ORIGINAL RESEARCH PAPER

Community Medicine

# ADHERENCE TO IRON FOLIC ACID SUPPLEMENTATION AND ITS ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING URBAN HEALTH TRAINING CENTRE (UHTC) OF TERTIARY HEALTH CARE OF SOUTH GUJARAT: A MIXED METHODS STUDY

**KEY WORDS:** Adherence, Anaemia in pregnancy, IFA supplementation, Maternal health

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**ABSTRACT**

**Introduction:** Anaemia during pregnancy is a significant public health issue affecting millions of women globally. According to NFHS-5, only 44% of mothers consumed IFA tablets for more than 100 days during their pregnancy, and 52.2% of pregnant women are anaemic. **Aim and Objectives:** To assess the impact of iron-folic acid (IFA) supplementation adherence on anaemia and identify factors influencing adherence or non-adherence. **Materials and Methods:** This mixed-method study involved 80 pregnant women attending antenatal services at an Urban Health Training Centre in South Gujarat from October to December 2023. Participants aged 18-40 years, in their second and third trimester, were prescribed IFA, and documented haemoglobin levels were included. Data were collected using a structured questionnaire and analysed with MS Excel 2021 and SPSS version 26. Fisher's Exact test was applied for associations. In-Depth Interviews (IDI) with 10 purposively selected participants (5 adhering, 5 non-adhering) explored reasons for adherence. **Results:** The study of 80 pregnant women (mean age 23) found anaemia in 78.8%. Non-adherence to IFA was due to distance, side effects, and forgetfulness. IFA adherence ($p = 0.004$) and occupation ($p = 0.025$) were significantly associated with better anaemia outcomes. **Conclusion:** Adherence to IFA supplementation significantly improved anaemia outcomes, with occupation influencing results. Barriers to adherence included distance, side effects, and forgetfulness. Targeted interventions are needed to enhance adherence and reduce anaemia in pregnant women.

## INTRODUCTION

Iron deficiency is the most prevalent and also the most neglected nutrient deficiency in the world, particularly among pregnant women and children, especially in developing countries. (Yakoob & Bhutta, 2011)

Anemia is a worldwide public health challenge that primarily affects the developing counties, and raises serious concerns about societal health and economic development. (Yassin et al., 2024)

Iron folic acid supplementation is a provision of a formulation containing 60 mg of elemental iron and 400 micromilligrams of folic acid, especially during the pregnancy period of a woman's life. The requirement for iron and folic acid is enhanced at the time of pregnancy due to hormonal and physiological changes during pregnancy. (Tesfa et al., 2024)

Taking recommended iron and folic acid supplements throughout pregnancy decreases the risk of iron deficiency anaemia by 57% and the risk of all forms of maternal anaemia by 70% at term. (Tesfa et al., 2024)

According to NFHS-5, only 44% of mothers consumed IFA tablets for more than 100 days during their pregnancy, and 52.2% of pregnant women are anaemic. (AQLI, 2023)

IFA compliance refers to the extent to which pregnant women comply with taking medication or the condition of sticking to the dose and time for taking IFA as prescribed by health care providers or per recommendations. (Yassin et al., 2024)

Poor compliance with the prescription of micronutrients during this period increases the likelihood of folic acid and iron deficiency. (Tesfa et al., 2024)

Although iron and folic acid supplements are provided free of charge in most countries through primary healthcare services, their utilization during pregnancy remains low. Several factors contributing to this issue remain unclear and require further investigation. (Ummair et al., 2025) This study aims to assess the level of compliance with IFAS and identify the associated factors among pregnant women in the UHTC.

## MATERIALS AND METHODS

### Study Site

Urban Health Training Centre (UHTC) of a tertiary healthcare institute in South Gujarat.

### Sample Size

A total of 80 participants were recruited for the study. These participants consisted of pregnant women attending antenatal care (ANC) services at the Urban Health Training Centre (UHTC) of a tertiary healthcare institute in South Gujarat.

**Sampling Technique:**
In this study, purposive sampling was used to select participants for both the quantitative and qualitative components.

**I. Quantitative Component**
Purposive sampling was employed to select pregnant women attending antenatal care (ANC) visits who met the inclusion and exclusion criteria.

**II. Qualitative Component**
For the qualitative component, purposive sampling was applied to select a subset of 10 participants—5 women who were adhering to iron-folic acid (IFA) supplementation and 5 who were not adhering.

**Inclusion Criteria**
1. Pregnant women aged 18–40 years attending antenatal care (ANC) visits at the selected healthcare facility.
2. Women in their second or third trimester who had been prescribed iron-folic acid (IFA) supplementation.
3. Women with documented haemoglobin levels during the current pregnancy.
4. Women who provided informed consent and were willing to participate in the quantitative survey and in-depth interviews.

**Exclusion Criteria**
1. Pregnant women with pre-existing medical conditions such as chronic kidney disease, thalassemia, or other hemoglobinopathies that could affect haemoglobin levels and confound the results.
2. Women who had undergone a blood transfusion during the pregnancy period.
3. Pregnant women in their first trimester or those without documentation of IFA prescription or haemoglobin levels.
4. Women who declined to participate in the interviews or withdrew from the study after initial recruitment.

**Data Collection Period**
Three months (October 2023 to December 2023).

**Data Analysis**
Quantitative data were entered into MS Excel 2021 and analysed using descriptive statistics (frequencies, percentages, means, and standard deviations) for relevant variables with the help of MS Excel 2021 and SPSS Version 26. Qualitative data were analysed to identify the reasons for adherence and non-adherence to IFA supplementation.

## RESULTS AND DISCUSSION

A total of 80 pregnant women were included in the study, with a mean age of 23 ± 3.48 years. The majority of participants were housewives, and most had completed at least primary or secondary education. Analysis of BMI categories showed that the largest proportion of women had a normal BMI, while a smaller number were underweight. Regarding anaemia status, mild anaemia was the most common finding, followed by moderate anaemia; a minority of participants had no anaemia, and none had severe anaemia. Adherence to iron-folic acid (IFA) supplementation was high, with 87.5% of women reporting intake of IFA tablets on at least four days per week.

The association of anaemia with education, occupation, and BMI was analysed. Education level did not show a statistically significant association with anaemia status (p=0.238). However, a significant association was observed between occupation and anaemia status (p=0.025), indicating that occupation may influence anaemia levels among pregnant women. BMI was not significantly associated with anaemia status (p=0.513).

**Table 1: Socio-demographic Characteristics of Study Participants (n=80)**

| Variables of interest | Mean ± SD or n (%) |
|---|---|
| Age | 23 ± 3.48 |
| Education | |
| - Illiterate | 2 (2.5%) |
| - Primary Education | 24 (30%) |
| - Secondary Education | 42 (52.5%) |
| - Higher Secondary | 12 (15%) |
| - Graduate | 0 |
| - Post Graduate | 0 |
| Occupation | |
| - Housewife | 77 (96.3%) |
| - Unskilled Labor | 3 (3.8%) |

**Table 2: BMI Category and Anaemia Status of Study Participants**

| Variables of interest | n (%) |
|---|---|
| BMI Category (kg/m²) | |
| Underweight (<18.5) | 12 (15%) |
| Normal (18.5–24.9) | 66 (82.5%) |
| Obese (25–29.9) | 2 (2.5%) |
| Obese Class 1–3 (≥30) | 0 |
| Anaemia (g/dl) | |
| No Anaemia (≥11) | 17 (21.3%) |
| Mild (10–10.9) | 50 (62.5%) |
| Moderate (7–9.9) | 13 (16.3%) |
| Severe (<7) | 0 |
| IFA Taking (≥4 days/week) | |
| Yes | 70 (87.5%) |
| No | 10 (12.5%) |

**Table 3: Association of Education, Occupation, and BMI with Anaemia Status**

| Variables | Fisher's exact value | p value |
|---|---|---|
| Education | 7.4 | 0.238 |
| Occupation | 6.454 | 0.025* |
| BMI | 3.150 | 0.513 |

*Significant at $p < 0.05$

## DISCUSSION

Our study found an IFA adherence rate of 87.5%, which is higher than that reported by Saha et al. (2020)(Debi et al., 2020) in Hooghly district (81.74%), Mandal et al. (2024)(Mandal et al., 2024) in Nadia district (80.1%) and Smitha et al.(2024)(Smitha et al., 2024) in Odisha(77.3%). The primary reasons for non-adherence in our study included distance, side effects (such as vomiting and abdominal pain), and forgetfulness, which are consistent with both comparison studies. Forgetfulness emerged as the most common barrier across all three studies—accounting for 73.7% of noncompliance in Saha et al.(Debi et al., 2020) and 56.5% in Mandal et al.(Mandal et al., 2024). were lack of counselling on IFA supplements and their benefits (93.5 %) was the most common barrier found in Smitha et al.(Smitha et al., 2024)

Regarding anaemia prevalence, our study reported a high rate of 78.8%, significantly greater than 39.7% in Mandal et al. and higher than the national NFHS-5 average(52.2%)(Nfhs-5 Key Indicators, n.d.). This difference may reflect variations in geography, dietary practices, health literacy, or socioeconomic conditions. Importantly, our study demonstrated a statistically significant association between IFA adherence and anaemia status ($p = 0.004$), aligning with Mandal et al.(Mandal et al., 2024)'s finding that anaemia was more prevalent among non-adherent women ($p = 0.007$).

Our study also found women's occupation ($p = 0.025$) to be significantly associated with anaemia status, which was similarly observed in Mandal et al., where husbands' occupation (unskilled/unemployed) was linked to higher odds of non-adherence (OR = 2.14).

Additionally, in our study, Education was not found to be significantly associated with anemia ($p = 0.238$). Contrary findings were reported by Smitha et al.(Smitha et al., 2024), where low educational and socioeconomic status were associated with anemia."

Qualitative data from our study offered deeper insight: participants who adhered to IFA cited benefits such as feeling less tired and gaining weight, while non-adherent participants often cited the belief that past healthy pregnancies without IFA were sufficient—a theme not explicitly discussed in the comparison studies.

## CONCLUSION

Adherence to IFA supplementation significantly improved anaemia outcomes, with occupation influencing results. Barriers to adherence included distance, side effects, and forgetfulness. Targeted interventions are needed to enhance adherence and reduce anaemia in pregnant women.

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