

# Socio-Economic Factors Influence Iron-Folic Acid Supplementation during Pregnancy Compliance with Who Guideline in Eastern Ethiopia

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**Abstract:** Noncompliance to the iron-folic acid tablets is one of the most important challenging factors in combating anemia. Anemia is a global public health problem affecting nearly 2 billion people in both developing and developed countries with major consequences for human health as well as social and economic development. **Aim:** The aim of this study was to assess the level of compliance to iron-folic acid supplementation during pregnancy and its effects in combating anemia during pregnancy in Eastern Ethiopia. **Methodology:** This cross-sectional study with systematic random sampling technique is carried out to assess compliance to iron-folic acid in pregnant women who taking iron folic acid supplementation in Dilchora hospital, Dire Dawa town of Eastern Ethiopia during June 2016. Variables including age, religion, occupation, education, marital status, family size, parity, trimester and number of antenatal care visits during pregnancy. A total 217 pregnant women of gestational age of 6<sup>th</sup> to 9<sup>th</sup> months from Dire Dawa town area were included in the study. Data was collected by personal interview with pre-structured questionnaire. SPSS version-16, software was used data analyzing and calculation of association. **Results:** Out of the total of 217 participate in the study underwent all the study components giving a respondent rate of 97.3%. The mean age of the participants was 27.35 years. Around half of them were Muslim 109 (50.2%) and Oromo were the dominant ethnicity accounting for 82 (37.8%). And 203 (93.5%) of the participants were married. The participants' educational level showed 60 (27.6%) were primary level, to 62 (28.6%) were +12 and above. The occupation indicated 97 (44.7%) were house wife and 68 (31.3%) were working. The majority of the included subjects were familiar with anaemia 185 (85.3%) in which 164 (75.6%) of them were also aware about the cause of anaemia. The study revealed 159 (73.3%) of the respondent know the recommendation of IFA intake during pregnancy.

**Keywords:** Socio-economic status; Iron folic acid supplementation; Anemia; Adverse pregnancy outcomes

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**1. INTRODUCTION:** Anemia is a global public health problem affecting nearly 2 billion people in both developing and developed countries with major consequences for human health. It occurs at all stages of life cycle, but is more prevalent in pregnant woman.<sup>[1]</sup> Iron deficiency anemia (IDA) is considered as major contributing factors to the global burden of anemia<sup>[2]</sup> and prenatal supplementation with iron-folic acid tablets is effective to prevent anemia.<sup>[3]</sup>

IDA during pregnancy put adverse effects on maternal health and pregnancy outcomes.<sup>[4, 5]</sup> Folic acid deficiency at conception and in early pregnancy is associated with increased risk of neural tube defects and other adverse pregnancy outcomes such as preeclampsia, malformations such as oro-facial clefts, fetal death, fetal growth restriction and preterm delivery.<sup>[6, 7]</sup> The anemia is more prevalent in developing countries and World Health Organization (WHO) estimated that more than 40% of non-pregnant and over 50% of pregnant women in developing countries are anemic.<sup>[8-11]</sup> According to the World Health Organization (WHO), 3.7% of maternal mortality in Africa is directly attributed to anemia.<sup>[12]</sup> and iron deficiency (ID) accounts 22% of all maternal deaths worldwide.<sup>[13]</sup> A meta-analysis indicated that the risk of maternal death can be reduced by 20% for each 1 g/dl increase in population mean hemoglobin level.<sup>[13]</sup>

In Ethiopia many studies witnessed the maternal anemia.<sup>[14-19]</sup> The national guideline for control and prevention of micronutrient deficiencies highlights the need of daily iron supplementation for at least 6 months during pregnancy and 3 months postpartum.<sup>[20, 21]</sup>

According to Ethiopia Demographic Health Survey (EDHS) 2011, the coverage of iron supplementation is disappointingly low as only 17.3% of women took the supplement during their recent pregnancy in the preceding 5 years and only 0.4% was

supplemented for 90 or more days.<sup>[14]</sup> Despite the assumption that iron supplementation is an integral part of Antenatal Care (ANC), only 37% of women who had ANC received iron supplements.<sup>[14]</sup>

**2. METHODOLOGY:** Study area: This study was conducted in Dil Chora hospital, Dire Dawa town, located between Somali and Oromia regions, approximately 50 km north of Harar town. The climatic condition of the area is Subtropical highland climate and the altitude is 1,276 m above the sea level. Based on the 2007 census conducted by the central statistical agency of Ethiopia (CSA) Dire Dawa has a population of 341,834, of whom 171,461 are men and 170,461 women, 233,224 or 68.23% of the population are urban inhabitants. The dominant ethnic groups living in the town were Oromo, Somali. An official letter was written from Jimma University College of student research project (SRP) office to administration of Dilchora hospital in Dire dawa town to get permission for data collection and same was granted. Consent from the respondents was asked before interviewing.

**2.1. Subject selection:** Pregnant women who had ANC follow up were randomly selected. The sample size was determined and the subjects having any chronic disease, on ATT, ART, congenital defects were excluded from the study. Systematic random sampling was adopted. A structured questionnaire was used to collect data from each respondent. The questionnaire was developed for the purpose of data collection after reviewing relevant literatures. The questionnaire was prepared by English and changed to multi-lingual including Afan, Oromo, Somali and Amharic languages for the ease of respondent. Hemoglobin concentration less than 11gm/dl of blood or hematocrit less than 33% were considered as anemic (as per WHO guideline) and compliance was defined daily intake of iron and folic acid as per the prescribed dose.

**2.2. Statistical analysis:** Statistical analysis was done using standard statistical tools and SPSS version 16 software.

### 3. RESULT AND OBSERVATIONS:

**3.1. Socio demographic and households' characteristics of respondents:** A total of 217 study subjects were participated in this study with a response rate of 97.3%. The respondents were pregnant women taking iron folic acid supplement and randomly selected with the gestational age of 6<sup>th</sup> to 9<sup>th</sup> months. Out of the total study subjects (50.2%) were Muslims, (35%) were Orthodox, (13.8%) were protestant and two were by others by religion. Ethnicity of the respondents were Oromo (37.8), were Amharic (36.9%), were Somali (20.3%) and the remaining were belonging to ethnic groups. Educational status of women were recorded and found that 79.7% were literate, read and rest were illiterate.

**3.2. Assessment of the knowledge of anemia, its causes and symptoms of anemia in pregnant mothers:** Revealed a total of 217 respondents (85.3%) of them know anemia and (14.7%) of don't know anemia, while in its causes (25.8%) said lack of iron, (23.5%) said because of eating unbalanced diet, (17.5%) said excessive blood loss and (6.9%) of them said due to malarial attack but (26.3%) of the remaining said they don't know the causes and symptoms of anemia. Out of 217 pregnant mothers (65.9%) of them know the consequence of anemia in pregnancy and (34.1%) of the remaining don't know, (84.3%) of them know ways of prevention of anemia and (15.7%) don't know and (88.9%) of the respondents know source of information of anemia and the remaining (11.1%) don't know.

**3.3. Assessments of attending ANC follow up and spacing of pregnancy:** A total of 217 of participants (44.2%) had two visits, (32.7%) had three visits and the remaining (23%) had four and above visits while the spacing of pregnant (39.6%) wait greater than two years for the next pregnant, (24.9%) wait less than two years and (35.5%) had their first pregnant.

**3.4. Assessment of gravidity, trimester and chronic diseases in previous pregnancies and any disease for the current pregnancy:** Among all pregnant women of 217, (64.1%) of them were multigravida and (35.9) were primigravida. More than half of pregnant women (53.9%) were in their third trimester of pregnancy and the remaining (46.1%) were in their second trimester of pregnancy. Over half of the pregnant mothers (55.3%) had no chronic disease in their previous pregnancies and (35.5%) of them were in their first pregnancy. And majority (89.8%) of them had no disease on admission to the hospital in their current pregnancies. Compliance is influenced by many socio-demographic factors and knowledge about iron folic acid supplementation. In this study compliance is measured by self report of the mothers considering intake of 76% of pregnant mothers were compliant (took at least 96.7% of the expected dose of the iron-folate tablets in the previous ANC visit of the study) to the supplement and ( $p < 0.05$ ) is significant.

**4. DISCUSSION:** In this study 76% of the participants were found compliant to iron folic acid tablet supplement which comparable to 74.9% study done in four other regions of Ethiopia and a study in India in which compliance was 61.7%. Earlier it was reported 39.2% compliance in Southern Ethiopia. The findings of this study is showing similar results reported in Philippines.<sup>[24]</sup> In Indonesia 43% of the pregnant women who have claimed to have taken all iron tablets. These methods of cross-sectional study have been reported in Egypt and Philippines also found significantly higher level of compliance as compared with the pill count method. In this study it was found that age, lower number of ANC follow up visits, large family size, occupation, gravidity and spacing between pregnancies results in poor compliance of IFA supplement.<sup>[25]</sup>

The major causes of non-compliance were fear of side effect and forget to take tablets. The fear of side effect can be improved by counseling of the pregnant mothers, that it will have beneficial impact on maternal health and pregnancy outcomes. The advice to take IFA tablets empty stomach will increase its gastrointestinal tract absorption and will give better results. Side-effect is frequently considered as a major obstacle to compliance. According to studies in Saudi Arabia, Senegal<sup>[26]</sup> and India, it was

reported as a reason for missing doses by 40.2%, 27.0% and 25.4% of the pregnant women with low adherence, respectively. Studies conducted in Philippines, Bangladesh<sup>[27]</sup> and Vietnam<sup>[28]</sup> also concluded likewise. In the current study, a relatively lower proportion of women with low compliance (24%) reported side-effect as the reason for non-adherence. One possible explanation for the decreased figure can be the fact that nearly all (94%) of the pregnant women were not informed about potential side-effects of iron supplements in advance. Appropriate orientation is known to raise psychological tolerance to side-effects.<sup>[29]</sup> Forgetfulness can be prevented by supportive attitude of family members. Compliance can be improved by developing appropriate message and improving communication. In Northeast Thailand a colander was used to remind women of importance of taking pills and help them to keep track of the supplement they have provided.<sup>[29]</sup> This is also important that the socioeconomic status puts direct impact on living environment. In the people belong to lower income group are exposed to environmental pollutants, which facilitate adverse pregnancy outcomes<sup>[30]</sup> and some time affects vital organs including kidney<sup>[31]</sup> and also induces anemia during pregnancy.

**5. CONCLUSION AND RECOMMENDATIONS:** Majority of the pregnant women knew anemia and most common cause of anemia were iron deficiency. The number of antenatal care visits is low and more than half the pregnant women visited ANC clinic in their third trimester of pregnancy and around two-third of them were multigravida. The higher compliance level is seen in women who are educated, have better knowledge of anemia. The health care providers and the pregnant women must be aware of the important of noncompliance and the factors affecting it. In this study it was found that knowledge of IFA supplement during pregnancy is the most important factor among determinants of compliance. Therefore, the increasing awareness about health education and iron folic acid supplementation dose and duration can improve their compliance towards iron folic acid supplementation and as a result decrease in prevalence of anemia in pregnant women. The health institution worker needs to be regularly and continuously supervised by the concerned body to sustain the improvement of antenatal care coverage and thereby decrease defaulting from ANC follow up.

Table-1: Association of compliance IFA tablets to its determinants among subjects:

Sl. No	Variables	Compliance		P value, Df and X2 respectively
		Compliance (%)	Noncompliance (%)	
1	Age			
	<=25	65 (83.3)	13 (16.7)	0.069
	>=26	100 (71.9)	39 (28.1)	1
				0.059
2	<b>Literacy</b>			
	Illiterate	9 (75)	3 (25)	0.055
	Read and write	19 (59.4)	13 (40.6)	4
	Primary level	46(76.7)	14 (23.3)	0.173
	Secondary level +12 and above	40(78.4)	11 (21.6)	
		51(82.3)	11 (17.7)	
3	<b>Gravida</b>			
	Primigravida	67(85.9)	11 (14.1)	0.019
	Multigravida	98(70.5)	41 (29.5)	1
				0.016
4	<b>Spacing</b>			
	<2years			
	>=2years	35(64.8)	19 (35.2)	0.005
	First pregnant	64(74.4)	22 (25.6)	2
		66(85.7)	11 (14.3)	0.020
5	<b>Number of of ANC visits</b>			
	Two visits	78(81.2)	18 (18.8)	0.996
	Three visits	44(62)	27 (38)	2
	Four and above	43(86)	7 (14)	0.003
6	<b>Know anemia</b>			
	Yes	144(77.8)	41 (22.2)	0.177
	No	21(65.6)	11 (34.4)	1
				0.135

Table-2: causes of noncompliance

Sl. No.	Variables	Frequency (%)
1	side effect	22 (10.1)
2	fear too many tablets harm baby	14 (6.5)
3	Forgetfulness	11 (5.1)
4	fear too many tablets harm me	4 (1.8)



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