Global Journal of Medical Research: L
Nutrition & Food Science
Volume 17 Issue 1 Version 1.0 Year 2017
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Compliance to Prenatal Iron and Folic Acid Supplement and Associated Factors among Women during Pregnancy in South East Ethiopia: A Cross-Sectional Study

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Methods: A community based cross-sectional study was conducted from March to May, 2014 in Goba District. A total of 405 mothers who give birth in the last six months were selected using systematic random sampling technique. Data were collected using pretested questionnaire by interview and then entered and analyzed using SPSS version 20. Both Bivariate and multivariate logistic regression were carried out to see significant association. Variables with P-value less than 0.05 were considered as significant in the multivariate analysis. Results: The compliances rate to IFA supplement was found out to be 18%. Educational status of mother (AOR=0.24 (95% CI 0.63-0.97)), knowledge on anaemia (AOR =0.41 (95% CI 0.20-0.84)), knowledge on benefit of iron folic acid (AOR =0.38 (95% CI 0.20-0.77), receiving health education on Iron Folic acid supplement during prenatal visit (AOR= 4.03 (95% CI 1.4-11.5) were found to be factors associated with compliances to iron folic acid supplement.

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GJMR-L Classification: NLMC Code: QU 145, QU 145.5

Strictly as per the compliance and regulations of:

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Conclusions: Compliance to IFA supplement was low among the study communities. Improving awareness of the community about IFA supplement during pregnancy and improving educational status of women are highly recommended.

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I. Background

Anemia is a global public health problem affecting two billion people worldwide. Globally, 41.8% of pregnant women and 30.2% of non-pregnant women are anemic (1). At least half of this anemia burden is assumed to be due to iron deficiency (2). Many studies documented the adverse effects of maternal anemia, 12.8% and 3.7% of maternal mortality in Asia and Africa respectively is directly attribute-able to anemia (3). In Ethiopia; anemia is the severe problem affecting 62.7% of pregnant mothers and 52.3% non-pregnant women (4, 5). For women, the consequences of anemia include reduced energy and capacity for work poor pregnancy and birth outcomes including premature delivery, low birth weight, and increased prenatal mortality, and increased risk of death during delivery and postpartum. It is estimated that as many as 20% of maternal deaths are caused by anemia and that anemia may be an associated cause in as many as 50% of maternal deaths worldwide(6).

As a public health measure, iron/ folic acid supplementation has been the recommended strategy for alleviating anemia in pregnant women. WHO recommended daily dose of 30–60 mg of elemental iron and 400 µg (0.4 mg) Folic acid on daily bases throughout pregnancy(7).

To combat Iron deficiency anaemia, many developing countries including Ethiopia have interventions and programme during pregnancy. Provision of IFA supplement to all pregnant women free of charge is among the key interventions. The recommended dose by the Ministry of Health in Ethiopia is 60 mg/day for 90 days for iron and 400µg of folic acid daily(8, 9). And, Although National Nutrition Strategy adopted key target of increasing the proportion of mothers who get IFA for more than 90 days during pregnancy and the post-partum period to 50% by 2015, there is discrepancy in the ANC coverage and the IFA intake level. The 2011 DHS documented IFA supplement of 17%. More importantly the IFA intake 90 or more tablets found to be 0.4% (18).

Gastrointestinal side effects, inadequate Supply of tablets, inadequate counselling, poor utilization of prenatal health-care services, lack of knowledge and patient fears about the tablets affect women's perception regarding tablet use in many countries (11-14).

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Even though iron folic acid (IFA) Supplementation during pregnancy is among the methods to reduce maternal mortality, in Ethiopia the coverage is very low, in addition there are limited studies conducted on this topic.

Therefore, the findings of this study will give valuable information on compliances of IFA and its determinate factors for policy makers and service providers.

II. Materials and Methods

A community based cross-sectional study using quantitative methods of data collection was conducted in Goba District, South East Ethiopia from March to May 2014.

Those postnatal mothers who give birth 6 months before the survey were included in the study. The sample size for this study was determined using a single population proportion formula estimation, with the assumptions of; an expected compliances to IFA 50%, a 95% confidence level, a 5% margin of error and a none response rate of 10%. The final calculated sample size was 422.

Goba district is divided into 2 urban and 24 rural kebeles (the smallest administrative unit in Ethiopia). From the district's 24 rural kebeles 4 were selected randomly and from the 2 urban kebeles 1 is selected randomly. In selected kebeles, preliminary survey was conducted to identify households with mothers who have child birth within 06 months prior to the study and sampling frame was developed. After the total sample size was allotted proportionally to the selected kebeles based on the total number of deliveries in the past 06 months, respondents were selected using systematic random sampling technique.

Data was collected using semi-structured, interviewer administered, pretested questionnaire after Obtaining informed consent. The completed questionnaire were given codes, checked for completeness and consistencies then entered into EPI-info version 3.5.3 statistical software and then transferred to SPSS version 20 statistical package for further analysis. Data cleaning were performed to check for accuracy and consistencies, missed values and variables were also checked and corrected. The results were presented in the form of tables, figures, and text.

In this study, women were categorized as compliant to IFA supplement if she took 90 or more IFA tablets on daily base during her pregnancy (20).

Mothers Knowledge of anaemia was assessed using 20 questions. The questionnaire were composed of cause, health consequence, risk group and method of prevention in anaemia, Mothers who score mean value and above were considered as having good knowledge of anemia.

To assess mother's knowledge of IFA, 12 questions were employed, mothers who score mean value and above were considered as having good knowledge of IFA.

Both Bivariate and multivariate logistic regressions were used to identify factors associated with compliances to IFA. Odds ratio with 95% confidence interval was used to identify the presence and strength of association between variables.

Ethical clearance was obtained from the Institutional Ethical Review Board of Institute of Public Health, College of Medicine and Health Sciences, University of Gondar. Correspondingly written letters were offered from Bale Zone Health Department. Finally informed consent was obtained from each mother before the start of the interview.

III. Results

a) Socio-demographic Characteristics

A total of 405 PNC mothers who give birth 6 months before data collection were included in the study with a response rate of 95.9%. The mean age of the respondents was 26.3 (±5.1) years. Around 35.6% of respondent were in age group of 21-25 years and about 28% were in age group of 36-40 years.

Majority of the women interviewed were married (98.1%) and rural dwellers (83.2%). About (32.1%) of the respondents were unable to read and write, (27.4%) can only read and write, (13%) had primary school level and (19.5%) had secondary school level. Regarding occupation majority of the respondents were house wives (72.6%) (Table1).

b) Pregnancy and Obstetric related characteristic of respondent

Around half of the respondents had less than three times ANC visit. Around eleven percent of the respondents had history of abortion and 3% had history of still birth. Among the respondents 21.7% started ANC while their pregnancy was less than 12 weeks of gestation, and 26.7% started after 24 weeks of gestation (Table2).

c) Respondent's knowledge about anemia and benefit of IFA supplement

Two third (62.5%) of respondents had good knowledge on cause, consequence, risk group, and method of prevention in anaemia, while 60.7% of the respondents had good knowledge on benefits of IFA.

d) Service related characteristics

About 78.9% were provided with health education and 21.1% were not provided health education on iron/folic acid supplements during their IFA collection. . Regarding dispensing of supplement; majority of the respondents (87%) collected 30 tablets whereas 12.8% were collected more than 30 tablets per visit (Table 4).

e) Compliances to iron/ folic acid supplement

It was found out that only 18% of the respondents were compliant to iron/folic acid supplement.

f) Factors Associated with Adherence

Bivariate analysis for compliances to IFA revealed that place of residence, educational status of mother, education level of the husband, mothers knowledge of anaemia, mothers knowledge on benefits of iron folic acid and receiving health education at the time of supplement collection have significant association with compliance to IFA at p value ≤ 0.02.

Multivariable logistic regression was done to control potential confounders and educational status of mother, knowledge on anaemia, knowledge on benefits of iron folic acid and receiving health education at the time of supplement collection have significant association with compliances to IFA at p value≤ 0.05 (Table 5).

IV. Discussion

This study revealed that only 18% of the studied subjects were compliant to IFA supplement.

The compliance rate of this study is lower than a study conducted in Kenya (24.5% (15), study conducted in Cambodia (47%) (16) and study conducted in India (35.5%) (17). This could be due to differences in socioeconomic status of the study population. But the finding of this study is higher than EDHS 2011 which was 0.4%. This could be because of the present study has been conducted among ANC follower and the time gap between the present study and EDHS 20011 (18).

Educational status of mother was important socio demographic factor which showed significant association. The compliance rate of IFA supplement was significantly increases with educational status of mother. Mothers who can't read and write were 91%, mothers who can read and write were 77% and mothers who had primary education were 76% less likely to adhere to IFA when compared with those who had above secondary education. This might be because, when women are educated, they might have accessible to information and advices from different sources about IFA and threats of anaemia.

Another important variable that showed a significant association is knowledge of cause, consequences, risk group and method of prevention in anemia. The rate of compliance to IFA was 59% times less likely among women with poor knowledge.

This finding was similar with the study done in Nepal which identifies high proportion of compliances among pregnant mothers with good knowledge (19). This could be due to reason that knowledge of pregnant women about anaemia related to causes, consequence and method of prevention affect their compliance of IFA. In addition good level of knowledge about anaemia was a factor which could promote individuals in preventing iron deficiency anaemia and following recommendation.

It was found out that there was a significant association between respondent's knowledge on benefit of IFA and compliance to IFA. Women with poor knowledge on benefit of IFA were 62% times less likely to adhere than women's with good knowledge on benefit of IFA. This could be due to the fact that good levels of knowledge promote mothers to take the supplements based on the recommendation.

Receiving health education during prenatal visit was also an important predictor of compliance to iron foliate supplements. This study showed that mothers who were provided with health education at the time of receiving supplements have about 4.03 (AOR 4.03 (95% CI 1.4- 11.5) times more likely to adhere to IFA supplement than those who were not provided. This could be due to the fact that health education at the time of supplement provide important information of IFA supplement

V. Conclusions

Compliance to IFA supplements was low among pregnant women attending ANC in the study communities. Increase awareness of the community about anemia and IFA supplement during pregnancy, improving educational status of women, providing alternative community based delivery mechanisms and sustainable supply of IFA is highly recommended.

a) Abbreviations

ANC: Antenatal Care; *EDHS:* Ethiopian demographic and health Servey; *IDA:* Iron deficiency anaemia; *IFA* iron / folic acid; *MMR:* maternal mortality rate; *NIE:* nutritional initiative of Ethiopia; *PNC:* postnatal care; *SPSS:* statistical package for social science; *WHO:* world organization.

b) Competing Interests

The authors declare that they have no competing interests.

Acknowledgements

We would like to thank University of Gondar for approval of ethical clearance and technical and financial support for this study. We also acknowledge all staff of Institute of Public Health for their help and courage.

We would also like to extend our appreciation to, Bale Zonal Health Department and Goba District Health Office for providing the necessary information and facilitating conditions while carrying out this study. Above all our heartfelt thanks go to study participants who spent their precious time in responding to our questionnaire. All data collectors and the supervisors are highly acknowledged for the utmost effort they put to the quality of this research.

References References Referencias

1. Benoist Bd, McLean E, Egll I, Cogswell M. Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia: World Health Organization; 2008.
2. Organization WH. Proposed global targets for maternal, infant, and young child nutrition. Summary of main issues raised and WHO responses Geneva: World Health Organization. 2012.
3. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. The lancet. 2006;367(9516):1066-74.
4. Tarekegn SM, Lieberman LS, Giedraitis V. Determinants of maternal health service utilization in Ethiopia: analysis of the 2011 Ethiopian Demographic and Health Survey. BMC Pregnancy and Childbirth. 2014;14(1):161.
5. Benson T, Bellete S, Chanyalew D, Belachew T. An assessment of the causes of malnutrition in Ethiopia. International Food Policy Research Institute Washington DC. 2005:1-213.
6. Idowu O, Mafiana C, Dopu S. Anaemia in pregnancy: a survey of pregnant women in Abeokuta, Nigeria. African health sciences. 2007;5(4):295-9.
7. Stoltzfus RJ, Dreyfuss ML, Organization WH. Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia: Ilsi Press Washington^ eDC DC; 1998.
8. Jennings J, Hirbaye M. Review of Incorporation of Essential Nutrition Actions into Public Health Programs in Ethiopia. The Food and Nutrition Technical Assistance Project (FANTA) Equinet Newsletter. 2008:1-25.
9. Haidar J. Prevalence of anaemia, deficiencies of iron and folic acid and their determinants in Ethiopian women. Journal of health, population, and nutrition. 2010;28(4):359.
10. Benson T, Solomon B, Demiss C. Framework document for the national nutrition strategy of Ethiopia. October; 2005.
11. Rofail D, Colligs A, Abetz L, Lindemann M, Maguire L. Factors contributing to the success of folic acid public health campaigns. Journal of Public Health. 2012;34(1):90-9.
12. Sanghvi TG, Harvey PW, Wainwright E. Maternal iron-folic acid supplementation programs: evidence of impact and implementation. Food & Nutrition Bulletin. 2010;31(2).
13. Sanghvi TG, Harvey PW, Wainwright E. Maternal iron-folic acid supplementation programs: evidence of impact and implementation. Food & Nutrition Bulletin. 2010;31(2).
14. Aguayo VM, Koné D, Bamba SI, Diallo B, Sidibé Y, Traoré D, et al. Acceptability of multiple micronutrient supplements by pregnant and lactating women in Mali. Public health nutrition. 2005;8(01):33-7.
15. Dinga LA. Factors Associated With Adherence To Iron/Folate Supplementation Among Pregnant Women Attending Antenatal Clinic At Thika District Hospital In Kiambu County, Kenya: University of Nairobi; 2013.
16. Lacerte P, Pradipasen M, Temcharoen P, Imamee N, Vorapongsathorn T. Determinants of adherence to iron/folate supplementation during pregnancy in two provinces in Cambodia. Asia-Pacific Journal of Public Health. 2011;23(3):315-23.
17. Jasti S, Siega-Riz AM, Cogswell ME, Hartzema AG, Bentley ME. Pill count adherence to prenatal multivitamin/mineral supplement use among low-income women. The Journal of nutrition. 2005;135(5):1093-101.
18. MEASURE D, Macro I. Ethiopia Demographic and Health Survey, 2011: Preliminary Report: Central Statistical Agency; 2011.
19. Osrin D, Vaidya A, Shrestha Y, Baniya RB, Manandhar DS, Adhikari RK, et al. Effects of antenatal multiple micronutrient supplementation on birthweight and gestational duration in Nepal: double-blind, randomised controlled trial. The lancet. 2005;365(9463):955-62.
20. Federal Ministry of Health [FMOH]. Best practice, progress updates, initiatives and articles, special bulletin. October, 2012.Google Scholar.

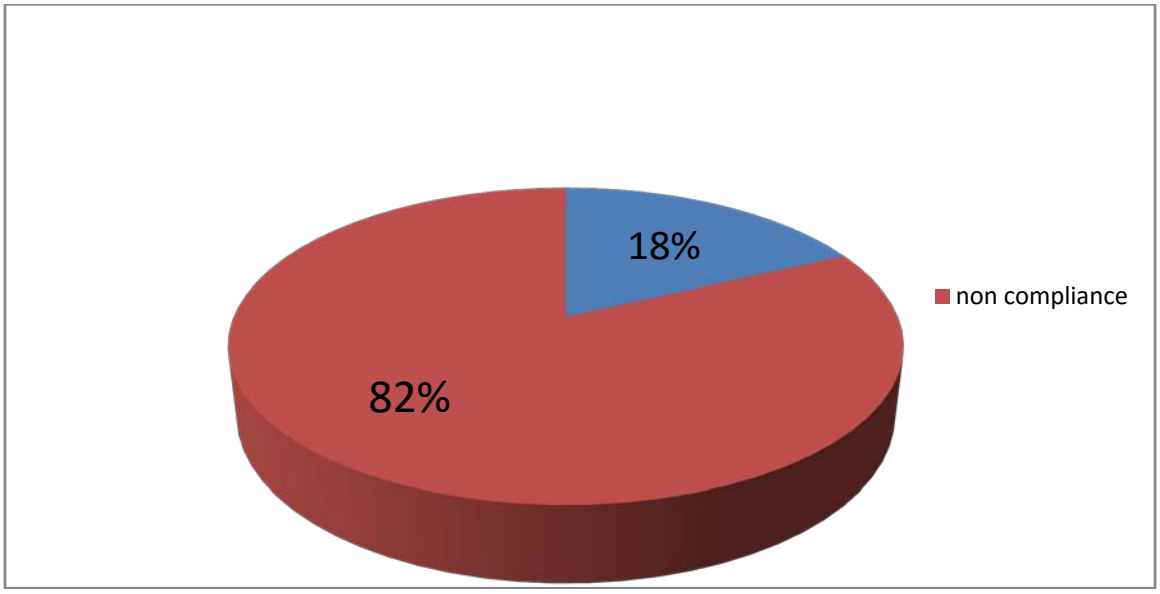

Figure 1: Adherence level of mothers to IFA Goba District South East Ethiopia, 2014

Table 1: Socio-demographic and economic characteristics of respondent of pregnant and PNC mothers, Goba woreda, South East Ethiopia, 2014 (n=405)

Variable	Category	Frequency	Percent
Age	16-20	51	12.6
	21-25	144	35.6
	26-30	132	32.6
	31-35	50	12.3
	36-40	28	6.9
Marital status	single	15	3.7
	Married	370	91.3
	Divorced	4	1.0
	widowed	16	4.0
Religion	l Orthodox	174	43.0
	catholic	6	1.5
	Muslim	213	52.6
	protestant	12	3.0
Residence	rural	337	83.2
	Urban	68	16.8
Family size	< 4 family	71	17.5
	4-7 family	253	62.5
	>7 Family	81	20.0
Educational level	Can t read and write	122	30.1
	Can read and write	117	28.9
	Primary	53	13.1
	secondary	84	20.7
	Above secondary	29	7.2
Occupation of mother	House wife	294	72.6
	Governmental employee	41	10.1
	Private employee	18	4.4
	Daily laborer	11	2.7
	Merchant	24	5.9
	Farmer	17	4.2

Educational level of husband	Can t read and write Can read and write Primary secondary Above secondary	80 116 59 117 33	19.8 28.6 14.6 28.9 8.1
Occupation of husband	Governmental employee Private employee Daily laborer Merchant Farmer	58 47 12 27 261	14.3 11.6 3.0 6.7 64.4

Table 2: Pregnancy and obstetric related characteristic of respondent Goba woreda, Oromia region, South East Ethiopia, 2014(n=405)

Variable		Frequency	Percent
Gravidity	<3 ≥3	302 103	74.6 52.4
Still birth	Yes No	12 393	3 97
Abortion	Yes No	47 358	11.6 88.4
No of ANC	>3 <=3	199 206	49.1 50.9
Time of start of ANC	<12 week 12-24wk >24 wk Health post	88 209 108 73	21.7 51.6 26.7 18
Place of ANC	Health Center Hospital	277 55	88.4 13.6

Table 3: Respondents knowledge about anaemia and benefit of IFA supplement Goba District, South East Ethiopia, 2014 (n=405)

Variable		Frequency	Percent
Knowledge on anaemia	Good knowledge Poor knowledge	253 152	62.5 37.5
Knowledge on benefits of IFA	Good knowledge Poor knowledge	246 159	60.7 39.3

Table 4: Service related characteristics Goba District, South East Ethiopia, 2014 (n=405)

Variable	Category	Frequency	Percent
Health education	Yes	319	78.8
	No	86	21.2
Waiting time	< 30 minute	354	87.4
	>30 minute	51	12.6
Problem faced	Yes	93	23
	No	312	77
Number of tab supplemented per visit	30 tab	353	87.2
	>30 tab	52	12.8

Table 5: Factor associated with compliance to IFA at Goba District, South East Ethiopia, 2014 (n=405)

Factors	Category	Compliance status of respondent		COR (95 % CI)	AOR (95 % CI)
		Compliance	Non-Compliance		
Place of residence	Rural	54	283	0.49(0.26, 0.90)	0.69(0.31, 1.5)
	Urban	19	49	1	1
Educational status of mother	Can t read and write	9	113	.20(0.7, 0.60)	0.11(0.026, 0.47)
	Can read and write	20	97	.54(.21, 1.39)	0.23(0.064, 0.87)
	Primary education	8	45	0.46(0.15-1.4)	0.24(0.63, 0.97)
	Secondary education	28	56	1.31(0.51, 3.33)	0.97(0.32, 2.8)
	Above secondary	8	21	1	1
Educational status of husband	Can t read and write	10	70	0.38(0.13, 1.04)	1.31(0.34, 4.9)
	Can read and write	16	100	0.42(0.16, 1.08)	1.30(0.37, 4.4)
	Primary education	13	46	0.75(0.28, 2.75)	3.3(0.90, 12.3)
	Secondary education	25	92	0.72(0.29, 1.75)	0.85(0.30, 2.3)
	Above secondary	9	24	1	1
History of abortion	Yes	15	32	2.4(1.23, 4.7)	3.79(1.68, 8.55)
	No	58	300	1	1
Knowledge on anemia	Good	58	195	1	1
	Poor	137	15	0.36(0.20, 0.67)	0.41(0.20, 0.84)
Knowledge on benefits of iron folic acid	Good	56	190	1	1
	Poor	17	142	0.40(0.22, 0.72)	0.38(0.20, 0.77)
Health education at the time of supplement collection	Yes	68	251	4.3(1.71, 11.2)	4.03(1.4, 11.5)
	No	5	81	1	1