Magnitude of Adherence to Iron Folic Acid Supplementation and Associated Factors among Pregnant Women's attending Antenatal care at Tirunesh Beijing General Hospital, Addis Ababa, Ethiopia

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Research Article

Abstract

Background. Pregnant mothers are at high risk of anemia because of significantly increased iron requirements, and adherence to iron folic acid supplementation is one of the main strategies for prevention of anemia. Iron deficiency anemia is the most common nutritional disorder, affecting two billion people worldwide. In Ethiopia, l<1% of pregnant mothers took iron folic acid supplements for the recommended period during their pregnancy. Despite this fact, it often remains unrecognized and unidentified in the study area.

Objective. the current study was aimed to assess the magnitude of adherence to iron folic acid supplementation and associated factors among pregnant mothers attending antenatal care at Tirunesh Beijing General Hospital, Addis Ababa, Ethiopia.Methods.An institution based cross-sectional study design was conducted .systematic random sampling were used .Data were collected through face to face interview and analyzed with SPSS version 26. By considering 95% confidence level and P value of < 0.05, binary logistic regression was used to identify factors associated.

Result. Adherence to iron folic acid supplementation in the study was 43.7% (95% CI: 40.2%–47%). pregnant mothers knowledge of anemia [AOR = 1.51, 95% CI: (1.26-2.27)], had history of abortion [AOR=0.5, 95% CI: (0.29-0.77)], aged less than 25 years [AOR=0.55, 95% CI: (0.32-1.34)], had still birth [AOR=2.21, 95% CI: (1.13-4.31)], collect greater than 60 Iron tablets per visit [AOR=1.34, 95% CI: (1.01-1.89)], husbands education [AOR=5.32, 95% CI: (1.92-14.74)], had Significant association with Iron and Folic acid Adherence.

Conclusion and Recommendation. The magnitude of adherence among pregnant women towards IFA supplementation was 43.7%. Still birth, abortion, knowledge about anemia, aged less than 25 years, husbands' education and the numbers of tablets collected by pregnant women were factors for adherence to iron folic acid supplementation. Emphasis should be given to those women who have had a bad obstetric history and an adequate supply of IFA tablets to enhance the adherence of pregnant women to IFA supplementation.

1. Introduction

The need for iron folic acid increases during pregnancy due to physiological changes, fetal growth, and development. The increased demand for these nutrients is not met through diet alone due to decreased bioavailability of nutrients among pregnant mothers. The likelihood of presenting iron deficiency and foliate deficiency is high if the diet is not supplemented with iron folic acid tablets during pregnancy. (1) Iron deficiency anemia is the most common nutritional disorder, affecting two billion people worldwide. (2) Pregnant mothers are among the high-risk groups for anemia due to low iron stores in their bodies. Based on evidence from iron supplementation trials, it will be estimated that, on average, 50% of anemia globally is caused by iron deficiency.(3)

Pregnant mothers are at especially high risk of iron deficiency and anemia because of significantly increased iron requirements during pregnancy. Iron supplementation has been a major strategy in low-income and middle-income countries where micronutrient deficiencies are common to reduce iron deficiency anemia in pregnancy.(4) Globally 41.8% or almost half of all pregnant mothers are anemic, with the highest proportion affected in developing countries. (5)

The prevalence of anemia among pregnant mothers in developed countries is 18% on average, which is significantly lower than the average of 56% in developing countries. The actual prevalence of anemia in pregnant mothers in Africa and Asia is estimated to be 57.1% and 48.2%, while that of America and Europe is 24.1% and 25.1%, respectively.(6) According to the Ethiopia Demographic Health Survey (EDHS) of 2011, less than 1% of pregnant mothers took IFA supplements for the recommended period during their pregnancy. (7)

Several studies have reported that the use of any antenatal iron folic acid supplementation during pregnancy reduces the risk of early neonatal and childhood mortality by preventing maternal anemia, low birth weight, and preterm delivery. Currently, 23 percent of Ethiopian mothers aged 15–49 are anemic. In rural areas, the proportion of mothers with any anemia is significantly higher than in urban areas (25 percent versus 16 percent). (8) Lack of iron folic acid (IFA) supplementation and poor adherence to the supplement during pregnancy is associated with anemia. Maternal anemia is also associated with low weight gain, congestive heart failure, preterm labor, bleeding, and lower resistance to infection, poor cognitive development, and reduced work capacity. Similarly, iron folic acid deficiency during pregnancy is linked to an increased risk of neural tube defect NTD, preeclampsia, fetal malformations, and preterm delivery. Anemia is common among Addis Ababa mothers (16%). (5)

Food-based and supplementation strategies to improve iron status are recommended for populations at risk of anemia and iron deficiency. So, the most possible mass intervention for iron supplementation is administering iron along with folic acid in the form of tablets to pregnant women. But the effectiveness and success of such interventions depend on the adherence to the iron-folic acid tablets.(9)

According to the WHO and Ethiopian national guidelines for control and prevention of micronutrient deficiencies, all pregnant mothers should receive and consume a standard dose of 30-60 mg of iron and 400 μg of folic acid, one supplement daily as early as possible and taken throughout pregnancy.(10)

A study in four major regions of Ethiopia (Tigray, Amhara, Oromiya, and Southern Nations Nationalities Peoples) shows fewer than 3.5% took the supplements for more than 90 days. The report of the Ethiopian Demographic Health Survey in 2011 shares the serious outcomes of iron foliate deficiency with sub-Saharan countries, followed by maternal and child morbidity and mortality.(7) The aim of this study was to identify the magnitude of adherence to iron folic acid supplementation and associated factors among pregnant mothers attending an ANC care clinic in Addis Ababa, Akaki Kality Sub City of Tirunesh Beging Hospital.

2. Methods

2.1 .Study Design and Settings

An institution-based cross-sectional study design was conducted from May 15, 2021, up to July 15, 2021. The hospital is found South of Addis Ababa, the capital city of Ethiopia. The town contains eleven sub-cities and 126 woredas. It has 13 governmental and More than 10 non-governmental hospitals and the hospital has been operational since March 26, 2004. Tirunesh Beijing General Hospital is one of the famous public general hospitals providing a range of medical-surgical, maternal, and child health services, including delivery services and various inpatient and outpatient healthcare services for more than one Million catchment populations. All pregnant mothers attending for antenatal care follow up and who were previously supplemented with IFA tablets in the study area were the source population. In the year 2020, from January to December, hospitals offer service to 264,490 males and 280,413 females, for a total of 544,903 people. Among these, 19,524 pregnant women visited hospitals for the seeking of antenatal care follow up.

2.2. Participants

All pregnant mothers who had at least two ANC follow-ups at Tirunesh Beijing General Hospital and supplemented with IFA tablets for at least one month before the date of interviews were included in the study, and we excluded pregnant mothers who were unable to respond to the interview during the study period.

2.3. Sample Size determination

The sample size was calculated by using a single population proportion formula by considering the following assumptions:

established prevalence from previous studies of the topic of interest (adherence rate), in governmental health institutions in Addis Ababa, Ethiopia, 2015 (p = 18%).(11)

Level of confidence =95%

Level of significance =5%

Margin of error (d) = 5%

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

n = the minimum sample size required

p= Estimated proportion of iron folic acid supplementation

d = margin of error of 0.05

Z α/2= significance level atα =0.05

     (Assuming 95% confidence level of Z α/2 = 1.96)

Sample size (n) = $(1.96)^2 * .18(1-0.18/(0.0)^2$

Sample size (n) = 226a

With the assumptions of 95% confidence interval is 10% non-response. The total sample size was = **248**

For the second objective, calculate using the double population proportion formula to determine the required sample size for this objective. The Stat Calc program of Epi Info version 7 was used. The results of different factors associated with adherence of IFAS were calculated with a 95% confidence interval, 80% power, and by taking an adjusted odd ratio and summing them up, including 10% non-response rate and 1.5 design effects.

The percent of pregnant mothers who had good knowledge of IFAS adhered to 22% and the percent of pregnant mothers who had poor knowledge of IFAS was 13.4% (AOR = 0.31) and a 10% non-response rate[12] The required sample size was 662 pregnant mothers.

Finally, the largest sample size used was **662** because it could encompass the sample size needed for all objectives.

2.4. Sampling procedures and Technique

All pregnant mothers who had at least two ANC follow-ups at Tirunesh Bejing Hospital and supplemented with IFA tablets for at least one month before the date of interviews were included in the study. By using the flow of pregnant mothers visiting the ANC clinic in the previous two months as a baseline, the total number of pregnant mothers N = 2740, a systematic random sampling technique was used to include a sample of 662 study participants to each of the ANC attendants in all ANC based on the average number of pregnant mothers who are on their second or more visits for antenatal follow up at Tirunesh Beijing General Hospital (one month and two weeks) from the ANC registration. The first participant in ANC follow up was selected by lottery method, then subsequent respondents were selected every K^{th} interval (N/n = 2740/662 = 4) from the daily ANC client flow until the required response was achieved. This depends on voluntary consenting pregnant mothers who visit for ANC service within six weeks of working days and the sample was equally allocated. The first participant was selected by the lottery method, which was the second pregnant woman.

2.5. Study Variables

The dependent variable was adherence to iron folic acid supplementation. Independent variables were as follows: Socio-demographic factors (Mothers' age, marital status, residence, educational status, husband's educational status, mother's occupational status, husbands' occupational status, family size, family monthly income), obstetric and medical factors (Number of pregnancy, still birth, abortion, gestational age of the mother, history of current anemia, and number of ANC follow-up), health service related factors (Shortage of supplements within the facility, health education, nutrition counseling during pregnancy, number of collected tablets per visit), women's knowledge of anemia (benefits of IFA and knowledge about the supplementation).

2.6. Operational definitions

Adherence to iron folic acid: Mothers were said to adhere to IFAS if they took or more of the supplement, equivalent to taking the supplement at least 4 days a week during the 1-month period preceding the study(13)

Non-adherence to iron folic acid: Pregnant mothers who had taken combined iron/folic tablet for less than 4days a week considered to be not adhered to the supplementation(13)

Knowledge on anemia: Pregnant mothers said to have satisfactory knowledge on anemia if they respond correctly ≥ 4 questions out of seven.

Knowledge on IFA: Pregnant mothers said to have satisfactory knowledge on IFA supplement if they responds correctly ≥ 2 questions out of three.

Still Birth:-Pregnant mothers who had history of deliver dead fetus after 28 weeks of Gestational age(14).

Abortion:-Pregnant mothers who had history of Cessation or termination of pregnancy before 28 weeks (15)

2.7. Data collection Tool and procedure

Face-to-face interviews with a pre-tested structured questionnaire were used to collect data. Questionnaires constituted information on socio-demographic and obstetric variables, and knowledge on anemia and folic acid, adherence to iron and folic acid, and health care system factors. Data was collected with a structured pre-tested questionnaire using an interview which was adapted from different literature. The questionnaire was adapted from different studies considering the local situation of the study area. The questionnaire was first prepared in English, then translated to Amharic, and finally back to English; again it was translated back to Amharic. Data was collected using an interview method. Data was collected by 2 trained diploma midwives and 1 BSC nurse supervisor who can speak Amharic,

after they were trained for one day by the investigator about the purpose of the study, ANC follow up and registration, and how to interview the subjects and record responses accurately and uniformly. For data quality control purposes, the data collectors were trained before the data collection and supervised during the data collection period.

2.8. Data processing and analysis

The collected data were entered in to Epi data version 3.1 then exported to SPSS version 26 for analysis. Descriptive statistics like mean, frequencies, and percentages were used to summarize data, and text and tables were used to present data. A Binary Logistic regression was used to fit the data in order to identify factors associated with iron folic acid supplementation. All variables whose bivariate test had a p-value < 0.25 were considered as candidates for the multivariable model, and all explanatory variables that were associated with the outcome variable in the bivariable analysis were included in the multivariable analysis. The crude and adjusted odds ratios together with their corresponding 95% confidence intervals were computed. In this study, a P-value<0.05 was considered to declare a result statistically significant.

3. Results

3.1. Socio-demographic characteristics of the study participants

In this study, 661 pregnant mothers participated, with a response rate of 99.8%. The mean age of the respondents was 28.47 (SD: ± 4.091) years, with a minimum age of 18 years and a maximum age of 39 years, respectively. Among the total study participants, 555 (84%) resided in urban areas. Concerning the educational level of mothers, almost ninety percent (589, (89.1%) of study participants had a history of formal education, but 10.9% couldn't read and write. Regarding the education status of her husband, 55 (8.3%) had no formal education and 91 (13.8%) were daily laborers. In assessing the current marital status of respondents, 645 (97.6%) were married, and 87 (13.2%) of respondents reported that their family size was greater than five. The maximum monthly income of the participants was 8500 and the minimum was 500 birr, with a median of 4400 birr. (Table 1).

3.2. Obstetric & medical characteristics of study participants

In assessing Obstetric & medical characteristics of study participants,352 (53.3%) of pregnant mother were in the third trimester, 41.5% were Primigravida and those who had less than three Antenatal care follow up visit were 271 (41.0%) participants, those who had history of abortion, history of current anemia and still birth were 15%, 1.2% and 7.6% respectively (Table 2).

3.3. Health Related service characteristics of study participants

From the total participants 129 (19.5%) respondents reported that there is shortage of supplemental Iron. In the study, more than half of respondents (51%) reported that, they collect less than 60 tablets per visit and 56.3% of respondent's takes less than four tablets per week and 43.7% of pregnant women were adherent to IFA supplementation meaning women had taken 4 or more than four tablets of IFA per week in the past one month preceding the survey. concerning with health education on Antenatal care 49 (7.4%) of respondents were can't get health education and 96(14.5%) of respondents can't get counseling services (Table 3).

3.4. Knowledge about anemia and Iron folic acid supplement

In the study, 125 (18.9%) of participants had poor knowledge of anemia, and 62.6% had poor knowledge of iron folic acid supplementation. Regarding knowledge about the duration of iron supplementation during pregnancy, 207 (31.3%) of participants had poor knowledge. (Table 4).

3.5. Factors associated with Adherence to Iron folic acid Supplementations

Variables which have an association with Adherence to Iron folic acid Supplementations at p value $\leq$ 0.25 in Bivariable logistic regression were, Age ,Gestational age of the mothers, Still Birth ,history of abortion, knowledge about anemia ,husband Level of Education and Number of tablets collected per visit by pregnant mothers (Table 5).

All these explanatory variables were entered into multivariable logistic regression to identify factors that are associated with iron folic acid supplementation. However, in multivariable logistic regression, only age, still birth history of abortion, knowledge about anemia, husband level of education, and number of tablets collected per visit by pregnant mothers were associated with adherence to iron folic acid supplements at a P value of < 0.05.

According to the findings, pregnant mothers over the age of 35 were negatively associated with adherence to iron folic acid supplementation compared to those under the age of 25 [AOR=0.55, 95% CI: (0.32-1.34)]. This study revealed that the odds of having adherence to iron folic acid supplementation were two times more likely among pregnant women who had still birth compared with those who didn't have still birth [AOR = 2.21, 95% CI: (1.13-4.31)]. Those pregnant mothers who had good knowledge of anemia were two times more likely to have adherence with iron folic acid supplementation than mothers who had poor knowledge of anemia [AOR = 1.51, 95% CI: (1.26-2.27)]. The odds of adherence with iron

folic acid supplementation among pregnant mothers who had a history of abortion were [AOR = 0.5, 95% CI: (0.29-0.77)]. Concerning the level of husbands' education, those who could read and write had five times more adherence to iron folic acid supplementation than their counterparts. [AOR=5.32, 95% confidence interval: (1.92-1.74] Those pregnant mothers who collected greater than 60 iron tablets per visit had more likely adherence to iron folic acid supplementation than those who collected less than 60 iron tablets per visit [AOR = 1.34, 95% CI: (1.01-1.89)] (Table 6).

4. Discussion

Physiological changes during pregnancy, fetal growth and development increase the requirement for iron and folic acid. The increased demand for these nutrients during pregnancy is not correct through diet alone due to the decreased desire to eat food. Despite this fact, it often remains unrecognized and unidentified in the study area. Thus, the aim of this study was to assess the magnitude of adherence to IFA supplementation and its associated factors among ANC-attending pregnant women at Tirunesh Beijing General Hospital. Accordingly, the study found that the magnitude of adherence to IFA supplementation among pregnant women at Tirunesh Beijing General Hospital was 43.7% (95%CI: 40.2%–47%).This finding was in line with a study conducted in North Wollo (43.1%) (16) ,and Systematic Review and Meta-Analysis conducted in Ethiopia (43.63%)(17) Dilla town (43.4%%)(18).

However, the finding of the study was lower than studies conducted in India (64.7%)(19), , Senegal (69%) (20), and the Philippines (70%) (21). The possible justification might be due to variations in socio-demographic characteristics, data collection tools, and the cut point of adherence status, and period of data collection. Similarly, the finding of the study was lower than a study conducted in Ethiopia, Tikur Anbessa specialized hospital, at 63.6%.(22), Mizan Tepi, Ethiopia (70.6%)(23) The possible reasons might be study area and time for collection of data.

The findings of the current study was higher than study conducted in different regions of Ethiopia; such as in Misha district (39.2%)(24) Afar region (22.9%)(25) and Goba district (18%)(26).This discrepancy may be attributed to sample size and socio economic, cultural, health seeking behavior, study period gap and geographical difference across the study population.

The study found that pregnant women over the age of 35 are more likely to take iron folic acid supplements than those under the age of 25. This result contradicts with a study conducted in Adwa town, Tigray Ethiopia (27). The result showed that the odds of adherence among pregnant mothers in the age group of 25–29 years were two times higher than those who were in the age group of greater than 35 years. This might be a study area and a cultural variation.

The finding of the study was supported by a study conducted in Assela town, Ethiopia(28),where it was reported that having fewer children had a lower likelihood of adhering compared with women with more children. One possible explanation is that women may have more children as they age and their adherence to iron folic acid supplementation increases.

Pregnant women with a history of abortion were less likely to adhere to iron folic acid supplementation in the study than those without a history of abortion(1). The findings of the study were contradicted by a study conducted in Aykel Town, Northwest, Ethiopia. The study was conducted in Aykele town. Pregnant women who had a history of abortion were four times more likely to adhere to iron and folic acid supplementation than their counterparts. This variation might be due to women's poor perception of the prevention and treatment of anemia by taking iron and folic acid as prescribed and recommended by health care providers. The odds of Adherence with Iron folic acid Supplementations among pregnant mothers who had good knowledge about anemia were 1.5 more likely than their counterparts. The finding of the study supported by Meta-analysis Study conducted in sub-Saharan Africa(29) showed that women who had knowledge about anemia were 5.42 times more likely to have compliance to IFAS in their course of pregnancy as compared to those who had no knowledge of anemia. Similarly the finding of the study was supported by other study conducted with entitled systematic review and meta-analysis on Adherence with iron folic acid in Ethiopia and result shows that having good knowledge about anemia were two times more likely adhere to IFAS(8). The possible justification might be due to women having good knowledge that may improve their ability to adherence to IFAS in pregnancy.

Pregnant women who collected more than 60 iron/folic acid tablets per visit were 1.3 times more likely to have good iron folic acid supplementation adherence than those who collected less than 60 iron tablets per visit. The results of the study were consistent with a study conducted in Eritrea(30), where the results showed that the number of tablets given and increased antenatal care were statistically significant with adherence to iron folic acid supplementation. This statistically significant might be linked to the fact that women who receive health education about adherence to iron and folic acid by the health professionals during their regular follow-up period and the increased number of tablets collected.

In this study, pregnant women who had a history of stillbirth were two times more likely to adhere to iron folic acid supplementation than their counterparts. Whereas a cross-sectional study conducted in Adwa town, Tigray, Ethiopia(27) entitled "Adherence to iron-folic acid supplement and associated factors among antenatal care attending pregnant mothers in governmental health institutions of pregnant women who had a history of still birth had less likely adherence to folic acid than their counterparts." This discrepancy might be a socio-cultural variation.

The study revealed that knowledge about the benefits of iron folic acid supplementation was 37.4%, which is lower than a study conducted in Kenya, at 48.3% (31). Similarly, the findings were lower than According to a study conducted in Burji Districts, Segen Area People's Zone, Southern Ethiopia, 46.7% of respondents had good knowledge of IFAS, and those with good knowledge of IFAS were nearly two times more likely to adhere to IFAS than those with poor knowledge of IFAS. discrepancy might be due to sociocultural variation within the study area.

Adherence to IFAS was assessed by asking the participants retrospectively about their IFAS taking behavior for the previous months. This might have had recall bias and might underestimate the adherence rate. Furthermore, since this study was a quantitative cross-sectional study, it does not infer a

cause and effect relationship between the explanatory and the outcome variable. Thus, the findings of this study should be interpreted within these limitations.

5. Conclusion And Recommendations

The magnitude of adherence among pregnant women towards IFA supplementation was 43.7%. Age of women, husbands' educational status, still birth, abortion, knowledge about anemia, and number of tablets collected by pregnant women were factors for adherence to iron folic acid supplementation.

The Ministry of Health should give emphasis to creating awareness for pregnant women about the importance of iron-folic acid supplements and healthcare providers should give emphasis to those women who have had bad obstetric history and attention should be given to young pregnant women. Moreover, hospital managers should monitor adequate supply of IFA tablets to enhance adherence of pregnant women to IFA supplementation. Health extension workers should provide health education about the importance of prenatal iron supplementation to the community and empower male partners to combat iron deficiency anemia. Researchers are encouraged to carry out further studies with strong study designs and qualitative methods to identify additional factors.

Abbreviations

ANC	Antenatal care
CDC	Communicable Disease Control
EDHS	Ethiopian Demographic and Health Survey
FMOH	Federal Ministry of Health
Hgb	Hemoglobin
HC	Health Center
ID	Iron Deficiency
IDA	Iron Deficiency Anemia
IFA	Iron Folic Acid
IFAS	Iron Folic Acid Supplementation
IFS	Iron foliate Supplementation
INACG	International Nutritional Anemia Consultancy Group
µg	Microgram
NGO	Non-Governmental Organization
NNP	National Nutritional Program
NTD	Neural Tube Defect
LBW	Low Birth Weight
PPS	proportional to population size
SPSS	software for social science
SNNP	South, Nations Nationalities and People
WHO	World Health Organization

Declarations

Data Sharing Statement

All relevant data are within the paper.

Ethical Statement

This study was ethically approved by the Research and Ethical Review Board of Rift Valley University College, and Ethical clearance was obtained from Addis Ababa Public Health Research and Emergency Management Directorate. Written Informed was taken from each study participant's. All relevant ethical principles under the Helsinki Declaration were followed and respected.

Acknowledgment

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work

Funding

Disclosure

There is no conflict of interest among authors.

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Tables

Table 1 Socio- demographic and economic characteristics of pregnant mothers attending Antenatal
care (n=661)

Variables	Categories	Frequency (n)	Percentage (%)
Age in years	<25	128	19.4
	25-35	491	74.3
	35-45	42	6.4
Residence	Rural	106	16.0
	Urban	555	84.0
Educational level of mothers	Can't read and write	72	10.9
	Can read and write	38	5.7
	Primary	213	32.2
	Secondary	257	38.9
	Above secondary	81	12.3
Occupation of mother	House wife	61	9.2
	Government employee	251	38.0
	Private employee	104	15.7
	Daily Laborer	89	13.5
	Merchant	144	21.8
	Farmer	12	1.8
Educational level of husband	Can't read and write	55	8.3
	Can read and write	27	4.1
	Primary	110	16.6
	Secondary	196	29.7
	Above secondary	273	41.3
Occupation of husband	Government employee	290	43.9
	Private Employee	151	22.8
	Daily Laborer	91	13.8
	Merchant	108	16.3
	Farmer	21	3.2
Monthly income	<2500	79	12.0

	2500-5000	355	53.7
	5000-7500	221	33.4
	>7500	6	.9
Current marital status	Single	8	1.2
	Married	645	97.6
	Divorced	8	1.2
Family size	<=4	574	86.8
	>=5	87	13.2

Table 2 Obstetric & medical characteristics of pregnant mothers attending Antenatal care (n=661)

Variables	Categories	Frequency	Percentage
Gestational age of the mothers	First trimester	162	24.5
	Second Trimester	147	22.2
	Third trimester	352	53.3
Number of Pregnancy	Primigravida	274	41.5
	Multi Gravida	387	58.5
Number of ANC visit	<=2	271	41.0
	>=3	390	59.0
History of Abortion	No	562	85.0
	Yes	99	15.0
History Still birth	Yes	50	7.6
	No	611	92.4
History of current anemia	Yes	8	1.2
	No	653	98.8

Table 3 Health related service characteristics of pregnant women's attending Antenatal care (n=661).

Variables	Categories	Frequency	Percentage
Shortage of supplement	Yes	129	19.5
	No	532	80.5
Health education on ANC	Yes	612	92.6
	No	49	7.4
Tablets collect per visit	<60 tablet	337	51.0
	>=60 tablet	324	49.0
Counseling on IFAS	Yes	565	85.5
	No	96	14.5
Tablet taken per week	<4 tablet	372	56.3
	>=4 tablet	289	43.7

Table 4 Respondents knowledge about anemia and benefit of iron folic supplement among pregnant mother attending Antenatal care (n=661).

Variables	Category	Frequency	Percent
Knowledge about anemia	Poor/Non- satisfactory	125	18.9
	Good/satisfactory	536	81.1
Knowledge on benefits of IFAS	Poor/Non- satisfactory	414	62.6
	Good/Satisfactory	247	37.4
Knowledge about duration of the supplementation	Yes	454	68.7
	No	207	31.3

Table 5 Bivariable Logistic regression output on factors associated with adherence to IFA supplementation among pregnant women's attending Antenatal care

Variable	Categories	Adherence to IFAS		COR(95%CI)
		Yes	No	
Age	<25 years	72	56	1.71(0.85-3.47)
	25-35 years	199	292	0.9 (0.48-1.72)
	>35 years	18	24	1
Gestational age of the mothers	First trimester	62	100	1
	2ndTrimester	67	80	1.35 (0.86-2.13)
	Third trimester	160	192	1.34 (0.92-1.97)
Still Birth	Yes	37	13	2.34 (1.22-4.49)
	No	335	276	1
History of abortion	Yes	28	71	0.46 (0.29-0.73)
	No	261	301	1
Knowledge of Anemia	Good	244	292	1.49(0.99-2.22)
	Poor	45	80	1
Husband Level of Education	Can't read & write	11	44	1
	Can read and write	16	11	5.82 (2.1-16.2)
	Primary	50	60	3.33 (1.56-7.13)
	Secondary	91	105	3.47 (1.69-7.1)
	Above secondary	121	152	3.18 (1.58-6.43)
Tablet collect per visit	>=60 tablet	154	170	1
	<60 tablet	135	202	1.36 (0.9-1.85)

Table 6 Multivariable Logistic regression output on factors associated with adherence to IFA supplementation among pregnant Women's attending Antenatal care.

Variable	Categories	Adherence to IFAS		AOR (95%CI)
		Yes	No	
Age	<25 years	72	56	0.53 (0.33-0.73)
	25-35 years	199	292	0.55 (0.32-1.34)
	>35 years	18	24	1
Still Birth	Yes	37	13	2.21(1.13-4.31)
	No	335	276	1
History of abortion	Yes	28	71	0.5 (0.29-0.77)
	No	261	301	
Knowledge of Anemia	Good	244	292	1.51(1.26-2.27)
	Poor	45	80	1
Husband Level of Education	Can't read & write	11	44	1
	Can read and write	16	11	5.32(1.92-14.74)
	Primary	50	60	3.27 (1.52-7.04)
	Secondary	91	105	3.27 (1.59-6.73)
	Above secondary	121	152	3.05(1.5- 6.18)
Tablet collect per visit	>=60 tablet	154	170	1
	<60 tablet	135	202	1.34(1.01-1.89)