



## "Awareness And Practices Of Iron Consumption And Their Impact On The Prevalence Of IDA Among Pregnant Women: A Study At Federal General Hospital, Islamabad

Ayesha Inam<sup>1</sup>, Asia Rubab<sup>2</sup>, Imran Akram<sup>3</sup>, Mehr Un Nisa Shahid Baig<sup>4</sup>

<sup>1</sup>Federal General Hospital, Chakshehzad, Islamabad, [dr.aishh1990@gmail.com](mailto:dr.aishh1990@gmail.com)

<sup>2</sup>Federal General Hospital, Chakshehzad, Islamabad, [drsunya22@gmail.com](mailto:drsunya22@gmail.com)

<sup>3</sup>Federal General Hospital, Chakshehzad, Islamabad, [malikimranakram@gmail.com](mailto:malikimranakram@gmail.com)

<sup>4</sup>Federal General Hospital, Chakshehzad, Islamabad, [mehrshahid26@gmail.com](mailto:mehrshahid26@gmail.com)

\*Corresponding Author: Ayesha Inam

\*Federal General Hospital, Chakshehzad, Islamabad, [dr.aishh1990@gmail.com](mailto:dr.aishh1990@gmail.com)

### Abstract

**Background:** Iron deficiency anemia (IDA) is a significant public health issue, particularly among pregnant women, due to its association with adverse maternal and fetal outcomes. This study aims to assess awareness, practices, and perceived barriers related to iron consumption during pregnancy among women attending the Gynecology OPD at Federal General Hospital, Chak Shehzad, Islamabad.

**Methods:** A cross-sectional study was conducted among pregnant women. Awareness was evaluated using five questions related to iron consumption, with scores categorized into low, moderate, and high awareness. Practices were assessed using five additional questions, and cumulative practice scores were classified as poor, insufficient, or good. Perceived barriers, side effects of iron supplements, and counselling received from healthcare providers were also explored. Serum haemoglobin levels from pathology lab reports were classified into anaemia severity categories using WHO criteria. Chi-square tests were used to evaluate associations between awareness, practices, and demographic variables.

**Results:** The study revealed a moderate overall awareness score of 0.53 (SD = 0.199). Higher education, urban residence, employment, and higher income were significantly associated with better awareness levels ( $p < 0.005$ ). Practices related to iron consumption were below average, with a cumulative practice score of 0.35 (SD = 0.197). Employed women, urban residents, and those with higher education exhibited better practices ( $p < 0.005$ ). Major barriers to regular iron supplement intake included forgetfulness (29.5%), side effects (26.5%), and cost (18.2%). Approximately 48.4% of participants reported insufficient counselling from healthcare providers. Most women (49.3%) had moderate anaemia, with no significant associations between anaemia severity and awareness or practices.

**Conclusion:** Despite moderate awareness, poor practices and significant barriers hinder optimal iron consumption among pregnant women. Enhancing education, healthcare provider counselling, and accessibility to iron supplements are crucial to improving maternal health outcomes.

**Key words:** *Iron consumption, Pregnancy, Awareness, Practices, Iron Deficiency Anaemia*

### Introduction

Globally, Iron deficiency anaemia (IDA), is a major public health concern, most importantly in pregnant women. It is considered as the most common nutritional deficiency during gestational period.(1) Iron deficiency leads to reduced haemoglobin production, the main protein in red blood cells responsible for oxygen transport throughout the body.(2) During pregnancy, the body's nutritional demands increase to support fetal development, including a rise in blood volume to sustain placental circulation. (3) Consequently, pregnant women with IDA are at risk for complications such as low birth weight, maternal fatigue, preterm birth, and, in severe cases, maternal or fetal death.(4)

IDA can be managed through two primary approaches: adequate dietary intake of iron-rich foods and iron supplementation.(5) The World Health Organization (WHO) recommends a daily iron intake of 27 mg for pregnant women.(6) However, dietary intake alone often fails to meet this requirement, necessitating the use of iron supplements..(7) Also, many women are unaware of proper consumption practices, which can lead to decreased iron absorption and reduced efficacy of supplementation.(8)

Proper iron consumption is essential for a healthy pregnancy and favourable outcomes. Pregnant women must be informed about iron-rich foods and appropriate supplementation practices to reduce the prevalence of IDA. In developed countries prevalence rates of IDA in pregnant women is less as compared to underdeveloped countries where it is a major health concern(9) The incidences of iron deficiency anaemia is very high in low income countries affecting almost 40-50% of pregnant women. (10)Studies also have reported that knowledge regarding iron consumption is limited among pregnant women in Pakistan.(11)

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Federal General Hospital in Chak Shehzad, Islamabad, serves a diverse population from urban and peri-urban areas, where IDA among pregnant women is a prominent issue. The gynaecology department manages numerous cases of IDA, both in the ward and outpatient settings. Previous studies in similar contexts have reported IDA prevalence rates of 40–50% among pregnant women in Pakistan, with higher rates observed in rural and low-income populations.(12)

The aim of this study is to assess the level of awareness regarding iron-rich diets and supplementation practices among pregnant women attending the Gynaecology OPD at Federal General Hospital. The study will evaluate current practices, knowledge about iron-rich foods, and the role of nutrient interactions (e.g., with calcium and vitamin C) in iron absorption. Additionally, it will explore barriers to adherence to iron supplementation recommendations, including cultural beliefs, supplement side effects, and gaps in healthcare provider communication.

**Methodology**

A cross-sectional descriptive study was conducted to assess iron awareness among pregnant women. The study was carried out at Federal General Hospital, Islamabad, with ethical approval obtained from the hospital's Ethics Review Committee (ERC). Informed verbal consent was obtained from all participants. A self-administered data collection tool was developed for the study, consisting of four sections: demographic information, awareness-related questions, practice-related questions, and perceived barriers to proper iron consumption. Data was collected from pregnant women visiting the outpatient gynaecology department. A total of 400 patients were surveyed over a six-month period, from July to December 2024. The sample size was calculated using the Raosoft sample size calculator, with a 95% confidence interval and a 5% alpha value, yielding a sample size of 356. To account for missing data, the sample size was rounded up to 400. Non-probability convenience sampling was used to select participants. Inclusion criteria consisted of women aged 18 to 45 years who were between 12 and 36 weeks pregnant. Exclusion criteria included women with pre-existing conditions that affect iron absorption. Serum haemoglobin (Hb) levels were obtained from participants' pathology lab reports and categorized based on WHO criteria for anaemia severity: mild (10.0–10.9 g/dL), moderate (7.0–9.9 g/dL), and severe (<7.0 g/dL).(13) Awareness association with anaemia severity was analyzed using chi-square. After data collection, the data was entered, cleaned, and coded in SPSS 23 for further analysis.

**Results**

Descriptive statistics were used to analyze demographic variables of the study population . The following table illustrates the demographic details of the study population. Table 1

**Table 1: Demographic variables of the participants attending outpatient gynaecology department, FGH hospital July to December 2014**

Variable	Frequency	Percentage	Variable	Frequency	Percentage
<b>Age</b>			<b>Occupation</b>		
18-25	180	45	Employed	180	45
26-35	142	35	Homemaker	142	35
36-40	36	9	Student	36	9
41-45	42	10.5		42	10.5
<b>Language</b>			<b>Monthly Income Pkr</b>		
Pashto	121	30.3	10,000-20,000	12	3
Punjabi	152	38.0	20,000 - 30,000	69	17.2
Urdu	127	31.8	30,000 - 50,000	46	11.3
<b>Residence</b>			Above 50,000	280	280
Urban	153	38.3	<b>Previous Pregnancies</b>		
Rural	247	61.8	0	142	35.5
<b>Education</b>			1	91	22.8
No Education	117	29.3	2	93	23.3
Primary Level	96	24.0	3	50	12.5
Secondary Level	74	18.3	4	22	5.5
Higher Secondary Level	31	7.8	5	0	0
University Degree	82	20.5	6	2	5
<b>Do You Have Any Baby With Genetic Abnormality</b>					
Yes	8	2			
No	392	98			

Five questions (Fig.1) assessed participant's awareness regarding iron consumption during pregnancy, with scores categorized as low (0.0–0.33), moderate (0.34–0.66), and high (0.67–1.0). A moderate overall awareness score of 0.53 was observed, with a standard deviation of 0.199, indicating fairly consistent awareness levels among participants.

No.	Question
A1	Are you aware of the foods containing iron in them?
A2	Which of the following food is a good source of iron?
A3	Are you aware of the fact that iron absorption is enhanced by vitamin C?
A4	Are you aware of the recommended daily dose of iron?
A5	Do you know that certain foods can hinder iron absorption?

(Fig 1. Questions regarding awareness of iron consumption. )

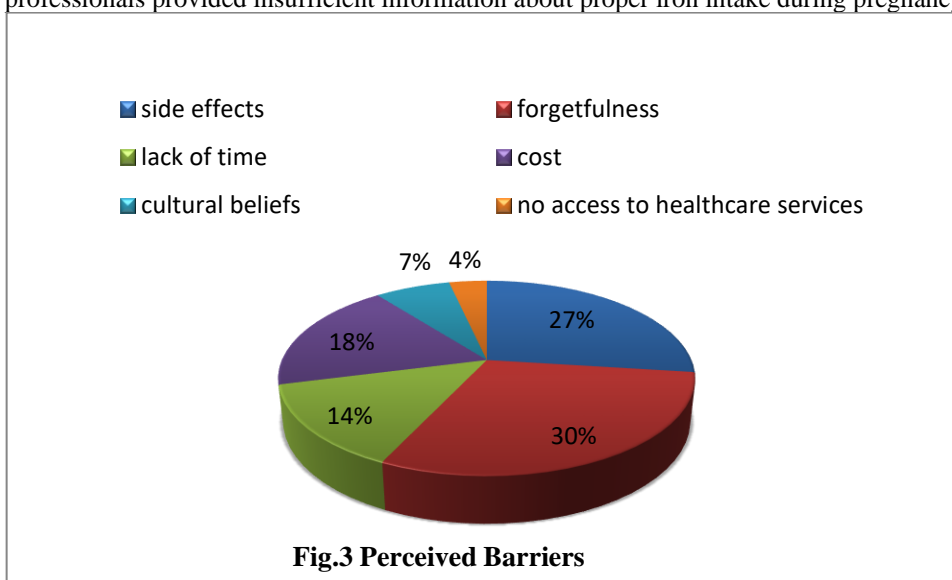
Chi-square analysis revealed significant associations between awareness levels and demographic factors. Higher education correlated strongly with better awareness ( $p < 0.005$ ), with standardized residuals(R) value of 8.7 and 5.7 for participants with higher secondary and university education, respectively. Language also played a role, with Urdu speakers showing better awareness (standardized residuals residual(R) = 1.2) compared to Pashto speakers (standardized residuals residual(R) = -1.1). Employment status influenced awareness, with employed women exhibiting the highest awareness levels (standardized residuals residual(R) = 8.3) and homemakers the lowest (-5.7). Urban participants demonstrated better awareness (standardized residuals residual(R) = 3.2) compared to rural residents (standardized residuals residual(R) = -4.1). Additionally, higher income groups were associated with better awareness levels (residual = 2.6).

Participants' practices regarding iron consumption were assessed through five questions(Fig 2) , yielding a below-average cumulative practice score of 0.35 (SD = 0.197). Practices were categorized as poor (0.0–0.33), insufficient (0.34–0.66), and good (0.67–1.0). Education significantly impacted practices, with higher secondary and university-educated participants demonstrating better scores ( standardized residuals residual(R) = 4.8 and 3.5, respectively). Language differences were observed, with Punjabi speakers exhibiting the poorest practices (standardized residuals residual(R) = -2.2). Employment status was also a key factor, with employed women showing better practices (standardized residuals residual(R) = 4.5), while rural residents had the poorest scores (standardized residuals residual(R) = -2.9).

No.	Question
P1	How often do you consume iron rich foods?
P2	Do you take iron and calcium supplements together?
P3	Which of the following you take with iron supplement to enhance its absorption?
P4	Do you take iron supplements in your pregnancy?
P5	Do u consume milk or yogurt with iron supplements?

(Fig 2. Questions regarding practices of iron consumption. )

Barriers to iron consumption were also explored (Fig3). The most commonly reported side effects of iron supplements were stomach pain (23.8%), constipation (20.6%), vomiting (18.4%), and nausea (17.7%). Forgetfulness was the leading barrier to regular supplement intake (29.5%), followed by side effects (26.5%), cost (18.2%), lack of time (13.8%), cultural beliefs (6.9%), and lack of access to healthcare services (3.4%). Nearly half of the participants (48.4%) reported that healthcare professionals provided insufficient information about proper iron intake during pregnancy.



Haemoglobin levels indicated that 26.8% of participants had mild anaemia, 49.3% had moderate anaemia, and 15% had severe anaemia. No significant association was found between anaemia severity and participants' awareness or practices. While 90.2% of participants felt confident in identifying iron-rich foods. None of the participants identified fruits as a good source of iron, and only 3.7% identified dairy as a source. Additionally, 83% were unaware of vitamin C's role in enhancing iron absorption, and only 22.8% recognized that certain foods could inhibit iron absorption. Awareness of the recommended daily iron dose was also low, with only 30.3% reporting correct knowledge.

### **Discussion**

The findings of this study provide valuable insights into the knowledge, attitudes, and practices of pregnant women regarding anaemia, iron-rich diets, and iron supplements in a secondary care hospital in Islamabad. The results revealed that only 50% of the participants were aware of the importance of iron consumption during pregnancy. This level of awareness aligns with findings from previous studies conducted in similar settings, where awareness levels among pregnant women ranged from 40% to 60%, reflecting a persistent gap in public health education efforts (14, 15).

However, despite moderate awareness, only 30% of the participants demonstrated good practices related to iron consumption. This discrepancy between awareness and practice has also been observed in studies from other regions, where barriers such as lack of counselling, forgetfulness, and side effects significantly hinder adherence to iron supplementation.(16) Notably, 50% of participants reported that their healthcare providers did not adequately counsel them on the importance of iron intake, which highlights a critical gap in antenatal care services. A similar lack of counselling has been reported in studies from low-resource settings, emphasizing the need for targeted interventions to enhance communication between healthcare providers and patients .(17)

The major barriers to iron supplementation identified in this study included forgetfulness, reported by a significant proportion of participants, followed by side effects such as nausea, vomiting, constipation, and stomach pain. These findings are consistent with previous research, where gastrointestinal side effects were frequently cited as a major deterrent to iron supplementation adherence. (18),(19)Addressing these barriers through patient education, alternative formulations, and side effect management strategies could improve adherence and outcomes.

This study also found significant associations between awareness and socio-demographic factors such as education, occupation, language, residence, and monthly income. For example, women with higher education levels and higher monthly incomes were more likely to be aware of the importance of iron supplementation, consistent with findings from other studies.(20) This suggests that socio-economic factors play a pivotal role in shaping health behaviours, underscoring the need for tailored educational interventions targeting underserved and less educated populations.

Interestingly, while the study categorized participants based on haemoglobin levels into mild, moderate, and severe anaemia, no significant association was found between awareness and iron deficiency anaemia (IDA) type. This finding is in contrast to studies conducted in other regions, where awareness levels were significantly associated with prevalence of anaemia in pregnancy . (21) The lack of association in this study may reflect other underlying causes of anaemia, such as nutritional deficiencies beyond iron, infections, or chronic conditions, which warrant further investigation.

The high prevalence of moderate anemia (approximately 50%) among participants underscores the public health burden of anemia during pregnancy. This is consistent with regional and global trends, where anemia in pregnancy remains a significant concern, particularly in low- and middle-income countries.(22) Addressing this issue requires a multi-faceted approach, including improving dietary diversity, enhancing access to iron supplements, and strengthening antenatal care services.

### **Conclusion**

This study highlights critical gaps in awareness, practices, and counselling regarding iron consumption among pregnant women in Islamabad. Addressing these issues requires targeted educational interventions, improved antenatal care counselling, and strategies to mitigate barriers such as forgetfulness and side effects. Further research is needed to explore the underlying causes of anaemia beyond awareness and practices and to evaluate the impact of tailored interventions on maternal and neonatal outcomes.

### **Limitations**

The study has some limitations that should be considered when interpreting its findings. Firstly, the sample size may affect the generalizability of the results, as a limited or non-representative sample might not accurately reflect the broader population. Secondly, reliance on self-reported data introduces the possibility of recall bias or social desirability bias, with participants potentially over reporting their awareness or underreporting unhealthy practices. Thirdly, the cross-sectional design of the study provides a snapshot of awareness at a single point in time, which precludes the ability to assess changes in awareness or practices throughout pregnancy. Lastly, the exclusion of pregnant women with pre-existing conditions affecting iron metabolism limits the study's scope, as including this subgroup could have offered valuable insights into the unique challenges faced by individuals with medical conditions requiring specialized care.

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