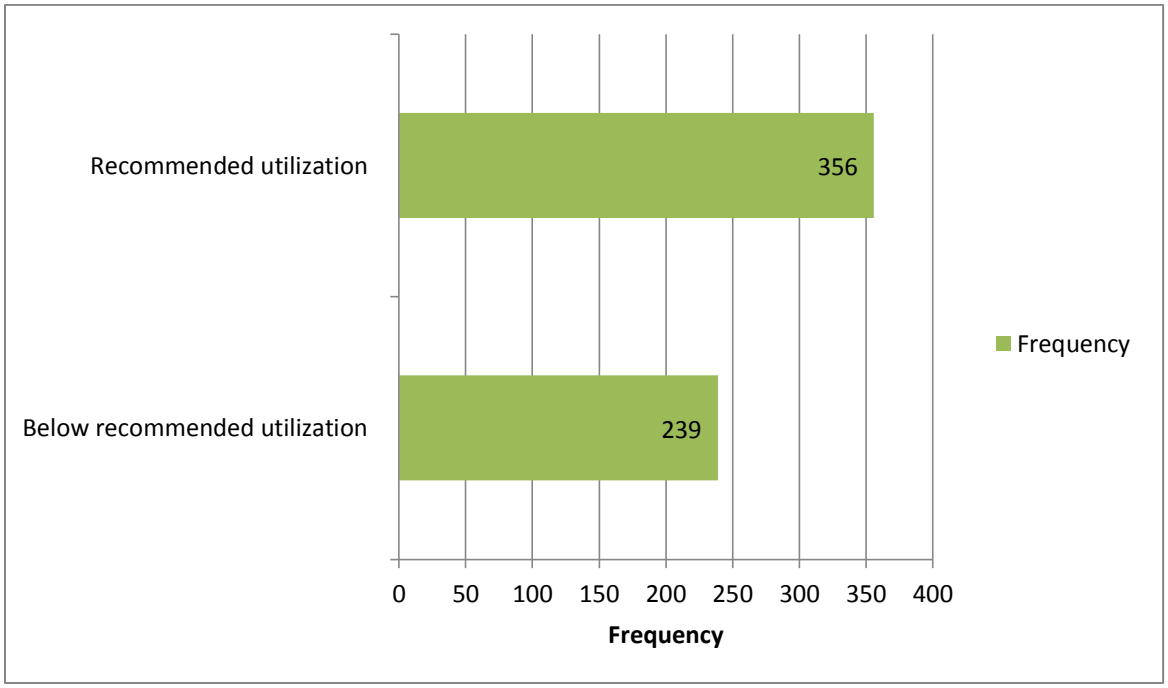

Figure 3. 1: Iron and ferrous sulfate utilization in Yeka sub city, Addis Ababa, Ethiopia 2021

Factors associated with ferrous sulphate use among pregnant women

Bivariable analysis:

Bi variable and multivariable analysis were done to assess association between independent variables and outcome variable. In the bivariate regression analysis, maternal occupation, use of public transportation, charge for IFA, having any information about use of IFA, poor health provider counseling, first ANC visit, IFA use for the health of baby, IFA use to prevent anemia, forget to take the IFA supplement, IFA side effect, missed the IFA tablet to take , experience of side effect related to IFA, vomiting related IFA , heart burn related to IFA had statistically significant association with recommended iron folic acid utilization. (Table 5.1)

Multivariable analysis:

Those variables with p value < 0.25 in bivariable analysis were taken to multivariable analysis. After multivariable analysis use of public transportation, first ANC visit, IFA use for the health of baby, IFA use to prevent anemia and IFA side effect had statistically significant association with recommended iron folic acid utilization. (Table 5.1)

Respondents who did not use public transport during their ANC follow up time were 1.868 times (AOR=1.868, 95%CI: 1.223-2.852) more likely to take the recommended iron and folic acid tablet as compared to those who use public transport and the association was statistically significant .

Women who take the supplement were 3.155 times (AOR=3.155, 95%CI: 2.061-4.829) times more likely to have ANC follow up before 16 wks of gestation compared to women didn't take the recommended amount.

On the other hand, participants who believed IFA use for the health of baby and who know taking iron and folic acid tablet during pregnancy prevent anemia were their reasons to take iron and folic acid tablet during pregnancy time (AOR=3.026, 95%CI: 1.955-4.686), (AOR =2.15495%CI: 1.403-3.307) respectively and the association was statistically significant to the recommended iron and folic acid utilization during pregnancy time. In addition pregnant women reason for not taking daily were IFA related Side effect, those who had no side effect were 2.505

times (AOR=2.505 ,95%CI:1.159-5.415) more likely to take the recommended iron and folic acid utilization .

Table5. 1:Bivariables and **Multivariable** analysis of iron and folic acid utilization during pregnancy in public health centers of Yeka sub-city, Addis Ababa, Ethiopia 2021.

	Recommended IFA Utilization				
Variable	**No**	**Yes**	**COR (95%CI)**	**AOR (95% CI)**	**SIG**
	No (%)	No (%)			
Maternal occupation					
Employed	9 (3.8)	46 (12.9)	4.089(1.442-11.5965)	2.236 (0.682-7.332)	0.184
Un employed	165 (69)	246 (69.1)	1.193 (0.344-2.613)	0.771(0.305-1.949)	0.583
Daily laborer	54 (22.6)	49(13.8)	0.740 (0.315-1.735)	0.786 (0.292-2.118)	0.634
Other	11 (4.6)	15(4.2)	1		
Use public transport to go to health facility					
Yes	153 (64)	160(44.9)	1	1	
No	86 (36)	196 (55.1)	2.179(1.556-3.052)	1.868 (1.223-2.852) *	0.004
Charge for IFA					
Yes	34 (14.2)	29 (8.1)	1	1	
No	205 (85.8)	327 (91.9)	1.870 (1.106 -3.162)	1.182 (0.627-2.227)	0.605
Received any information about use of iron and folic acid during pregnancy					
Yes	167 (69.9)	277 (77.8)	1.512 (1.041-2.194)	1.197 (0.7-2.046)	0.512
No	72 (30.1)	79 (22.2)	1	1	
Poor health care provider					

counseling					
Yes	49 (20.5)	50 (14)	1	1	
No	190 (79.5)	306 (86)	1.578 (1.023-2.435)	1.352 (0.766-2.388)	0.298
First ANC visit					
Before 16 weeks	88 (36.8)	232 (65.2)	3.210 (2.282-4.517)	3.155 (2.061-4.829) *	0.000
At or after 16 weeks	151 (63.2)	124 (34.8)	1	1	
Use for the health of baby					
Yes	66 (27.6)	174 (48.9)	2.506 (1.763-3.563)	3.026 (1.955-4.686) *	0.000
No	173 (72.4)	182 (51.1)	1	1	
Use to prevent anemia					
Yes	93 (38.9)	25 (70.5)	3.753 (2.656-5.303)	2.154 (1.403-3.307) *	0.000
No	146 (61.1)	105 (29.5)	1	1	
Forget to take the IFA supplement					
Yes	135 (56.5)	112 (31.5)	1	1	
No	104 (43.5)	244 (68.5)	2.828 (2.013 -3.972)	1.025 (0.477-2.203)	0.950
Due to side effect					
Yes	35 (14.6)	20 (5.4)	1	1	
No	204 (85.4)	336 (94.4)	2.882 (1.620-5.129)	2.505(1.159-5.415) *	0.020
Missed the tablet to take					
Yes	144 (60.3)	126 (35.4)	1	1	
No	95(39.7	230 (64.6)	2.767 (1.973-3.880)	1.670 (0.774-3.603)	0.191
Experience of side effect related to IFA					
Yes	114 (47.7)	66 (18.5)	1	1	
No	69 (52,3)	290 (81.5)	4.007 (2.772-5.793)	2.026(0.664-6.182)	0.215
Type of side effect experienced					
Vomiting					
Yes	27 (11.3)	13 (3.7)	1	1	
No	212 (88.7)	343 (96.3)	3.360 (1.697-6.656)	1.780 (0.637-4.978)	0.272
Heart burn					

Yes	103 (43.1)	54 (15.2)	1	1	
No	136 (56.9)	302 (84.8)	4.236 (2.878-6.234)	1.580(0.546-4.570)	0.399

* Statistically significant at multivariate analysis

7. DISCUSSIONS:

The study was conducted to determine magnitude of ferrous sulfate and folic acid utilization and associated factors during pregnancy in public health centers of Yeka sub-city. The study showed that /59.8%/of pregnant women have taken iron and folic acid supplement for 90 days and above during pregnancy. Access to health center with in short distance, having first ANC visit before 16 weeks of gestational age and side effect of iron and folic acid were significantly associated with iron and folic acid utilization for the recommended 90 days and above.

A systematic review and meta-analysis study showed 60% compliance with iron folic acid supplementation for the recommended 90 days and above in Addis Ababa, which is comparable with this study (41). Another systematic review and meta-analysis study showed that /67.94%/ compliance in Addis Ababa and Dire dawa (42). But this finding was higher as compared to EDHS 2016 and Mini EDHS 2019 where 5% and19.4 % of pregnant women used IFA tablets for 90 days and above respectively in Addis Ababa (3, 16). This difference might be the current study was a facility-based study while EDHS and Mini EDHS were community based, Facility based study conducted among pregnant women attending ANC follow up and this was good opportunity for pregnant women to get health education from health care provider on importance of IFA which in turn increase utilization. This is supported with an interventional study on utilization of iron and folic acid tablet among pregnant women in rural pungi found that after intervention of health education 82.88 %of pregnant women took IFA tablet out of which /42.31%/ consumed more than 90 tablets (43).

Other possible reason might be iron folic acid utilization in city administration was high as compared to other region and pregnant women who has four and more ANC visit has high IFA utilization. In addition urban mothers had high rate of compliance to IFA supplementation as compared to rural mother(42).

This study showed that access to health facilities within short distance is an important determinant factor for IFA utilization. Pregnant women who did not use public transport were more likely to take IFA for 90 days and above than those pregnant women who had used such a transport. It is in line with the study done in Haiti and Malawi, Indonesia (44, 45).

The study indicated that gestational age at first ANC visits is a predictor for the recommended IFA utilization. Pregnant women who had first ANC visit before 16 weeks of gestational age were more likely to take IFA supplementation for 90 days and above than those pregnant women who had first ANC visit after 16 weeks of gestational age. It is consistent with the study conducted in Ethiopia, North Wollo, and, Niger (32, 41, 46). The possible reason might be pregnant women who registered early for ANC service will have more ANC visit to understand the use of IFA for safe motherhood.

In this study pregnant women main reason for not using iron folic acid supplement as prescribed were IFA related side effects. Pregnant women who had not side effect were more likely to take IFA than those pregnant women who had. This is in agreement with WHO guideline and study findings in Ethiopia, in eight rural district, mecha district, Debre tabour and Tikur Anbesa Specialized hospital (2, 4, 7, 41, 47, 48). In addition, pregnant women's reason for taking IFA for the recommended time were their believe in folic acid and ferrous sulfate use for the health of unborn baby. It is concurrent with a study conducted in South Africa (8).

LIMITATIONS

- ✓ The study was limited to one sub city
- ✓ Cross sectional nature of the study
- ✓ Recall bias

STRENGTH

- ✓ Study population (conducted on pregnant women)

8. CONCLUTIONS

Cross-sectional study was conducted to assess ferrous sulfate and folic acid consumption and associated factors among pregnant women in health center of Yeka sub-city. The study showed that (59.8%) of pregnant women have taken iron and folic acid supplement for 90 days and above during pregnancy. Access to health facility, ANC visit before 16 wks gestation, and side effect were associated with iron and folic acid consumption for the recommended 90 and above days.

9. RECOMMONDATIONS

Yeka sub-city health office and respective health facilities need to work hard to access health facility with in short distance, creating awareness on early initiation of antenatal care, teaching pregnant women about the possible IFA related side effect and how to manage the side effect.

10. REFERENCES

1.Mithra P, Unnikrishnan B, Rekha T, Nithin K, Mohan K, Kulkarni V, et al. Compliance with iron-folic acid (IFA) therapy among pregnant women in an urban area of south India. African health sciences. 2013;13(4):880-5.

2.Taye B, Abeje G, Mekonen A. Factors associated with compliance of prenatal iron folate supplementation among women in Mecha district, Western Amhara: a cross-sectional study. The Pan African medical journal. 2015;20:43.

3.Institute EPH, ICF. Ethiopia mini demographic and health survey 2019: key indicators. EPHI and ICF Rockville, Maryland, USA; 2019.

4.Nasir BB, Fentie AM, Adisu MK. Adherence to iron and folic acid supplementation and prevalence of anemia among pregnant women attending antenatal care clinic at Tikur Anbessa Specialized Hospital, Ethiopia. PLOS ONE. 2020;15(5):e0232625.

5.Abdullahi H, Gasim GI, Saeed A, Imam AM, Adam I. Antenatal iron and folic acid supplementation use by pregnant women in Khartoum, Sudan. BMC Research Notes. 2014;7(1):498.

6.Wendt A, Stephenson R, Young M, Webb-Girard A, Hogue C, Ramakrishnan U, et al. Individual and Facility-Level Determinants of Iron and Folic Acid Receipt and Adequate Consumption among Pregnant Women in Rural Bihar, India. PLOS ONE. 2015;10(3):e0120404.

7.Gebremariam AD, Tiruneh SA, Abate BA, Engidaw MT, Asnakew DT. Adherence to iron with folic acid supplementation and its associated factors among pregnant women attending antenatal care follow up at Debre Tabor General Hospital, Ethiopia, 2017. PLOS ONE. 2019;14(1):e0210086.

8.Kalipa Z, Ter G, Yako EM, Okeyo A. Factors Influencing Adherence to Folic Acid and Ferrous Sulphate Nutritional Intake among Pregnant Teenagers in Buffalo City Municipality, South Africa. Pakistan Journal of Nutrition. 2017;16:531-7.

9.World Health Organization Guideline: Daily iron and folic acid supplementation in pregnant women 2012. Available from: nutrition@who.intwww.who.int/nutrition.

10.Spary-Kainz U, Semlitsch T, Rundel S, Avian A, Herzog S, Jakse H, et al. How many women take oral supplementation in pregnancy in Austria? Wien Klin Wochenschr. 2019:462–7.

11.Molla T, Guadu T, Muhammad EA, Hunegnaw MT. Factors associated with adherence to iron folate supplementation among pregnant women in West Dembia district, northwest Ethiopia: a cross sectional study. BMC Research Notes. 2019;12(1):6.

12.Mithra P, Unnikrishnan B, Rekha T, Nithin K, Mohan K, Kulkarni V, et al. Compliance with iron-folic acid (IFA) therapy among pregnant women in an urban area of south India. African Health Sciences 2013. 2013;13(4):880 - 5

13.Fiedler JL, D'Agostino A, Sununtnasuk C. A rapid initial assessment of the distribution and consumption of iron-folic acid tablets through antenatal care in Nepal. 2015.

14.Walters D, Kakietek J, Eberwein JD, Shekar M. An Investment Framework for Meeting the Global Nutrition Target for Anemia. 2017.

15.Shewasinad S, Negash S. Adherence and Associated Factors of Prenatal Iron Folic Acid Supplementationamong Pregnant Women Who Attend Ante Natal Care in Health Facility at Mizan-Aman Town, Bench Maji Zone, Ethiopia. ournal of Pregnancy and Child Health. 2017.

16.CSACE I. Ethiopia demographic and health survey 2016. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF. 2016.

17.Birhanu TM, Birarra MK, Mekonnen FA. Compliance to iron and folic acid supplementation in pregnancy, Northwest Ethiopia. BMC Research Notes. 2018;11(1):345.

18.Rashid. Reviewing Anemia and Iron Folic Acid Supplementation Program in Bangladesh - A Special Article.

19.Demis A, Geda B, Alemayehu T, Abebe H. Iron and folic acid supplementation adherence among pregnant women attending antenatal care in North Wollo Zone northern Ethiopia: institution based cross-sectional study. BMC Res Notes. 2019.

20.Organization WH. Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia. 2008.

21.Rialine C, Titaley DDS , John M, Dibley Factors associated with not using antenatal iron/folic acid supplements in Indonesia: the 2002/2003 and 2007 Indonesia Demographic and Health Survey. 2015;24(1):162-76.

22.Sharman A. Anemia Testing in Population-Based Surveys General Information and Guidelines for Country Monitors and Program Managers. 2000.

23.WHO recommendations on antenatal care for a positive pregnancy experience 2016 [cited 2016 10 October]. Available from: www.who.int/reproductivehealth/publications/maternal_perinatal_health/anc-positive-pregnancy-experience/en/.

24.World Health Organization Human Reproduction Programme Maternal mortality Evidence brief 2019.

25.World health statistics 2017 monitoring health for the SDGs Sustainable Development Goals 2017. Available from: http://apps.who.int/iris.

26.Wanjira M, Kamau , Mirie W, Thuo S, Kimani Maternal knowledge on iron and folic acid supplementation and associated factors among pregnant women in a rural County in Kenya. 2019;10:,74-80.

27.Brief MMN. Community-Based Distribution of Iron-Folic Acid Supplementation: Evidence and Program Implications. MCSP; 2017.

28.Assefa H, Mekonnen S, ,Abebe , Sisay M. Magnitude and factors associated with adherence to Iron and folic acid supplementation among pregnant women in Aykel town, Northwest Ethiopia. BMC Pregnancy and Childbirth 2019

29.USAID S. Ethiopia National Anemia Profile 2016. Available from: www.spring-nutrition.org.

30.Sununtnasuk C, D'Agostino A, L J, Fiedler. Iron + folic acid distribution and consumption through antenatal care: identifying barriers across countries. 2015;19 (4):732–42.

31.Gebremedhin S, Samuel A, Mamo G, Moges T, Assefa T. Coverage, compliance and factors associated with utilization of iron supplementation during pregnancy in eight rural districts of Ethiopia: a cross-sectional study. MC Public Health 2014 14:607. 2014.

32.Demis A, Geda B, Alemayehu T, Abebe H. Iron and folic acid supplementation adherence among pregnant women attending antenatal care in North Wollo Zone northern Ethiopia: institution based cross-sectional study. BMC Research Notes. 2019;12(1):107.

33.Ejigu T, Woldie M, Kifle Y. Quality of antenatal care services at public health facilities of Bahir-Dar special zone, Northwest Ethiopia. BMC Health Services Research 2013.

34.Birhanu TM, Birarra MK, Mekonnen S, ,Abebe. Compliance to iron and folic acid supplementation in pregnancy, Northwest Ethiopia. BMC Research Notes. 2018.

35.Digssie A, Gebremariam , Abebaw S, Tiruneh , Abebe B, Abate , Tadege M, Engidaw , Tesfa D, Asnakew Adherence to iron with folic acid supplementation and its associated factors among pregnant women attending antenatal care follow up at Debre Tabor General Hospital, Ethiopia. 2019.

36.Nisar YB, Dibley MJ, Mir AM. Factors associated with non-use of antenatal iron and folic acid supplements among Pakistani women: a cross sectional household survey. BMC Pregnancy and Childbirth. 2014;14(1):305.

37.Abdullahi H, I G, Gasim, , Saeed A, M A, Imam , Adam I. Antenatal iron and folic acid supplementation use by pregnant women in Khartoum, Sudan. BMC Research Notes. 2014.

38.Wendt A, Stephenson R, Young M, Webb-Girard A, Hogue C, Ramakrishnan U, et al. Individual and Facility-Level Determinants of Iron and Folic Acid Receipt and Adequate Consumption among Pregnant Women in Rural Bihar, India. PLOS ONE 2015.

39.Kassa ZY, Awraris T, Daba AKD, Tenaw Z. Compliance with iron folic acid and associated factors among pregnant women through pill count in Hawassa city, South Ethiopia: a community based crosssectional study. Reproductive Healt. 2015:8.

40.M J, O OS, O KS. Predictors of optimum antenatal iron-folate supplementation in a low resource rural set-up in Eastern Kenya. Journal of Public Health and Epidemiology. 2015; 7(11).

41.Desta M, Kassie B, Chanie H, Mulugeta H, Yirga T, Temesgen H, et al. Adherence of iron and folic acid supplementation and determinants among pregnant women in Ethiopia: a systematic review and meta-analysis. Reproductive Health. 2019;16(1):182.

42.Workineh Y, Semachew A, Ayalew E, Temesgen WA. Compliance to Iron-Folic Acid Supplementation and Its Association with the Number of ANC Visits in Ethiopia: Systematic Review and Meta-Analysis. Advances in preventive medicine. 2019;2019.

43.Singh G, Lal M, Singh S. Utilization of iron folic acid tablets among pregnant women in rural Punjab: an interventional study. International Journal of Community Medicine and Public Health. 2020;7(4):1.

44.Wang W, Benedict R, Mallick L. The Role of Health Facilities in Supporting Adherence to Iron-folic Acid in Haiti and Malawi: A Study Linking Health Facility Survey and Population Survey Data. 2020.

45.Titaley CR, Dibley MJ. Factors associated with not using antenatal iron/folic acid supplements in Indonesia: the 2002/2003 and 2007 Indonesia Demographic and Health Survey. Asia Pacific journal of clinical nutrition. 2015;24(1):162-76.

46.Begum K, Ouédraogo CT, Wessells KR, Young RR, Faye MT, Wuehler SE, et al. Prevalence of and factors associated with antenatal care seeking and adherence to recommended iron-folic acid supplementation among pregnant women in Zinder, Niger. Maternal & child nutrition. 2018;14 Suppl 1(Suppl 1):e12466.

47.Gebremedhin S, Samuel A, Mamo G, Moges T, Assefa T. Coverage, compliance and factors associated with utilization of iron supplementation during pregnancy in eight rural districts of Ethiopia: a cross-sectional study. BMC Public Health. 2014;14(1):607.

48.WHO Guidelines Approved by the Guidelines Review Committee. Guideline: Daily Iron and Folic Acid Supplementation in Pregnant Women. Geneva: World Health Organization Copyright © 2012, World Health Organization.; 2012.

11. ANNEXES

Annex 1: English version information sheet and consent form.

Good morning/ afternoon?

My name is _____I am working as a data collector on behalf of Helen Amtataw who is currently a postgraduate Student at School of Public Health College of Health Sciences Addis Ababa University. The objective of this study is to assess the magnitude of ferrous sulfate and folic acid utilization and associated factors during Pregnancy in public health center of Yeka sub city. This interview might take 25 minutes. Your name will not be written anywhere in the form and all the information you give us is confidential except for the purposes of this study and it will never be disclosed for the third parity. In addition, I would like to inform you that by participating in this study, you will get no short term or long term risk or benefit. I also would like to inform you that you have a full right to withdraw from the study or to stop the interview any time or to skip any question that you do not want to answer. Your cooperation and willingness for the interview is very helpful in identifying the problem related to the issue.

So do you agree to participate in this study?

Respondent agrees to be interviewed go to the next part.

Respondent does not agree to be interviewed stop interview.

Thank you in advance for your cooperation

Data collector name_____ sign: _____

If you have any question or doubt, you can contact:

Helen Amtataw (BSC) Tel.no 0947960391 E-mail: amhelen2010@gmail.com Or Meselech Assegid, Tel .no 0911904390 and E-mail: meselua@yahoo.com Or

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Annex 2: English Questionnaire

- Part one .Socio- Demographic characteristics

S.No		Responses	Code	Skip to Q
Q 101	Age of respondent in years	**……..**		
Q 102	Marital Status	1. Never Married	**1**	
		2.Married/living together	**2**	
		3 .Divorced /separate	**3**	
Q 103	The highest level of school attended	1.No formal education	**1**	
		2 .Read and write	**2**	
		3.Primary school	**3**	
		4.Secondary School	**4**	
		5 .More than secondary	**5**	
Q 104	Maternal occupation	1.Employed	**1**	
		2.Unemployed	**2**	
		3.Daily laborer	**3**	
		4. House wife	**4**	
		5 .Other	**5**	
Q 105	Husband's level of educational status	1.No formal education	**1**	
		2.Read and write	**2**	
		3.Primary school	**3**	
		4.Secondary School	**4**	
		5.More than secondary	**5**	
Q 106	Husband's occupation	1.Employed	**1**	
		2.Unemployed	**2**	
		3.Daily laborer	**3**	
		4.Other	**4**	
Q 107	Average monthly income in Ethiopian birr	……		

Part Two. Health Facility Related questioner

S.No	Questions	Responses	Code	Skip to Q
Q 201	Did you use any means of transportation to come to this health center?	1.Yes	**1**	
		2. No	**2**	
Q 202	How long in minutes it takes to reach this health facility?	1. ≤ 30 min	**1**	
		2. > 30 min	**2**	
Q 203	Was IFA prescribed for you in this facility during current pregnancy?	1.Yes	**1**	
		2. No	**2**	
Q 204	How long in minute it takes you in this health center to collect the prescribed IFA?	1. ≤ 30 min	**1**	
		2. > 30 min	**2**	
Q 205	Have you charged for IFAS?	1.Yes	**1**	
		2. No	**2**	
Q 206	Have you ever received any information about use of iron and folic acid tablet during pregnancy?	1.Yes	1	if 2 skip to Q 208
		2. No	2	

Q 207	If "yes" What was/were the source of information?	1.Doctor/health care provider	1	
		2.Health extension worker	2	
		3.Media	3	
		4.Reading materials (Boucher, poster)	4	
Q 20 8	Did you obtain counseling service on importance of IFA during your ANC visit?	1.Yes	1	
		2. No	2	
Q 209	Is there a shortage in the health facility during IFA tablet collection?	1.Yes	**1**	
		2.No	**2**	
Q 210	If "No "What other problems encountered in the health center during IFA tablet collection?	1.Long waiting time	1	
		2.Poor health provider communication	2	
		3. poor health provider counseling	3	
		4.Poor health provider knowledge	4	
		5. Other please specify……	5	

Part Three. Pregnant women related questioner

S.No	Questions	Responses	Code	Skip to Q
Q 301	What is the age of this pregnancy?	1. Months	**1**	
Q 302	Gestational age where ANC started	1. Before 16 weeks	**1**	
		2. At or After 16 weeks	**2**	
Q 303	How money children do you have?	1. 0	**1**	
		2. 1-3	**2**	
		3. 4-6	**3**	
		4. >6	**4**	
Q 304	Did you take any medication for treatment of present or past medical illness?	1.Yes	**1**	
		2. No	**2**	
Q 305	Have you received iron folic acid supplement during the current pregnancy?	1.Yes	1	If 1, skip to Q310
		2. No	2	

Q 306	If "yes" when you first received iron folic acid in this pregnancy?	1. <16 weeks	1	
		2. 24-28 weeks	2	
		3. 30-32 weeks	3	
		4. 36-38 weeks	4	
Q307	From where did you take iron folic acid supplement?	1.Clinic	1	
		2 Heath center	2	
		3.Pharmacy	3	
		4. Other …….	4	
Q 308	During the whole pregnancy, for how many days did you take the tablets?	1. Days…….	1	
Q 309	What are the reasons for taking the iron and folic acid supplement during pregnancy?	1.For the health of baby	1	
		2.To prevent anemia	2	
		3. Prevention of infections	3 4	
		4. Advice of health worker to take it	5	
		5. Don't know		
Q 310	What are the reasons for not using the iron folic acid supplement	1.I don't know the important of IFA supplement	1	
		2. I forget to take the iron folic acid supplement	2	
		3. Due to religious/cultural belief	3	
		4.due to side effect	4	
		5. Please specify the side effect……	5	

Q 311	How often you were taking iron folic acid tablet	1.Daily	**1**	
		2.Day after day	**2**	
		3. Other…….	**3**	
Q 312	How did you take your IFA tablets?	1.Before meal	**1**	
		2.Before bed time	**2** **3**	
		3.In the morning	**4**	
		4. With meal		
Q 313	Have you miss the tablet to take	1.Yes	**1**	
		2. No	**2**	
Q 314	If "Yes" What was the Reason for not taking daily?	1.Forget fullness	**1**	
		2.Fear of side effect	**2**	
		3.Unpleasant taste of IFA tablet	**3**	
		4. Other, please specify…	**4**	
Q 315	Did you experience IFA related side effects during pregnancy?	1.Yes	1	If, 1 skip to Q314
		2. No	2	
Q 316	Which Iron and folic acid tablet side effect mostly occurred in you?	1.Vomiting	1	
		2.Diarrhea	2	
		3.Constipation	3	
		4.Heart burn	4	
Q 317	Which way decrease the occurrence of the side effect?	1. Before meal.	1	
		2. Before bed time	2	
		3.In the morning	3	
		4.With meal	4	

Q 318	Did you accept and apply the information and counseling that has given on IFA by health care provider	1.Yes 2.No	**1** **2**	
Q 319	If "No" what is the reason?	……		

Annex 3: Amharic version information sheet and consent form

የተሳትፎ መጠይቅ እና የስምምነት ቅጽ

ጤና ይስጥልኝ..... እባላለሁ

በአዲስ አበባ ዩቨርስቲ የሁለተኛ ዲግሪ ተማሪ የሆነችዉን ሄለን አምታታዉን በመወከል መረጃ እየሰበሰብኩ ነዉ።የጥናቱ አላማ በ መንግስት ጤና ጣቢያ ነፍሰጡር እናቶች አይረን ፎሊክ አሲድ አጠቃቀም ዙሪያ ነዉ።ይህ ቃለ መጠይቅ 25 ደቂቃ ሊወስድ ይችላል።ስምዎት በዚህ ፎረም ላይ በማንኛዉም ቦታ አይፃፍም።የሚሰጡን ማንኛዉም መረጃ ለሶስተኛ ወገን ሳይተላለፍ ለዚህ ጠናት አላማ ብቻ ይዉላል።ሚስጥራዊነቱም የተጠበቀ ነዉ።ከዚህ በተጨማሪም ላሳዉቅ የምወደዉ ጉዳይ በዚህ ጥናት በመሳተፍዎ የሚያገኙት የአጭርም ሆነ የረጂም ጊዜ ጥቅምም ሆን ጉዳት የለም።

በዚህ ጥናት በሚሳተፉበት ወቅት

1.እራስዎን ከጥናቱ የማግለል ሙሉ መብት አለዎት።

2.ቃለ ምልልሱን በማነኛዉም ሰአት ማቋረጥ ይችላሉ።

3.መመለስ ያልፈለጉትን ጥያቄ እንዲመልሱ አይገደዱም

ስለዚህ በዚህ ጥናት ለመሳተፍ ፈቃደኛ ነዎት ?

1 .አዎ .....ወደ ሚቀጥለዉ ።

2 .አይደለሁም.....ቃለ መጠይቁን አቁም።

ለሚኖረዎት ማንኛም ጥያቄ ወይም አስተያየት የሚቀጥለዉን አድራሻ ይጠቀሙ

ሄለን አምታታዉ ስልክ ቁጥር 0947960391 **ኢ.ሜል አድራሻ :** amhelen2010@gmail.com **ወይም መሰለች አሰግድ ስልክ ቁጥር** 0911904390 **ኢ.ሜል አድራሻ :** meselua@yahoo.com**ወይም ገ/ዓዲቅ ሽብሬ ስልክ ቁጥር** 0931419767 **ኢ.ሜል አድራሻ :** Gebretsh@gmail.com

Annex 4: Amharic questionnaire

ክፍል አንድ አጠቃላይ የተጠያቂዉ መግለጫ

ጥያቄ ተ.ቁ	መጠይቅ	አማራጭ መልስ	መለያ ቁጥር	እለፍ
101	እድሜ በአመት	……		
102	የጋብቻ ሁኔታ	1.ያላገባ	1	
		2.ባለ ትዳር	2	
		3.የተለያዩ/የተፋቱ	3	
103	የደረሱበት የትምህርት ደረጃ	1.ማንነብና መፃፍ የማይችል	1	
		2.ማንበብና መፃፍ የሚችል	2	
		3.የመጀመርያ ደረጃ	3	
		4.ሁለተኛ ደረጃ	4	
		5.ከዚያ በላይ	5	
104	የ ሥራ ሁኔታ	1.የመንግስት ሰራተኛ	1	
		2.ምንም ስራ የለኝም	2	
		3.የቀን ሰራተኛ	3	
		4.የቤት ሰራተኛ	4	
		5.ሌላ ካለ ይግለፁ	5	

105	የትዳር አጋር የትምህርት ደረጃ	1.ማንነብና መፃፍ የማይችል	1	
		2.ማንበብና መፃፍ የሚችል	2	
		3.የመጀመርያ ደረጃ	3	
		4.ሁለተኛ ደረጃ	4	
		5.ከዚያ በላይ	5	
106	የትዳር አጋር የ ሥራ ሁኔታ	1.የመንግስት ሰራተኛ	1	
		2.ምንም ስራ የሌለዉ	2	
		3.የቀን ሰራተኛ	3	
		4.ሌላ ካለ ይግለፁ……	4	
107	የወር ገቢዎ በኢትዮጵያ ብር	……..		

ክፍል ሁለት፡- በጤና ጣቢያ የ ነፍሰጡር እናቶች አይረን ፎሊክ አሲድ እንክብል ዕደላን በተመለከተ የተጠየቁ ጥቄዎች

ጥያቄ ተ.ቁ	መጠይቅ	አማራጭ መልስ	መለያ ቁጥር	አለፍ
201	ወደዚህ ጤና ጣቢያ ለመምጣት የትራኒስፖርት አገልግሎት ትጠቀምያለሽ ?	1.አዎ	1	
		2.የለም	2	
202	ጤና ጣቢያው ከቤትሽ ያለው እርቀት በደቂቃ ምን ያህል ነዉ?	1 .30 ደቂቃና ከዚያ በታች	1	
		2 .30 ደቂቃና ከዚያ በላይ	2	
203	በአሁኑ እርግዝናሽ ወቅት ከ ዚህ ጤና ጣቢያ የአይረን ፎሊክ አሲድ እንክብል ታዘልሽ ያዉቃል?	1.አዎ	1	
		2.የለም	2	
204	በዚህ ጤና ጣቢያ የታዘዘልሽን የአይረን ፎሊክ አሲድ እንክብል ለማግኘት ስንት ደቂቃ ትጠብቂያለሽ?	1.30 ደቂቃና ከዚያ በታች	1	
		2.30 ደቂቃና ከዚያ በላይ	2	
205	ከጤና ጣቢያ አይረን ፎሊክ አሲድ እንክብል ስትወስጂ ክፍያ ትጠየቂያሽ	1.አዎ	1	
		2.የለም	2	
206	አይረን ፎሊክ አሲድ እንክብል በእረግዝና ወቅት ስላለዉ ጥቅም መረጃ አግኝተሽ ታዉቂያለሽ ?	1.አዎ	1	2 ከመረጡ ወደጥያቄ ቁጥር 208 አለፍ
		2.የለም	2	

207	መልስሽ አዎ ከሆነ መረጃዉን ከየት አገኘሽዉ ?	1.ከጤና ጣቢያዎች	1	
		2.ከጤና ኤክስቴንሽን ባለሙያወች	2	
		3.ከመገናኛ ብዙሃን	3	
		4.ከሚነበኑ ዕሀፎች	4	
208	በጤና ጣቢያ የ እረግዘና ክትትልሽ ወቅት ስለ አይረን ፎሊክ አሲድ እንክብል ጥቅም የምክር አገልግሎት አግኝተሻል ?	1.አዎ	1	
		2.የለም	2	
209	የአይረን ፎሊክ አሲድ እንክብል በምትወስጂበት ጊዜ አጥተሽ የተመለሽበት አጋጣሚ አለ ?	1.አዎ	1	
		2.የለም	2	
210	መልስሽ "የለም" ከሆነ ያጋጠመሽ ችግር ምን ነበር ?	1.አገልግሎቱን ለማግኘት ብዙ ሠዓት መጠበቅ	1	
		2.ጤና ባለሙያዎቹ የተግባቡት ቺግር አለባቸዉ	2	
		3.በቂ የምክር አገልግሎት አልተሰጠኝም	3	
		4.ሌላ ካለ ይግለፁ	4	

ክፍል ሦስት፡- የነፍሰጡር እናት የአይረን ፎሊክ አሲድ እንክብልአ አጠቃቀም በተመለከተ የተጠየቁ ጥያቄዎች

ጥያቄ ተ.ቁ	መጠይቅ	አማራጭ መልስ	መለያ ቁጥር	አለፍ
301	የስንት ወር ነፍሰ ጡር ነሽ ?	1.ወር…….	1	
302	የእርግዝና ክትትል ስትጀምሪ የእርግዝናሽ አድሜ ስንት ነበር ?	1.ከ 16 ሳምንት በፊት	1	
		2.ከ16 ሳምንት በኋላ	2	
303	ስንት ልጆች አሉሽ ?	1.ምንም ልጂ የለኝም	1	
		2. 1-3	2	
		3. 4-6	3	
		4. >6	4	
304	በህመም ምክንያት እየወሰድሽው ያለ መድሃኒት አለ ?	1.አዎ	1	
		2.የለም	2	

305	በአሁኑ እርግዝናሽ የአይረን ፎሊክ አሲድ እነክብል ወስደሻል ?	1.አዎ	1	1 ከመረጡ ወደ ጥያቄ ቁጥር 310 አለፍ
		2.የለም	2	
306	መልስሽ አዎ ከሆነ ስንተኛዉ ሳምንት ላይ አይረነ ፎሊክ አሲድ አንክብል ለመጀመሪያ ጊዜ ወሰድሽ ?	1. <16 ሣምንት	1	
		2. 24-28 ሣምንት	2	
		3. 30-32 ሣምንት	3	
		4. 36-38 ሣምንት	4	
307	የአይረን ፎሊክ አሲድ እንክብል ከየት አገኘሽ ?	1.ፋርማሲ	1	
		2.ክሊኒክ	2	
		3.ጤና ጣቢያ	3	
		4.ሌላ……..	4	
308	በእርግዝናሽ ወቅት አይረን ፎሊክ አሲድእንክብል ለስንት ጊዝ ወሰድሽ	1……ቀን	1	
309	‘የአይረን ፎሊክ አሲድ እንክብል የምትወስጂው ለምንድነው?	1.ለጤናማ ልጂ	1	
		2.እራሴን ከደም ማነስ ለመከላከል		
		3.እራሴን ከብክለት ለመከላከል	2	
		4.የጤና ባለሙያዎች መውሰድ		

		እንዳለብኝ ስለነገሩኝ ነው	3	
		5.አላውቀውም	4	
310	በ'እርግዝናሽ ወቅት· የአይረን ፎሊክ አሲድ እንክብል የማትወስጂበት· ምክነያት· ምነድንዉ?	1.የአይረን ፎሊክ አሲድ እንክብል ጥቅም አልዉክም	1	
		2 ስለምረሳዉ	2	
		3.ሀይማኖቴ ስለማይፈቅድ	3	
		4.በጎንዮሽ ጉዳቱ ምክነያት·	4	
		5.እባክሽ የጎንሽ ጉዳቱን ግለጭ	5	
311	አይረን ፎሊክ አሲድ እንክብል በምን ያህል ጊዜ ልዩነት· ነበር የምትወስጅዉ?	1.በየቀኑ·	1	
		2.አንድ ቀን እያለፍኩ·	2	
		3.ሌላ……..	3	
312	አይረን ፎሊክ አሲድ እንክብል አንዴት· ነዉ የምትወስጂዉ ?	1.ከምግብ በፊት·	1	
		2.ከመተኛቴ በፊት·	2	
		3.ጠዋት·	3	
		4.ከምግብ ጋረ	4	
313	አይረን ፎሊክ አሲድ እንክብል ሳትወስጂ እረስሽ ታዉቂያለሽ?	1..አዎ	1	
		2.የለም	2	
314	አይረንፎሊክአሲድበየቀኑ· የማትወስጂበት· ምክነያት· ምን ነበር	1.ስለምረሳዉ	1	

	?	2.በጎንዮሽ ጉዳቱ ምክነያት	2	
		3.መጥፎ ጣዕም ስላልዉ	3	
		4.ሌላ.....	4	
315	በ'እርግዝናሽ ወቅት አይረን ፎሊክ አሲድ እንክብል መዉሰድ ጋረ በተያያዘ ያጋጠመሽ የጎንዮሽ ጉዳት አለ ?	1..አዎ	1	1 ከመረጡ ወደ ጥያቄ ቁጥር 314 አለፍ
		2.የለም	2	
	የትኛዉ አይረን ፎሊክ አሲድ የጎንዮሽ ጠንቅ ብዙ ጊዜ በእርሶ ላይ ተከስተል ?	1.ትዉከት	1	
		2.ተክማት	2	
		3ድረቀት	3	
		4.የልብ ማቃጠል	4	
		5.ሌላ.....	5	
317	የትኛዉ የአወሳሰድ መንገድ የጎንዮሽ ጉዳቱን ይቀንሳል ?	1.ከምግብ በፊት	1	
		2.ከመተኛቱ በፊት	2	
		3.ጠዋት	3	
		4.ከምግብ ጋረ	4	
318	ስለ አይረን ፎሊክ አሲድ እንክብል ጥቅምም ሆን የጎዮሽ ጠንቅ በጤና ባለሙያ የሚሰጠዉን የጤና ትምህርትና የምክር አገልግሎት ተግባራዊ ታደረጊያለሽ ?	1.አዎ	1	
		2.የለም	2	
319	መልስዎ" የለም" ከሆነ አባክዎ ምክያቱን ይግለፁ	.....		

Annex 5: Curriculum vitae (CV)

1. Personal details

Name: Helen Amtataw

Date of birth: June 1989

Place of birth: Amhara regien semen shewa zone majete

Nationality: Ethiopian

Address: Mobile +0947960391

E-mail: amhelen2010@gmail.

2. Educational background

1986-1993 E.C grade 1-8 majete primary schools,

1994-1997 E.C grade 9-10 Lem secondary school and 11-12 menen preparatory school

1999-2001 E.C BSc Nurse in Hawassa University.

2010 E.C started following GMPH in Addis Ababa University.

3. Work Experience

March 2002 - May 2004 I had been working in semen shewa zone Lemi woreda,

December 2005 – 2006 E.C I had been working in Addis Ababa, kerkose sub city, Woreda 02 health center as service provider in outpatient department

January 2006-till now working in Yeka Sub city, woreda 10 health Center in family planning clinic, I had trainings on basic family planning service, PMTCT, TB

4. Skills

I have basic computer skills in software application: MS Word, MS Excel, MS Access, power point, publisher and internet using skills.

5. Language

Amharic: Excellent in listening, speaking, reading, writing

English: V. Good in listening, speaking, reading, writing

6. Interest

Reading any publications, participating on voluntary services, discussing with friends with any issue.

7. Reference

1. Mr Demena Sufa

   Medical Director in Yeka sub city Woreda 10 health center, Addis Ababa

   Tel. +251 1186037102.

2. S/r Atitegeb Tsegaye

   Health promotion and disease prevention Cordinator in Wored 10 health center, Addis Ababa

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3. Mrs Tarikua Argaw

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