

## Level of knowledge regarding the use of folic acid and iron supplements among pregnant women attending the antenatal clinic at Hoima Regional Referral Hospital. A cross-sectional study.

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### Abstract

#### Background:

Iron and folic acid supplementation is a key component of antenatal care recommended by the World Health Organization to prevent anemia and neural tube defects in pregnancy. This study aims to assess the level of knowledge regarding the use of folic acid and iron supplements among pregnant women attending the antenatal clinic at Hoima Regional Referral Hospital.

#### Methodology:

A descriptive cross-sectional study was conducted among 195 pregnant women selected through systematic sampling. Data were collected using structured questionnaires and analyzed using descriptive statistics, with frequencies and percentages used to summarize findings.

#### Results:

The study included 195 respondents, 70.3% of the respondents were aged 26–35 years. 85.6% were married. 55.4% had completed primary education. Regarding occupation, almost three-quarters 73.8% were unemployed. More than half of the respondents 66.7% reported health workers as their source of information regarding iron and folic acid tablets, while a minority 3.1% reported school. 60% knew the correct number of iron and folic acid tablets taken per day, while a sizeable minority 40% did not know. 58.5% reported that the supplements help prevent anaemia, 17.9%, while the smallest proportion associated them with preventing low birth weight, 8.2%. 85.6% knew some natural sources of iron and folic acid, while the smallest proportion 14.4% reported that they did not know. Nearly three-quarters of the respondents 71.8% knew some side effects of the supplements, whereas the least number 28.2% reported that they did not know.

#### Conclusion:

Overall, pregnant women demonstrated a fair level of knowledge about iron and folic acid supplements, but notable gaps still exist that could hinder their proper use and effectiveness.

#### Recommendation:

Strengthening antenatal health education and expanding community awareness are necessary to improve knowledge and supplement use.

**Keywords:** Iron and folic acid supplementation, antenatal care, pregnant women, knowledge level, anemia prevention, Hoima Regional Referral Hospital.

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### Background of the study

Maternal knowledge about nutrition and supplementation is a critical determinant of adherence to antenatal care recommendations, particularly the use of iron and folic acid (IFA) supplements. Adequate knowledge enables pregnant women to understand the importance, benefits, and correct usage of these supplements, which is crucial for preventing maternal anemia, neural tube defects, preterm births, and low birth weight (Debbarma et al., 2022; WHO, 2020). Studies have shown that women with higher awareness and understanding of IFA supplementation are more likely to take the supplements consistently, while those with limited

knowledge often exhibit poor adherence (Ugwu et al., 2023; Kimiywe et al., 2023).

Research in sub-Saharan Africa indicates that lack of knowledge regarding the purpose, dosage, and duration of IFA supplementation is a significant barrier to compliance. For instance, a study in East Africa revealed that misconceptions about side effects, timing, and effectiveness of iron-folic acid tablets contributed to missed doses among pregnant women (Kimiye et al., 2023). Similarly, in Uganda, a study at Mulago National Referral Hospital found that only 11.6% of pregnant women adhered to iron supplementation for a 30-day period, with adherence

strongly linked to the women's awareness and understanding of the supplements (Kiwanuka et al., 2023). Evidence also highlights the role of counseling and health education in improving maternal knowledge. Women who received proper antenatal education on IFA supplementation reported better understanding of its benefits and demonstrated higher compliance (Lavanya et al., 2020; Nisar et al., 2022). Therefore, assessing the level of knowledge among pregnant women in Hoima Regional Referral Hospital is essential to identify gaps and inform interventions aimed at improving the uptake of iron and folic acid supplements. This study aims to assess the level of knowledge regarding the use of folic acid and iron supplements among pregnant women attending the antenatal clinic at Hoima Regional Referral Hospital.

## Methodology

### Study Design

The study adopted a cross-sectional and descriptive research design using quantitative approaches to data collection. The design was used because it helped gain an understanding of underlying reasons, opinions, and motivations while providing insights into the problem and uncovering trends in thought and opinions, and diving deeper into the problem at one point in time.

### Study Area

The study was carried out in the Maternal-Child Health Clinic of Hoima Regional Referral Hospital, commonly known as Hoima Hospital, located in Hoima District, Western Uganda; approximately 200 kilometers (120 mi) by road, northwest of Kampala, Uganda's capital and largest city. The coordinates are 1°25'40.0"N, 31°21'16.0" E (Latitude: 1.427778; Longitude: 31.354444). It is the referral hospital for the districts of Bulisa, Hoima, Kibaale, Kiryandongo, and Masindi. It is a public hospital, funded by the Uganda Ministry of Health, and general care in the hospital is free. This hospital is one of the thirteen (13) Regional Referral Hospitals in Uganda. The hospital is designated as one of the fifteen (15) internship Hospitals in Uganda where graduates of Ugandan medical schools can serve one year of internship under the supervision of qualified specialists and consultants. The bed capacity of Hoima Hospital is quoted as 280.

### Study Population

The study population consisted of all pregnant women attending ANC at the Maternal-Child Health Clinic of Hoima Regional Referral Hospital. This was because it's the age group for which routine supplementation with iron and folic acid is recommended.

### Sample Size Determination

The sample size of the study was estimated using the formula by Kish Leslie (1965).

Sample size,  $N = \frac{Z^2pq}{d^2}$

$d^2$

Where,

Z = standard normal distribution taken at 95% = 1.96 C. I n

= sample size

P = the national prevalence of iron and folic uptake, 47% (UDHS, 2022).  $q = 100 - p = (100 - 47) = 53\%$

d = allowable error = 7% or 0.07 Therefore,  $n = \frac{1.96^2 \times 47 \times 53}{7 \times 7}$

$7 \times 7$

=  $3.8416 \times 2491$

4

= 195 respondents

### Sampling Technique

This study employed a simple random sampling technique. This technique was used since it gives equal opportunities for every willing participant to be picked to participate in the study.

### Sampling Procedure

In the application of a simple random sampling method, the lottery technique was used, where 390 small pieces of paper were cut and on them written YES and No, and were properly mixed, then the prospective respondents were asked to choose one from the box. The prospective respondents who picked YES were considered, while those who picked No were allowed to go. This was continuously done for all the days in which the data was collected until the sample size was covered.

### Data Collection Method

The study used self-administered questionnaires as a method of data collection. This ensured a high response rate and provided data within the shortest time possible.

### Data Collection Tool (s)

The study used a standardized pretested questionnaire with closed-ended questions as a data collection tool. The choice of a questionnaire was justified by the fact that it allows data to be collected from a large number of people within a short time.

### Data Collection Procedure

The study involved seeking permission from the relevant authorities in Hoima district. The researcher and the assistants, with the help of other health workers, helped in the selection of participants for the study. After the study participants had been selected, they were given consent forms to fill out and were given the questionnaires to complete with guidance from the research team.

### Quality Control

Closed-ended questions were pretested using the direct questioning method, which involved randomly selecting 20

respondents in Hoima Health Center III who filled out the questionnaire so as to find out if the respondents easily understood and answered the questions as required, and the mistakes identified were corrected before actual data was collected.

Furthermore, the reliability and validity of the research tools were established through conducting a pilot study at Hoima regional referral hospital, where the questionnaires were given to some respondents to fill in, and the results were edited and kept. The questions that were found not to be properly understood were re-edited before actual data collection was done.

The research assistants were trained by the researcher on the right and correct procedure of data collection, which involved probing of the respondents in line with the subject matter under investigation before they were given ago ahead.

Enough time was provided for the collection of data, that is to say, a period of four weeks was used, and each participant was given thirty minutes to answer the questionnaire.

All pregnant women attending ANC at Hoima Regional Referral Hospital who gave informed consent after being informed of the purpose of the study and its ethical considerations were included.

All critically ill pregnant women attending ANC at Hoima Regional Referral Hospital and those not critically ill but did not give informed consent after being informed of the purpose of the study and its ethical considerations were excluded.

All standard operating procedures that ensured no harm to the respondents, either physically, mentally, or emotionally, were adhered to. In this case, face masking, hand sanitizing,

hand washing with soap and water, total confidentiality, privacy, and seeking consent were always ensured before involving a respondent in the study.

### Data Analysis and Presentation

Data analysis was conducted using SPSS statistical software. Exploratory data techniques were used at the initial stage of analysis and covered the structure of data, and identified outliers or unusual entered values. Quantitative data were then coded and processed using SPSS version 20. Descriptive statistics, such as frequencies, were used to summarize, organize, and simplify the data that was collected. Quantitative data were presented using frequency tables, pie charts, and graphs.

### Ethical Consideration

The findings of this study were approved by the Uganda Health Professions Assessment Board (UHPAB) and the research committee of Mildmay Institute of Health Sciences. The researcher sought permission to carry out data collection and access to the health facility records from the DHO through the hospital in charge. In order to ensure confidentiality, the participant's names were not written on the questionnaire. Consent was also sought before the participants were allowed to take part in the study; those who consented were interviewed, whereas those who did not consent were not forced to participate in the study. Also, a participant was allowed to withdraw from the study if they decided to do so and were not punished in any way.

### Results

#### Socio-demographic characteristics of the respondents

**Table 1: Shows the socio-demographic characteristics of the respondents (n=195)**

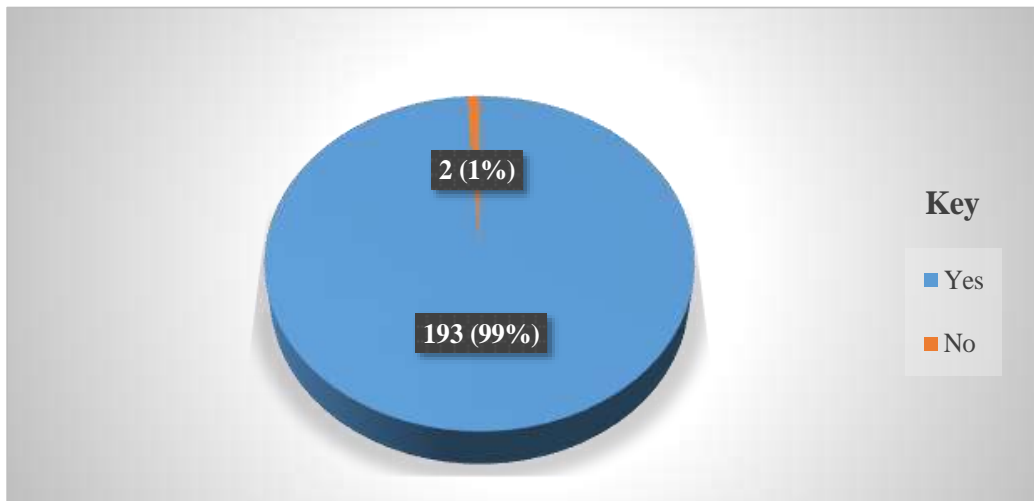
Variable	Category	Frequency (n)	Percentage (%)
<b>Age</b>	18–25 years	45	23.1
	26–35 years	137	70.3
	36–50 years	13	6.7
<b>Marital status</b>	Married	167	85.6
	Single	28	14.47
<b>Level of education</b>	No formal education	14	7.2
	Primary	108	55.4
	Secondary	48	24.6
	College/University	25	12.8
<b>Occupation</b>	Farmer	26	13.3

Businessperson	11	5.6
Unemployed	144	73.8
Civil servants	14	7.2

The demographic data showed that the majority, 70.3% of the respondents, were aged 26–35 years, majority 85.6% were married. More than half, 55.4%, had completed primary education. Regarding occupation, almost three-quarters 73.8% were unemployed.

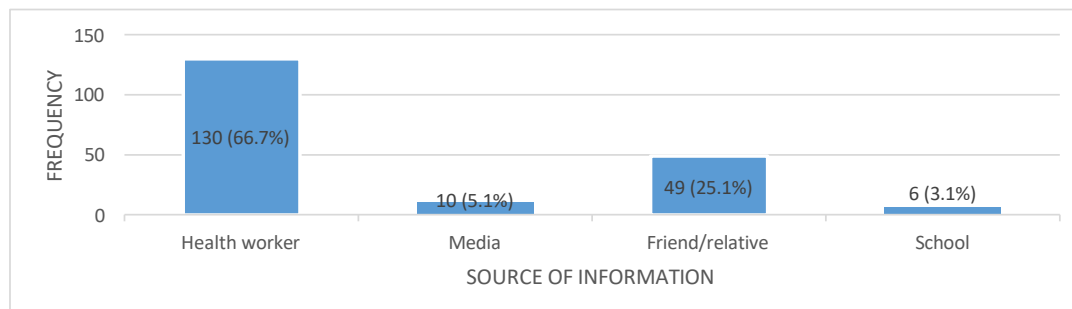
**The level of knowledge regarding the use of folic acid and iron supplements among pregnant women.**

**Figure 1: Shows whether respondents knew the correct number of iron and folic acid tablets to take per day (n=195)**



Almost all the respondents (99 %) knew what iron and folic acid tablets are, while a minority of 2 (1%) did not know.

**Figure 2: Shows respondents by their source of information regarding iron and folic acid tablets (n=195)**



More than half of the respondents 66.7% reported health workers as their source of information regarding iron and folic acid tablets, while a minority 3.1% reported school.

**Table 2: Shows whether respondents know the number of iron and folic acid taken per day, benefits of iron and folic acid supplements, natural sources of iron and folic acid, and any side effects of the supplements (n=195)**

Variables	Frequency (n)	Percentage (%)
<b>Know the number of iron and folic acid taken.</b>		
Yes	117	60
No	78	40
<b>The benefits of iron and folic acid supplements are known.</b>		
Prevent anemia	114	58.5
Prevent low birth weight	16	8.2
Prevent preterm birth	35	17.9
Don't know	30	15.4
<b>Know any natural sources of iron and folic acid</b>		
Yes	167	85.6
No	28	14.4
<b>Know any side effects of the supplements?</b>		
Yes	55	28.2
No	140	71.8

Table 2 revealed that more than half of the respondents 60% knew the correct number of iron and folic acid tablets taken per day, while a sizeable minority 40% did not know. The majority 58.5% reported that the supplements help prevent anaemia, 17.9%, while the smallest proportion associated them with preventing low birth weight, 8.2%. A majority 85.6% knew some natural sources of iron and folic acid, while the smallest proportion 14.4% reported that they did not know. Nearly three-quarters of the respondents 71.8% knew some side effects of the supplements, whereas the least number 28.2% reported that they did not know.

## Discussion

### The level of knowledge regarding the use of folic acid and iron supplements among pregnant women

Major findings under this objective revealed that almost all the respondents 99% knew what iron and folic acid tablets are, which demonstrates exceptionally high awareness of the supplements' identity and purpose. This level of knowledge implies that caregivers and health workers within the antenatal system consistently communicate the importance of IFA during pregnancy. Such strong awareness may stem from widespread distribution of supplements during ANC visits, routine health education conducted at health facilities, and prior exposure from previous pregnancies. This finding corresponds with a study by Kiwanuka et al. (2023), who observed that all their respondents had heard about folic acid and iron supplementation.

More than half of the respondents 66.7% reported health workers as their source of information regarding iron and folic acid tablets, indicating that health facilities remain the primary and most trusted source of maternal health

information. This suggests that ANC health education is functional and that mothers rely more on professional instruction than community-based sources. The observed pattern may be due to mothers' routine interaction with midwives, trust built through repeated clinical visits, and limited exposure to alternative community information channels. This result aligns with a study by Kiwanuka et al. (2023), whose study 58.8% of study respondents reported health workers as their main source of health information. The results revealed that more than half of the respondents 60% knew the correct number of iron and folic acid tablets taken per day, showing a fairly good understanding of dosage requirements. This implies that most mothers grasp the general instructions provided by clinic staff. The observed trend may arise from practical demonstration during ANC, clear instructions provided at drug dispensing points, and past experiences with the supplements. This finding disagrees with the report by Singh et al. (2020), which found that 90% of the women had notable knowledge gaps about iron folic acid supplementation, with 89.1% lacking knowledge on the recommended dosage.

The majority 58.5% reported that the supplements help prevent anaemia, suggesting a moderate understanding of the functional benefits of supplementation. This indicates that these women are likely to adhere to the dosage. This knowledge was likely due to health talks that emphasize anemia prevention and proper use of visual aids during health education sessions. The findings disagree with the study by Sendeku et al. (2020), which revealed that only 34.9% knew the benefits of iron folic acid, with only 23.8% able to list more than three benefits of adhering to iron-folic acid supplementation.

A majority 85.6% knew some natural sources of iron and folic acid. This suggests that dietary counseling provided during ANC is effective and that women are exposed to community nutrition messages from radio, peers, or village health teams. The high awareness may also reflect cultural familiarity with traditional iron-rich foods such as green leafy vegetables and beans. The finding disagrees with Singh et al.'s (2020) study, which found that 72.9% of their respondents did not know the sources of folic acid and iron. Nearly three-quarters of the respondents 71.8% knew some side effects of the supplements, signifying good practical

knowledge gained from personal experience and health worker counseling. This implies that women not only receive supplements but are also informed about expected reactions and how to handle them. This may result from improved counseling at distribution points, shared experiences from peers, and repetition of messages during ANC. This finding contrasts with Lyoba et al. (2020), whose study reported that 64.4% of pregnant women could not identify the side effects of taking iron-folic acid supplements.

### Conclusion

The study found that pregnant women attending the antenatal clinic at Hoima Regional Referral Hospital had moderate knowledge regarding the use of iron and folic acid supplements. While a majority were aware of their role in preventing anemia and had information from health workers, significant knowledge gaps still existed in areas such as correct dosage, full benefits, and potential side effects.

### Recommendation

There is a need to strengthen health education during antenatal care visits, with greater emphasis on the correct use, benefits, and side effects of iron and folic acid supplementation. Health workers should use clear, consistent messaging and educational materials, while community and school-based awareness programs should be enhanced to improve knowledge and promote proper utilization among pregnant women.

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### List of Abbreviations

<b>ANC:</b>	Antenatal Clinic
<b>APGAR:</b>	Appearance, Pulse, Grimace, Activity, Respiration.
<b>CBOs:</b>	Community-Based Organizations
<b>CBS:</b>	Central Bureau of Statistics
<b>CHW:</b>	Community Health Worker
<b>DNA:</b>	Deoxyribonucleic Acid
<b>Hb:</b>	Hemoglobin
<b>IDDS:</b>	Individual Dietary Diversity Score
<b>LBW:</b>	Low Birth Weight
<b>NGOs:</b>	Non-Governmental Organizations

<b>NHANES:</b>	National Health and Nutrition Examination Survey
<b>SCN:</b>	Sub-committee on Nutrition
<b>WHO:</b>	World Health Organization
<b>IFA:</b>	Iron and Folic Acid

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The study did not receive any external funding.

**Conflict of interest**

The author did not declare any conflict of interest.

**Author contributions**

Joice Katamba Nankinga was the principal investigator  
Jimmy Okwany supervised the research project  
Hasifa Nansereko supervised the research project  
Jane Frank Nalubega supervised the research project  
Francisco Ssemuwemba supervised the research project

**Data availability**

The data is available upon request.

Informed consent: Written informed consent was obtained from all participants prior to their inclusion in the study. Participants were informed about the purpose of the study, procedures involved, potential risks and benefits, and their right to withdraw at any time without penalty.

**Author Biography**

Joice Katamba Nankinga holds a Diploma in Clinical Medicine and Community Health from Mildmay Institute of Health Sciences.

Francisco Ssemuwemba is the dean of the School of Allied Health.

Hasifah Nansereko is the chairperson of the Institutional Review Council (IRC).

Jane Frank Nalubega is a tutor at Mildmay Institute of Health Sciences.

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