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Economic factors influencing the utilization of folic acid by pregnant mothers attending antenatal care at Apac General Hospital, Apac district. A cross-sectional study.

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Abstract

Background:

Utilization of folic acid among pregnant mothers is essential in preventing maternal anemia, neural tube defects, and other pregnancy complications. This study assessed economic factors influencing the utilization of folic acid among pregnant mothers attending antenatal care at Apac General Hospital, Apac District.

Methodology:

A hospital-based cross-sectional descriptive study employing quantitative methods was conducted among 32 pregnant mothers attending antenatal care at Apac General Hospital. Participants were selected using simple random sampling. Data were collected using a semi-structured questionnaire, pre-tested for validity and reliability. Analysis was done using SPSS version 27, and findings were presented using tables, graphs, and percentages.

Results:

Most respondents were aged 26–35 years (56%), married (69%), and had primary-level education (46.8%). The majority were self-employed (62.5%) and had 3–4 children (43.7%). Regarding economic factors, 66% reported that folic acid supplements were not accessible in their area of residence. More than half (56.3%) indicated they were only sometimes financially able to purchase supplements, while 18.7% were never able to afford them. Poverty was reported by 65.6% as always influencing utilization, and 59.4% indicated unemployment as a major barrier to consistent use.

Conclusion:

Economic factors such as poverty, unemployment, and limited financial capacity significantly influence the utilization of folic acid among pregnant mothers attending antenatal care at Apac General Hospital.

Recommendation:

The Ministry of Health and health facility managers should ensure a consistent free supply of folic acid supplements at antenatal clinics.

Keywords: *Folic acid utilization, pregnant mothers, antenatal care, economic factors, supplement accessibility, Apac General Hospital.*
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Background.

Poor adherence to haematenics such as iron and folic supplements remains a major nutritional challenge among pregnant women globally (Ridwan and Shafi, 2021). Haematenics are drugs used to raise the number of Red Blood Cells (RBC) and the amount of hemoglobin to a normal level (Cui et al, 2021). Pregnancy is the most crucial nutritionally demanding period of every woman's life, and the high demand of nutrients to deposit energy in the form of new tissue, growth of existing maternal tissues such as breast and uterus, and increased energy requirements for tissue synthesis make pregnant women more vulnerable to increased needs of haematenics such as iron and folic supplements (Yang et al, 2023). According to the World Health Organization (WHO, 2021), iron deficiency remained one of the most dangerous conditions during pregnancy as it increased the risk of having a pre-term, low birth weight baby, having a child with developmental delays, having babies with anemia, needing blood transfusion, as well as post-partum depression, among others. Thus, iron deficiency is a common deficiency globally which affected 53.8 million pregnant women (Passarelli et al, 2022). Globally, especially in developing or least developed countries, iron deficiency among pregnant women remains a major challenge, and the World Health Organization (WHO, 2023) cited iron deficiency as the greatest single threat to the world's public health; thus, improving nutrition as well as ensuring adherence to iron and folic supplements during pregnancy is highly recommended. However, various factors influence

utilization of iron and folic supplementation, including inadequate knowledge about its importance, lack of support, forgetfulness, as well as pill fatigue, among others (Yadav et al, 2019). In Sub-Saharan Africa, adherence to iron and folic supplements remains poor, and many pregnant women consume less than the recommended daily caloric intake, and 5%-20% were underweight (Akibu et al. 2018). In 12/17 African countries, including Nigeria, Togo, and Ethiopia, 10% or more of babies were born with low birth weight. Inadequate micronutrient intake, particularly of iron, vitamin A, zinc, folic acid, riboflavin, iodine, and vitamin E, is also common in Africa, which was attributed to anemia during pregnancy (Getachew et al, 2018). In East African countries, including Kenya, Tanzania, and Rwanda, adherence to iron and folic supplements also remained poor, and this led to a high rate of iron deficiency among pregnant women, which affected18-23% of all pregnancies (Stephen et al. 2018). Poor adherence to iron and folic supplements was attributed to factors including lack of support, knowledge deficits, poverty, as well as shortage or unavailability of supplements, among others (Begum et al.2018). In Uganda, adherence to iron and folic supplements among pregnant women remained a serious challenge, as evidenced by the WHO (2021) nutrition country report, which showed that among pregnant women, 33.4% were moderate to severely underweight, thus increasing the risk of delivering Low Birth Weight (LBW) babies and exposing the unborn children to various complications and challenges. Furthermore, according to the Uganda Demographic and Health Survey (UDHS, 2016), it reported that 46% of pregnant mothers in the country suffered from iron deficiency. This study assessed economic factors influencing the utilization of folic acid among pregnant mothers attending antenatal care at Apac General Hospital, Apac District.

Methodology.

Study design.

The study design was cross-sectional descriptive, employing quantitative data collection methods. It was a cross-sectional type of design because data was obtained at a single point in time, and it was descriptive because it allowed the collection of adequate data in the shortest time possible.

Study setting.

The study was carried out at the ANC Clinic at Apac General Hospital, Apac District. Apac district is bordered by Oyam district to the north east, Kole district to the north, Lira district to the north east, Dokolo district to the east, Amolatar district to the south, Nakasongola district to the south west, and Apac district to the west. Apac hospital is located approximately 62 kilometers (39 miles) by road, southwest of Lira and about 230 kilometers (140 miles) by road, north of Kampala, and its coordinates are 01º 58'42.0" N, 32º32'01.0" E (Latitude: 1.978325; Longitude: 32.533618). The administration comprises the medical superintendent as the overall in-charge, followed by the Hospital Administrator and Principal Nursing Officer as the head of the nursing and midwifery department. Specifically, data was collected from the ANC of the hospital, which has 12staff currently, i.e., 6 registered midwives, 2 enrolled midwives, 3 nursing assistants, and 1 cleaner.

The units operate from Monday to Friday with the following activities being carried out, triaging and booking of mothers, high risk assessment, examination of pregnant mothers, screening and treatment of mothers with HIV/AID and other infections, dispensing of routine prophylactic drugs in pregnancy and referral of mothers with complications, immunization, surgical, laboratory services, nutrition services, family planning services, antenatal and post-natal services, EMTCT and RCT services. The study setting was selected because of the manifestation of the problem on the ground.

Study population

The study included pregnant mothers attending ANC services at Apac General Hospital, Apac District.

Sample size.

The sample size was 32 respondents, all pregnant mothers attending ANC services at Apac General Hospital. In this study, the sample size was calculated using the Yamane formula (1967)

$n = N/1+N(e)^2$

Where n = Desired sample size
N =Study population
e =the margin of error in the calculation

$n = 35/1+35(0.05)^2$
$= 35/1.0875$
$= 32.1$

$= 32$

Therefore, the study population was 32 participants, which was above the minimum number required by UNMEB.

Sampling Procedure.

The study utilized a simple random sampling procedure to select the respondents for the study. In this procedure, the researcher wrote the words YES and NO on pieces of paper, folded them, put them in an enclosed box, shook it, and then invited respondents to participate by picking a paper from the enclosed box. Any respondent who picked a paper from the box with the YES written on it was requested to participate in the study. This continued until the number of respondents to be interviewed for the day was achieved. The research targeted 11 respondents per day for 3 days.

Inclusion Criteria
The study included pregnant mothers attending ANC services at Apac General Hospital who had voluntarily consented to participate and were available at the study.

Exclusion Criteria.
The study excluded all pregnant mothers who were ill and could not participate.

Study Variables.
Independent variables.
Economic factors such as unemployment, poverty, lack of money for transport and health services, among others.

Dependent variables.
Utilization of folic acid supplements among pregnant mothers.

Research instruments.
Data was collected using an approved semi-structured questionnaire, which consisted of both open and closed-ended questions. This tool was selected because not all the study participants were literate and able to read, write, and understand English, and fill in the tool for themselves. The research questionnaire was pre-tested among 3 pregnant mothers at Biashara Health Center II antenatal clinic in the district to enable the researcher to assess its clarity, accuracy, and reliability, and thereafter made any necessary adjustments before applying the questionnaire in the study area.

Data collection procedure.
An approval letter was obtained by the researcher from the principal of Florence Nightingale School of Nursing and Midwifery, and then taken to the facility in charge for approval to carry out the research. The facility administrator introduced the researcher to the person in charge of the ANC clinic. The researcher introduced herself to the respondents and explained the purpose and objectives of the study to them and assured them of maximum confidentiality and privacy of all information given, then asked for their permission to participate in the study by signing the consent form. Each respondent participated in the study for between 15 minutes. The researcher interviewed 11 respondents per day for 3 days.

Data management.
Data management included data editing before leaving the area of study to ensure that there were no mistakes or areas left blank, and any found were corrected before leaving the area of study. Data was stored under lock and key and only accessed by the researcher, while the results were stored on a flash disk for easy retrieval.

Data analysis and presentation.
The collected data were first analyzed using SPSS version 27, after which the researcher presented them in tables, graphs, and pie charts.

Ethical Considerations.
A letter of introduction was obtained from the Principal of Florence Nightingale School of Nursing and Midwifery, introducing the researcher and seeking permission to carry out the study from the administration of Apac General Hospital. After approval and permission were granted, the researcher was introduced to the person in charge of the ANC Clinic, who introduced her to the respondents. Participants were assured of the privacy of identify and maximum confidentiality, and numbers instead of names were used to identify respondents. The study only commenced after the objectives of the study had been well explained to participants, and they had understood and consented to participate in the study.

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Results.

Demographic and social characteristics

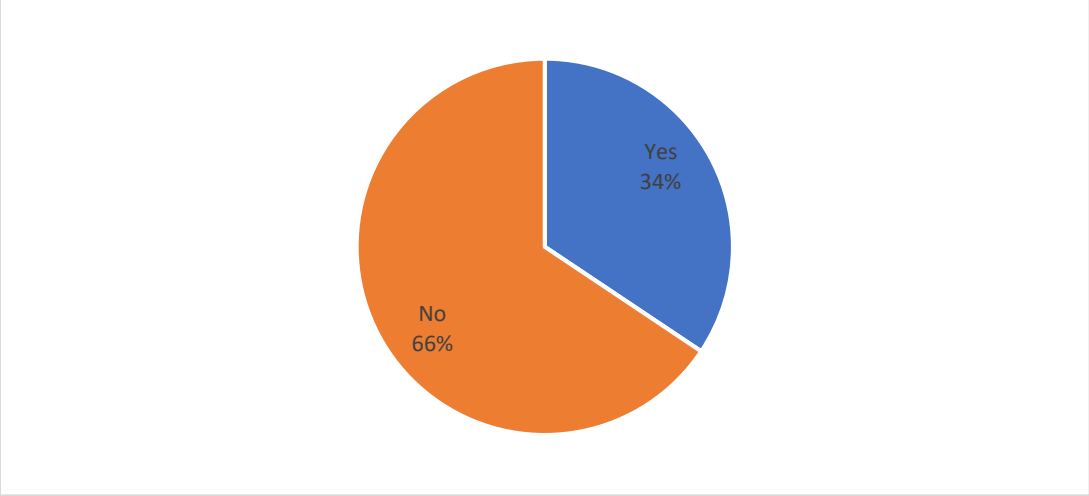
Table 1: Demographic and social characteristics of respondents (n=32)

Variable	Frequency (f)	Percentage (%)
Age		
18 – 25 years	8	25
26 – 35 years	18	56
36 – 47 years	6	19
Marital status		
Single	10	31
Married	22	69
Level of education		
Primary level	15	46.8
Secondary level	8	25
Tertiary level	5	15.7
No formal education	4	12.5
Occupation		
Peasant farmer	8	25
Self employed	20	62.5
Professional	4	12.5
Number of children		
1 – 2 children	8	25
3 – 4 children	14	43.7
5 children and above	10	31.3

From table 1, the majority of the respondents, 18 (56%), were in the age range of 26 – 35 years, followed by 8 (25%) who were 18 – 25 years, while the least were 6 (19%) who were 36 – 47 years. The majority of the respondents, 22 (69%), were married, while the least, 10 (31%), were single. Almost half15 (46.8%) of the respondents attained primary level education, followed by 8 (25%) who attained secondary level education, while the least 4 (5.9%) did not attain any formal education. Almost two-thirds 20 (62.5%) of respondents were self-employed, while the least 4 (12.5%) were professional. A total of 14 (43.7%) respondents had 3 – 4 children, followed by 10 (31.3%) who had 5 children and above, while the least 8 (25%) had 1 – 2 children.

Economic factors influencing the utilization of folic acid by pregnant mothers

Figure 1: Whether iron and folic supplements are accessible in respondents' area of residence (n=32)



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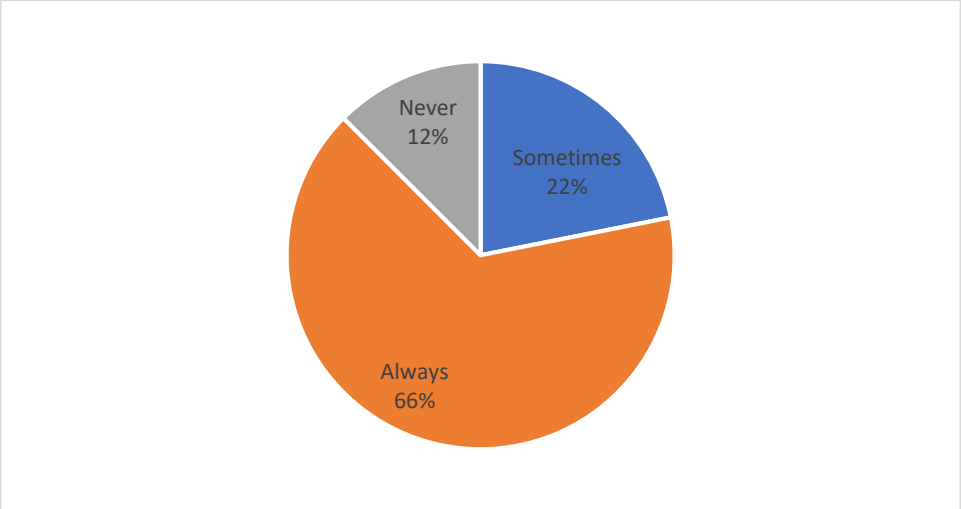
A majority of 21 (66%) of the respondents reported that iron and folic supplements were not accessible in their area of residence, while the least 11 (34%) reported that they were accessible.

Table 2: Whether respondents were financially able to purchase iron and folic supplements when needed(n=32)

Responses	Frequency	Percentage (%)
Sometimes	18	56.3
Always	8	25
Never	6	18.7

The majority, 18 (56.3%) of the respondents reported that they were sometimes financially able to purchase iron and folic supplements when needed, followed by 8 (25%) who reported always, while the least 6 (18.7%) were never able to purchase them.

Figure 2: Whether the low economic status of the family influenced utilization of iron and folic supplements(n=32)



Almost two-thirds 21 (66%) of the respondents reported that the low economic status of the family always influenced utilization of iron and folic supplements, as it leads to inability to afford the supplements, followed by 7 (21.8%) who reported that it sometimes influenced, while the least 4 (12%) reported that it never influenced.

Table 3: Whether poverty influenced utilization of iron and folic supplements (n=32)

Responses	Frequency	Percentage (%)
Sometimes	6	18.8
Always	21	65.6
Never	5	15.6

The majority, 21 (65.6%) of the respondents reported that poverty always influenced utilization of iron and folic supplements, followed by 6 (18.8%) who reported that it sometimes influenced, while the least 5 (15.6%) reported that it never influenced.

Table 4: Whether unemployment influenced utilization of iron and folic supplements (n=32)

Responses	Frequency	Percentage (%)
Sometimes	7	21.8
Always	19	59.4
Never	6	18.8

Results showed that 19 (59.4%) respondents reported that unemployment always influenced utilization of iron and folic supplements, as unemployed respondents did not have money to purchase supplements, followed by 7 (21.8%) reported that it sometimes influenced, while the remaining 6 (18.8%) reported that it never influenced.

Discussion.

Economic factors influencing the utilization of folic acid by pregnant mothers.

The majority of respondents, 21 (66%), reported that iron and folic acid supplements were not accessible in their area of residence, likely due to the poor location of facilities. This finding is consistent with the study by Abeje, Yirgalem, and Fikadu (2023), which assessed iron–folate adherence and associated factors among pregnant women in public health facilities in Durame Town, Southern Ethiopia. Their study found that economic factors, including poverty and the unavailability or inaccessibility of recommended supplements, significantly influenced the utilization of folic acid by pregnant mothers. This highlights the need for improved distribution and accessibility of supplements to ensure pregnant women can adhere to recommended nutritional guidelines. The majority, 18 (56.3%), of the respondents reported that they were sometimes financially unable to purchase iron and folic acid supplements when needed. This inability was likely due to the low socio-economic status of their families, resulting in poverty and an inability to afford the required supplements. This finding is consistent with the study by Gebremichael and Welesamuel (2020), which investigated adherence to iron-folic acid supplements among pregnant mothers attending antenatal care in governmental health institutions in Adwa town, Tigray, Ethiopia. Their cross-sectional study found that economic factors influencing the utilization of folic acid by pregnant mothers included the low economic status of the family, which sometimes led to an inability to purchase adequate amounts of iron and folic acid supplements. This emphasizes the importance of addressing socio-economic barriers to ensure equitable access to essential nutritional supplements for pregnant women. Above half, 19 (59.4%), of the respondents reported that unemployment always influenced their utilization of iron and folic acid supplements, as unemployed individuals lacked the financial means to purchase the supplements. This situation may be attributed to the high scarcity of jobs in the country and the low level of educational attainment among respondents. This finding aligns with Nuwahereza (2023), whose study on factors influencing folic acid and iron supplement use among pregnant women at Hoima Regional Referral Hospital in Uganda documented that economic factors influencing the utilization of folic acid by pregnant mothers included unemployment and poverty, which led to an inability to afford the recommended iron and folic acid supplements. These insights emphasize the need for targeted interventions to address socio-economic challenges and ensure access to essential nutritional supplements for pregnant women, particularly those facing unemployment and poverty. A total of 7 (21.8%) respondents reported being unemployed, likely due to the high scarcity of jobs in the country and the low level of educational attainment among respondents. This finding is consistent with Nuwahereza (2023), whose study on factors influencing folic acid and iron supplement use among pregnant women at Hoima Regional Referral Hospital in Uganda documented those economic factors influencing the utilization of folic acid by pregnant mothers, including unemployment and poverty, leading to an inability to afford the recommended iron and folic acid supplements. This highlights the significant impact of socio-economic factors on access to essential nutritional supplements for pregnant women, underscoring the need for comprehensive interventions to address unemployment and poverty in vulnerable populations.

Conclusion

Economic factors such as poverty, unemployment, and limited financial capacity significantly influence the utilization of folic acid among pregnant mothers attending antenatal care at Apac General Hospital. Poor accessibility of supplements further contributes to inadequate uptake.

Limitations of the study.

The study encountered challenges during data collection due to language barriers.

There was also a challenge of time constraints in the course of the study, balancing the research study and other demanding coursework.

Recommendation

The Ministry of Health and health facility managers should ensure a consistent free supply of folic acid supplements at antenatal clinics. In addition, targeted nutritional education and economic empowerment programs for pregnant mothers should be strengthened to improve adherence to folic acid supplementation during pregnancy.

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List of Abbreviations

ANC – Antenatal Care
AIDS – acquired immunodeficiency syndrome
Apac GH – Apac General Hospital
HIV – Human Immunodeficiency Virus
LBW – Low Birth Weight
MOH – Ministry of Health
RBC – Red Blood Cells
SPSS – Statistical Package for the Social Sciences
UDHS – Uganda Demographic and Health Survey
UNMEB – Uganda Nurses and Midwives Examinations Board
WHO – World Health Organization

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.

Source of funding.

The study was not funded.

Conflict of interest.

There is no conflict of interest.

Availability of data.

Data used in this study are available upon request from the corresponding author.

Authors contribution.

HA designed the study, conducted data collection, cleaned and analyzed data, and drafted the manuscript.
RA supervised all stages of the study from conceptualization of the topic to manuscript writing and submission.
DO supervised all the research process
TMO supervised the research process.
LO supervised the entire research process.

Author's biography.

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