# Compliance to iron and folic acid tablets among pregnant women attending antenatal clinic in Agartala Government Medical College

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## Abstract

**Introduction:** Anemia is a public health problem worldwide, and in pregnancy, the main cause of anemia is nutritional. Non-compliance to iron and folic acid supplement plays a role in the high prevalence of anemia in pregnant women. **Objectives:** The objectives were to find out the proportion of compliance to iron and folic acid tablets (IFA) among pregnant women and to determine factors associated with it. **Methods:** A cross-sectional study was conducted among 240 pregnant women attending antenatal clinic in Agartala Govt. Medical College, from 15th June to 14th September 2019. Subjects were recruited through consecutive sampling. A pretested, predesigned, semi-structured interview schedule was used to collect information. Data were analyzed using SPSS 15.0. Chi-square and Fisher's exact tests were used to find out the association of compliance with independent variables. *P* value of < 0.05 was considered as significant. **Results:** Majority (56.3%) of the participants were in the age group of 20–29 years and were housewives (92.1%), Hindu (93.8%), and completed secondary education (34.6%). The proportion of compliance to IFA among pregnant women was 52.5% (*n* = 126), and the reason for non-compliance (*n* = 114) in the majority was side effects of IFA (35.09%), followed by forgetfulness (28.07%). Factors like age, religion, education, socio-economic status, birth order, number of antenatal visits, or number of IFA consumed daily have not shown any significant association with this compliance. **Conclusion:** This study highlighted that only around half of the pregnant women are compliant with IFA, and this situation demands for information education and communication activities to generate awareness.

**Keywords:** Anemia in pregnancy, compliance to IFA, pregnant women

## Introduction

Anemia is a public health problem worldwide with high prevalence in vulnerable groups like preschool children, pregnancy and lactation, reproductive age, etc.[1] Anemia has adverse consequences, not only on physical but also on mental and social health.[2] In pregnancy, anemia is one of the most common preventable causes of a poor perinatal outcome as well as maternal mortality. Since the main cause of anemia during pregnancy is the deficiency of key nutrients, iron and folic acid supplement remain the mainstay in the management of anemia in pregnancy.[3]

Iron and folic acid deficiency during pregnancy are important factors for preterm delivery, anemia, low birth weight, and this contributes to increased maternal mortality and poor neonatal health.[4] In areas where the prevalence of iron deficiency is high (>40%), the supplementation should proceed for three months in the postpartum period.[5]

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The WHO defines anemia as a blood hemoglobin concentration less than 11 gm/dl or hematocrit less than 37% in pregnant women. The WHO estimates that the global burden of anemia in pregnancy was as high as 40.1% in 2016.[6] Despite the implementation of various control programs, including daily iron and folic acid supplementation as a mainstay,[7] there is the persistence of high prevalence of anemia in pregnancy,[6,8] and non-compliance to oral iron and folic acid supplementation plays the main role here.[9-12]

Medication compliance refers to the degree or extent of conformity to the recommendations about day-to-day treatment by the provider in respect to the timing, dosing, and frequency.[13] Though the cut-offs for non-compliance are not clear cut, missing two or more doses consecutively is usually considered as non-compliance.[14] By identifying non-compliance, we can aim at proper counseling of the subjects regarding the importance of compliance to IFA and decreasing the poor maternal and perinatal outcomes due to anemia in pregnancy.

Thus, considering the public health burden of anemia in pregnancy, as well as the fact that study on this topic is not done in this state, this study was conducted with the objectives to find out the proportion of compliance to intake of iron and folic acid (IFA) tablets among pregnant women attending antenatal clinic in Agartala Government Medical College and to study the association of compliance to IFA tablets with socio-demographic factors in this population.

## Materials and Methods

This is a hospital-based cross-sectional study conducted in the antenatal clinic in Agartala Government Medical College, West Tripura, for three months, from 15th June to 14th September 2019. Pregnant mothers attending antenatal clinic in Agartala Government Medical College, West Tripura, who had completed 18 weeks of POG or more were included, and women who requiring immediate admission and who refused to give consent for the study were excluded. The sample size had been calculated using the following formula for calculating sample size in observational studies measuring proportions, $n = [\{(Z_{1-\alpha/2})^2 PQ\} \div l^2]$[15] considering the proportion of pregnant women compliant to iron and folic acid tablets (IFA) is 64.7% ($P$),[16] at 5% level of significance. A relative error of 10% was considered, and thus, the sample size of 240 (rounded up) was calculated. Participants were selected from the clinic through consecutive sampling, keeping the inclusion and exclusion criteria in mind. Written informed consent for participation in this study was obtained from the women who were recruited in the sample. Data were collected through a face-to-face interview with a predesigned, pretested, structured interview schedule which consists of two parts, namely socio-demographic characteristics of participants and questions regarding compliance to IFA. The socio-economic classification of the respondents had been done according to the modified BG Prasad scale (2018), which uses per capita monthly income to determine the socio-economic classes and can be applied for individuals from both urban and rural areas.[17] The compliance is usually determined on the basis of the number of missed doses of IFA tablets. In this study, missing two or more doses consecutively in last 15 days was considered as non-compliance.[16,18] Number and timing of antenatal (ANC) visits were considered collectively and had been categorized into three groups, ideal (at least once in a month till seven months, then at least fortnightly in the eighth month and at least weekly thereafter), adequate (when minimum four visits, one in each of first two trimesters and two visits in the third trimester have been there, but not fulfilling criteria of ideal visit) and inadequate (not fulfilling criteria either of previous two groups). The collected data is compiled and analyzed using SPSS version 15.0. Descriptive statistics such as percentage, mean, standard deviation were calculated for quantitative data. Inferential statistics like the Chi-square test and Fisher's exact test were applied to study the association between qualitative variables. *P* value of < 0.05 was considered as significant. The Institutional Ethics Committee of Agartala Government Medical College has approved this study.

## Result

Out of 240 pregnant women included in the study, the majority (56.3%) belonged to the age group of 20–29 years, and the mean age of the study participants was 24.5 years (±SD: 5.1 years). Most of them were Hindu by religion (93.8%), belonged to scheduled caste (39.2%), had completed secondary education (34.6%). The majority of them were housewives (92.1%), consumed a mixed diet (99.6%), and had no known co-morbidities (88.8%). 51.3% of the respondents belonged to the nuclear type of family.

In this study, the compliance among the participants toward IFA tablets was 52.5%, and the main cause behind non-compliance, as stated by the non-compliant women (*n* = 114), was side effects (35.09%) followed by forgetfulness (20.6%). There was no significant association between socio-demographic characteristics and compliance of consumption of IFA tablets (*P* > 0.05) [Table 1]. Almost thirty-five percent said that fear of side effects was the reason for missing the IFA tablet, followed by forgetfulness (28.07%) [Table 2].

## Discussion

In the present study, the majority (56.3%) belonged to the age group of 20–29 years, and the mean age of the study participants was 24.5 years (±SD: 5.1 years), which is similar to a study conducted by Debi *et al*.[18] 72.6% of the participants belonged to 20–29 years (mean age 23.49 ± 0.291 years) and Mithra *et al*.[16] The majority (80.6%) belonged to 21–30 years age group (mean age of 25.8 ± 4.1 years). Deori *et al*.[19] reported that more than half (56.0%) of the pregnant women in our study were in the age group of 21–25 years and more than twenty-six percent (26.4%) of them had education up to high school followed by up to senior/higher secondary level (22.7%). Nearly thirty-one

| Table 1: Compliance of the pregnant women with IFA by their socio-demographic factors (*n*=240) | | | | |
|---|---|---|---|---|
| **Characteristics** | **Compliant** | **Non compliant** | **$\chi^2$** | **P** |
| Age | | | | |
| <20 years | 29 | 32 | 0.968 | 0.616 |
| 20-29 years | 72 | 63 | | |
| ≥30 years | 25 | 19 | | |
| Religion | | | | |
| Hindu | 120 | 105 | 3.682* | 0.159 |
| Muslim | 3 | 8 | | |
| Christian | 3 | 1 | | |
| Community | | | | |
| General | 22 | 28 | | |
| SC | 51 | 43 | 1.858 | 0.602 |
| ST | 7 | 6 | | |
| OBC | 46 | 37 | | |
| Education | | | | |
| Illiterate | 3 | 3 | | |
| Primary | 11 | 13 | 4.510 | 0.479 |
| Middle school | 25 | 26 | | |
| Secondary | 42 | 41 | | |
| Higher Secondary | 18 | 18 | | |
| Graduate & above | 27 | 13 | | |
| Marital Status | | | | |
| Married | 124 | 113 | 0.244* | 1.000 |
| Separated | 2 | 1 | | |
| Occupation | | | | |
| Housewife | 115 | 106 | 0.241 | 0.624 |
| Studying/working | 11 | 8 | | |
| Residence | | | | |
| Rural | 82 | 63 | 2.411 | 0.120 |
| Urban | 44 | 51 | | |
| Socio economic status | | | | |
| Class I | 21 | 14 | | |
| Class II | 26 | 35 | 3.902 | 0.419 |
| Class III | 42 | 38 | | |
| Class IV | 33 | 24 | | |
| Class V | 4 | 3 | | |
| Type of family | | | | |
| Nuclear | 62 | 61 | 0.443 | 0.505 |
| Joint | 64 | 53 | | |
| Period of gestation | | | | |
| 18-27 weeks | 41 | 47 | 1.959 | 0.375 |
| 28-37 weeks | 64 | 51 | | |
| 38 weeks or more | 21 | 16 | | |
| Gravida | | | | |
| Primigravida | 78 | 73 | 0.116 | 0.733 |
| Multigravida | 48 | 41 | | |
| No. of ANC visits | | | | |
| Ideal | 86 | 67 | | |
| Adequate | 34 | 36 | 3.295 | 0.192 |
| Inadequate | 6 | 11 | | |
| Co-morbidities | | | | |
| Present | 17 | 10 | 1.336 | 0.248 |
| Absent | 109 | 104 | | |
| Source of IFA | | | | |
| Hospital supply or Govt supply (free) | 74 | 70 | 0.183 | 0.912 |
| Pharmacy (purchased) | 44 | 37 | | |
| Both of the above | 8 | 7 | | |

*Contd...*

| Table 1: Contd... | | | | |
|---|---|---|---|---|
| Characteristics | Compliant | Non compliant | $\chi^2$ | *P* |
| Frequency of IFA tablets consumed daily | | | | |
| 1 (One) | 109 | 104 | 1.336 | 0.248 |
| 2 (Two) | 17 | 10 | | |

Chi-square test and Fisher's exact test (*)

| Table 2: Reasons for missing the IFA doses among the study participants (*n*=114) | | |
|---|---|---|
| Reason for missing IFA | Frequency | Percentage |
| Forgetfulness | 32 | 28.07 |
| Side effects (like constipation, nausea, vomiting, etc) | 40 | 35.09 |
| High cost of medicine | 1 | 0.88 |
| Running out of supplement | 21 | 18.42 |
| Thinking IFA is not useful | 4 | 3.5 |
| Thinking it is no harm to skip sometimes | 3 | 2.63 |
| Was sick recently | 8 | 7.02 |
| Was travelling recently | 5 | 4.39 |
| Total | 114 | 100 |

percent (30.8%) of the pregnant women belonged to lower middle-class socio-economic status according to the modified BG Prasad Socio-economic scale, and the maximum (81.0%) of them were from joint families. The majority (61.6%) of the pregnant women in our study had a gravida of ≥2 and more than onethird (37.9%) were on their second ANC clinic visit during the study.

In the present study, the majority (33.33% or one-third) of the participants belonged to the middle-class, contrary to a study by Debi *et al.*,[18] where two-third of the participants belonged to the upper social class and on the other hand, to a study by Mithra *et al.*,[16] where 72.1% belonged to the lower socio-economic status, and still it was observed that 60% received IFA free of cost and another 6.25% received free as well as purchased, which is similar to a study by Mithra *et al.*,[16] where 66.8% of the subjects received the therapy free of cost.

The present study revealed that 52.5% of the pregnant mothers were compliant with IFA, whereas in a similar study Mithra *et al.*[16] found this proportion to be 67.4%, and Pal *et al.*[20] found that 62% of the mothers were compliant. Deori *et al.*[19] reported that more than 77.1% were found to be compliant with the IFA tablets. Compliance was lower in the upper socioeconomic status (67.6%) and highest among the study participants that belonged to lower socioeconomic status (82.1%). Compliance was better among nonanemics (81.6%) than anemics (73.6%) (0.04) observed between anemia status and compliance to IFA tablets.

In this study, we have found that the main reason for skipping IFA tablets was the side effects of tablets (35.09%), followed by forgetfulness (28.07%), which is in agreement with the study conducted by Mithra *et al.*,[16] where the main reasons cited were forgetfulness (48.8%) followed by side effects (constipation

10.1%, gastritis 8.9% and vomiting 8.6%). Two independent studies conducted by Gebremedhin *et al.*[21] in Ethopia, which comprised of pregnant women and women who gave birth in the preceding year of the survey, the reasons were side-effects (63.3%) and forgetfulness (16.7%). Deori *et al.*[19] reported that the most common reason for noncompliance with IFA tablets was found to be forgetfulness, followed by side effects.

Various socio-demographic factors have shown significant association with compliance with IFA in similar studies, such as in a study conducted by Birhanu *et al.*[22] the compliance with IFA was significantly more in participants from the urban region, who had early initiation of antenatal checkups or frequent number of ANC and in the study by Mithra *et al.*[16] compliance with IFA was found to be significantly more with the increase in age, birth order, and single number of IFA. In contrast to these studies, this current study depicted no significant association with any of the socio-demographic factors such as age, religion, residence, socio-economic status, education, occupation, gravida, number of ANC visits, or IFA consumed daily.

## Conclusion

This study highlighted that only around half of the pregnant women were compliant with IFA and the main reasons were side effects and forgetfulness, which are both preventable if the pregnant mothers are properly counseled and educated on how to deal with the common side effects of IFA. This situation demands for further information, education, and communication activities to generate adequate awareness in this population.

## Conflicts of interest

There are no conflicts of interest.

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