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Original article

KNOWLEDGE AND ATTITUDES OF PREGNANT MOTHERS TOWARDS THE USE OF FOLIC ACID DURING ANTENATAL AT ENTEBBE REGIONAL REFERRAL HOSPITAL, WAKISO DISTRICT: A DESCRIPTIVE CROSS-SECTIONAL STUDY.

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Abstract

Background:

In Uganda, the uptake of folic acid during pregnancy stands at 3.1% among all pregnant women which has led to an estimated 1400 children with spinal bifida annually. The purpose of this study was to assess the knowledge and attitudes of pregnant mothers towards the use of folic acid during antenatal at Entebbe Regional Referral Hospital, Wakiso district.

Methodology:

A descriptive and cross-sectional study design that employed quantitative data collection methods was used. A sample size of 30 respondents was selected using a simple random sampling method and responded to a structured questionnaire. Data were analyzed using Microsoft Excel Programs that presented it in the form of frequency tables, pie charts, and graphs.

Results:

The study results on knowledge revealed that 71.4% had received information about folic acid from health workers, 56.7% did not know the recommended time of starting folic acid, 83.3% knew that they should take one tablet daily and 53.3% knew anemia as a danger of not taking folic acid. Regarding attitude; 43.3% believed that folic acid should not be taken throughout pregnancy, 66.7% disagreed that folic acid can be taken without a prescription, 76.7% did not feel comfortable taking folic acid during pregnancy

Conclusion:

The study concluded that mothers were moderately knowledgeable about folic acid use during pregnancy although they had negative attitudes.

Recommendation:

It is recommended that health education about folic acid use should be strengthened through the media and at the health facility which will aid in improving mothers' knowledge and attitudes.

Keywords: Folic acid, Spinal bifida, Antenatal care, Anaemia, Submitted: 2023-06-09 Accepted: 2023-06-14

1. Background:

Folic acid is a term that refers to a group of water-soluble vitamins of the complex B which are

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naturally found in foods such as leafy green vegetables, citrus fruits, and liver. Folic acid is the synthetic and completely oxidized form of folate and is used in vitamin supplements and fortified cereal products (Silva, Keating, & Pinto, 2017). Folic acid supplementation has long been recommended before and during pregnancy to reduce the risk of neural tube defects (Moser et al., 2019) and 400mcg prevents these birth defects (CDC, 2022).

Globally, the uptake of folic acid reduces the incidences of neutral tube defects by 50% to 70% if consistently taken by pregnant mothers (Abdulmalek, 2017). Women know about supplementation but not consuming folic acid during pregnancy. This leads to a high prevalence of complications in the mother like abortions, toxemia in pregnancy, placenta abruption retarded fetal growth, and fetal complications that arise from the poor development of the neural tube (AlDuraibi & Al-Mutawa, 2020).

In Thailand, the uptake of folic acid intake during the three months before conception and the first trimester of pregnancy is at 7.7%. Despite this low uptake, most mothers possess correct knowledge regarding folic acid having received information from healthcare workers (Kaewpoung S. et al, 2021).

In Africa, the uptake of folic acid is very low for example in Ghana it's below 28.7% yet more than 66.7% of women are aware of it (Mohammed, Kawawa, & Wemakor, 2020) it is evident that most mothers in the region have ever received information about folic acid but they are unaware of the recommended timing of starting to take the supplements and have prevailing negative beliefs about these supplements (Adebo, Dairo, Ndikom, & Adejumo, 2017). These have led to a prevalence of 50.71 per 10,000 neural tube defects and megaloblastic anemia among pregnant mothers (Atlaw et al., 2021). In East Africa, the low uptake of folic acid during pregnancy is responsible for the high prevalence of neural tube defects of 33.3 per 10,000 births (Sentongo P. et al, 2022). The situation has been worsened by poor antenatal attendance creating gaps in maternal awareness regarding these supplements. The government of Kenya instituted the mandatory folic acid fortification of maize and wheat flour to bridge the prevailing gaps (Mgamb E. et- al, 2017). In Tanzania, mothers disregarded the benefits of taking folic acid as they believe that they cannot suffer from any complications. This results in failure to comply with the prescribed schedule of taking folic acid leading to complications like neural tube and maternal defects (Mgonja, 2014).

In Uganda, 42.4% of women who take folic acid, use it in late pregnancy with only 8.1% taking it during the first trimester, (Bannink F. et al, 2015). This is because only 17% of pregnant women attend antenatal care within the first four months of pregnancy missing a golden opportunity to learn and receive folic acid supplements, (Uganda Demographics Health Survey (UDHS), 2016). Others express fear of side effects, inadequate drug supplies, and forgetfulness as the main reasons for missing folic acid, (Kiwanuka T.S. et al, 2017). Furthermore, adherence to folic acid among pregnant women was dependent on knowledge of the pregnant woman regarding folic acid supplementation, gravidity, counseling offered especially on the management of its side effects, forgetfulness, travel, age, literacy, socioeconomic status, cost of tablets, perceived side effects, supplement stock-outs, and clarity on the importance of folic acid supplementation, (Nimwesiga C. et-al, 2021).

It is therefore in this context that the author aims to determine the knowledge and attitude of pregnant mothers towards the use of folic acid during antenatal at Entebbe Regional Referral Hospital, Wakiso district.

2. Methodology:

2.1. Study design and rationale:

The study employed a descriptive cross-sectional design that involved a quantitative method of data collection. The study used a cross–sectional study design because it was cheap and time-saving to use, (Setia, 2016). Quantitative data collection methods were used to collect data that would express in numerical forms.

2.2. Study setting and rationale:

The study was facility-based and was conducted at Entebbe Regional Referral Hospital. It is located in Entebbe municipality, Wakiso district approximately 44 kilometers by road southwest of Mulago National Referral Hospital and Kampala City Centre, (Wikipedia, 2022). The hospital is a public health facility underman-agement of the Ministry of Health with a bed capacity of 200 and 153 health workers comprised of nurses, midwives, medical officers, laboratory technicians, radiographers, and among others. These offer services like pediatrics, radiology, laboratory, maternity, immunization, general surgery, internal medicine, orthopedics, isolation units, and operation rooms. It serves patients from Wakiso, Mpigi, Entebbe town, and neighboring islands in Lake Victoria. The antenatal unit works from Monday to Friday from 8 am – 3 pm with seven (07) midwives working at the unit receiving an average of 90 mothers per day. The hospital receives many mothers who start attending antenatal care in the second trimester implying that they miss the folic acid in the first trimester. Therefore, such an area provided a sufficient number of participants to involve in the study.

2.3. Study population:

The study population was Ugandan pregnant mothers within the first trimester and aged above 18 years. These were attending the antenatal clinic at Entebbe Regional Referral Hospital.

2.4. Sample size determination:

This study enrolled 30 respondents as guided by the UNMEB research guideline that recommends a minimum of 30 respondents (UNMEB, 2009). It was also in consideration of time, logistics, and financial costs.

2.5. Sampling procedure:

The study used a simple random sampling technique. This technique was chosen for this study because it ensured that the sample was representative of the study population as well as reducing bias in the sample. To obtain the participants, the researcher made 60 pieces of similar size and 30 were written on **Q** and the rest **P.** Mothers picked a single paper at random. Those who pick papers with the word **Q** were enrolled in the study. Each day ten respondents were enrolled on each day of data collection for three days.

2.5.1. Inclusion criteria:

The study targeted Ugandan pregnant mothers within the first trimester, English literates, aged 18 years and above who voluntarily consented to participate in the study and were available at the time of data collection.

2.5.2. Exclusion criteria:

The study eliminated mothers who are mentally ill, very sick, non-Ugandans, below the age of 18, and unable to read and write

2.6. Definition of variables:

2.6.1. Independent variables:

These were knowledge and attitudes.

2.6.2. Dependent variable:

This was the use of folic acid during pregnancy.

2.7. Research Instrument:

A structured questionnaire was used to obtain data from the respondents. These were divided into three parts; socio–demographic characteristics, knowledge, and attitudes of pregnant mothers toward the use of folic acid. The questions were closed-ended. The tool was pretested at Katabi Health Centre III to assess its accuracy, consistency, and reliability with necessary adjustments and corrections were made.

2.8. Data Collection Procedures:

The data collection was done by a research assistant because the researcher was staff at the Entebbe Regional Referral Hospital. Following the proposal approval and reception of the letter of introduction, the researcher sought permission to collect the data from the Director of Entebbe Regional Referral Hospital. This was followed by the researcher training the research assistant on the data collection procedures. The research

assistant then introduced himself to the respondent as well as offered explanations on the topic to attain informed consent. Data was collected by the research assistant. This was done using a self-administered structured questionnaire designed by the researcher. These questionnaires were issued to respondents to fill alone. This was done for 3 days with 10 respondents involved on each data collection day.

The targeted population of 30 respondents all turned up and participated in the study over three days.

2.9. Data Management:

To ensure the quality and safety of the collected data, completed questionnaires were checked for accuracy, missing data, and completeness daily after data collection at the end of the day. These were put and sealed in an envelope and these were put in a lockable suitcase. At the time of analysis, the results were further cleaned, coded, and entered into the computer. Soft copies were protected with a personal password known by the researcher only. These will be destroyed after three years of report submission.

2.10. Quality control techniques and Reliability:

The questionnaires were administered by a trained research assistant with a qualification of Diploma in Nursing, who would work under the close supervision of the researcher. The research assistant was trained on skills and techniques for obtaining cooperation and informed consent from the study participants to avoid influencing the outcomes of the study. Questionnaire pretesting was done at Katabi Health Centre III to assess its accuracy, consistency, and reliability after which necessary adjustments and corrections were made. After data collection, questionnaires would be checked daily, for completeness by the researcher

2.11. Data Analysis and presentation:

Data were initially tallied by the researcher. These were entered into the computer using Microsoft Excel 2016 and then exported to Statistical Package for Social Sciences (SPPS) version 2020 which processed and presented the data into frequency tables, figures, graphs, and charts.

2.12. Ethical considerations

The proposal was presented to the Mildmay Uganda School of Nursing and Midwifery for approval. The principal gave the researcher an introductory letter that was used to seek permission from Entebbe Regional Referral Hospital. The study began with the research assistant introducing and explaining the topic and objectives to the respondent. Informed consent was obtained from all the study respondents, and confidentiality was ensured throughout as respondents were not allowed to write their names on the questionnaire but instead used random numbers. Questionnaires were kept safe by the researcher by keeping them under a lockable suite case and electronic data was protected using passwords.

3. Results:

3.1. Table *1* :*Demographic characteristics of respondents*

shows that;

Half of the respondents 15(50%) were aged 20 – 29 years while the least 4(13.3%) were aged 40 – 49 years. The majority of the respondents 19(63.3%) were unemployed while the minority of the respondents 11(36.7%) were employed. Slightly more than three-quarters of respondents 23(76.77%) were married while less than a quarter 7(23.3%) were not married. Nearly half of the respondents 14(46.7%) had a secondary education level while only 2(6.7%) did not attend school. Almost all respondents, 29(96.7%) had attended less than 4 antenatal visits while only 1(3.3%) had attended more than four antenatal visits

3.2. Knowledge of pregnant mothers towards use of folic acid

Among those with information about folic acid use during pregnancy, most 20(71.4%) had obtained information from healthcare workers while only 1(3.6%) received information from a religious leader.

Variable	Response	Frequency (f)	Percentage (%)
Age (years)	<20	5	16.7
	20 – 29	15	50
	30 – 39	6	20
	40 – 49	4	13.3
	Total	**30**	**100**

Table 1 (a) Demographic characteristics of respondents

Table 1: (b) Demographic characteristics of respondents

Employment status	Employed	11	36.7
	Unemployed	19	63.3
	Total	**30**	**100**
Marital status	Not married	7	23.3
	Married	23	76.7
	Total	**30**	**100**
Level of education	Did not attend school	2	6.7
	Primary education	10	33.3
	Secondary education	14	46.7
	Tertiary education	4	13.3
	Total	**30**	**100**
Number of antenatal visits	<4 visits	29	96.7
	>4 visits	1	3.3
	Total	**30**	**100**

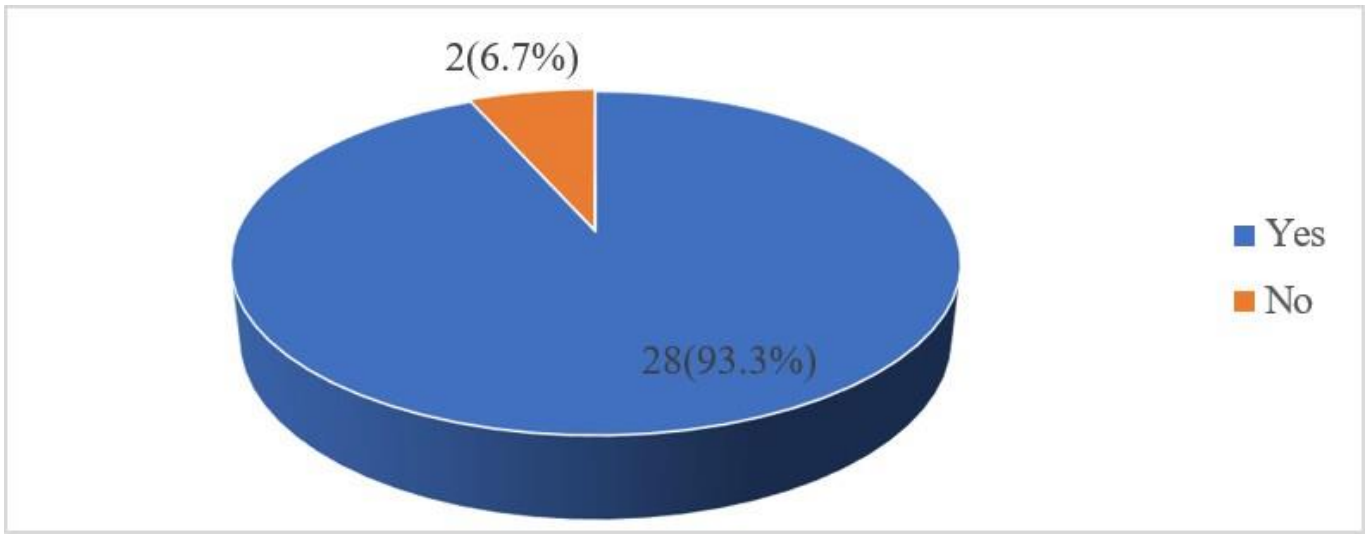

Figure 1: Possession of information about folic acid use during pregnancy.

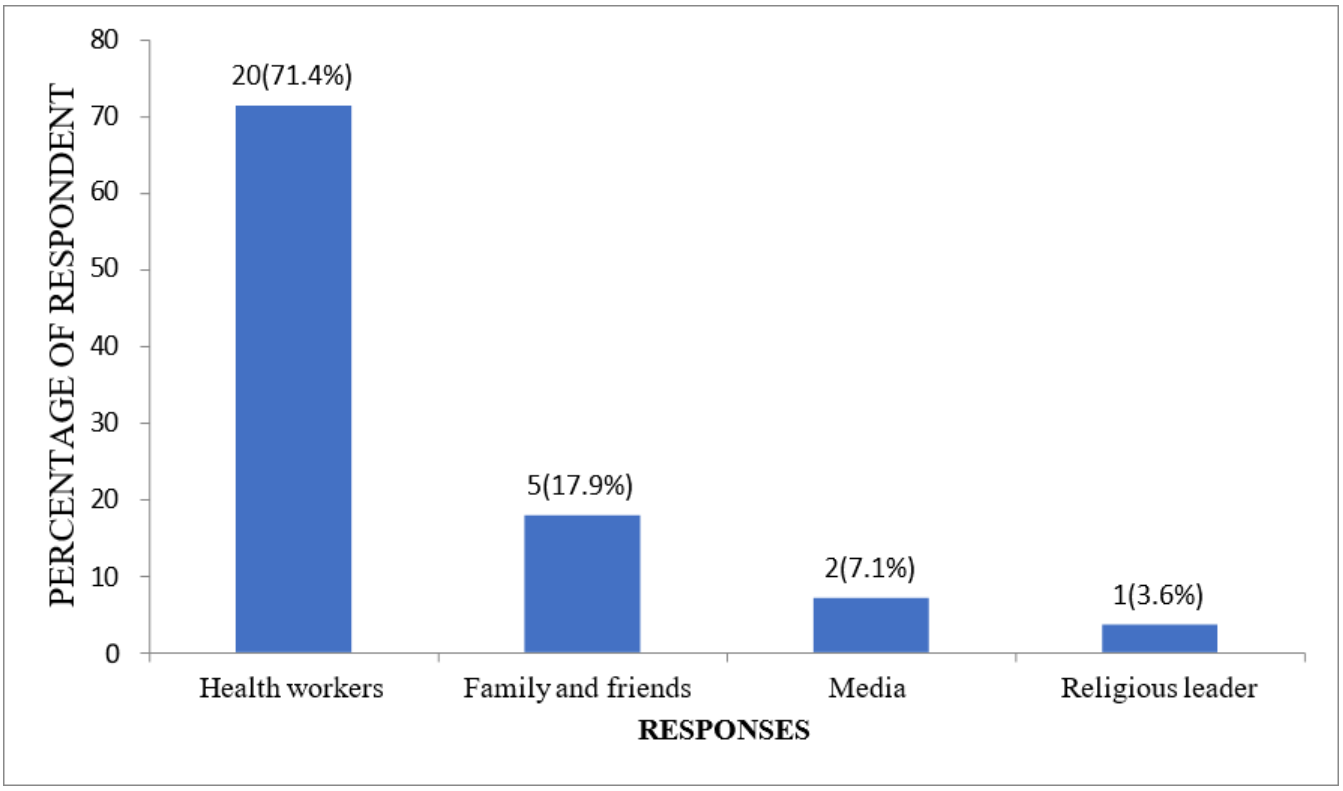

Figure 2: Source of information about folic acid

Table 2: Knowledge of pregnant mothers towards use of folic acid n = 30

Variable	Response	Frequency (f)	Percentage (%)
Importance of taking folic acid during pregnancy	Prevention of birth abnormalities	5	16.7
	Prevention of anemia	16	53.3
	Proper growth and development	5	16.7
	Did not know	4	13.3
	Total	**30**	**100**
Examples of food containing folic acid	Vegetables	21	70
	Animal meat	7	23.3
	Beans	9	30

Table 3: Knowledge of pregnant mothers towards use of folic acid n = 30

(Multiple answers)	Eggs	4	13.3
	Milk	6	20
	Did not know	2	6.7
Recommended time of starting taking folic acid	Before pregnancy	1	3.3
	Upon getting pregnant	7	23.3
	Any time during pregnancy	5	16.7
	Did not know	17	56.7
	Total	**30**	**100**
Recommended duration of taking folic acid during pregnancy	First six months of pregnancy	4	13.3
	First three months of pregnancy	8	26.7
	Throughout pregnancy	8	26.7
	I do not know	10	33.3
	Total	**30**	**100**
	1	25	83.3
	2	2	6.7

Table 4: Knowledge of pregnant mothers towards use of folic acid n = 30

Number of tables that should be taken per day	3	1	3.3
	Did not know	2	6.7
	Total	**30**	**100**
Dangers of not taking folic acid	Anemia	16	53.3
	Birth abnormalities	5	16.7
	Nothing	7	23.3
	Did not know	2	6.7
	Total	**30**	**100**

According to table 2, 3, and 4;

Most of the respondents, 16(53.3%) mentioned that taking folic acid during pregnancy is important in preventing anemia while the least 4(13.3%) mentioned that did not know. Majority of respondents, 21(70%) mention vegetables, 9(30%) mentioned beans, 7(23.3%) mentioned animal meat, 6(20%) mentioned milk and 4(13.3%) mentioned eggs as examples of foods containing folic acid. More than half of the respondents 17(56.7%) did not know the recommended time to start taking folic acid while only 1(3.3%) knew before pregnancy. A third of respondents 10(33.3%) mentioned that did not know the recommended duration of taking folic acid during pregnancy while the least 4(13.3%) mentioned first 6 months of pregnancy. The majority of the respondents, 25(83.3%) knew that they should take one tablet daily while the minority 1(3.3%) reported 3 tablets. Most of the respondents, 16(53.3%) knew anemia as the danger of not taking folic acid during pregnancy while the least

2(6.7%) did not know.

3.3. *Attitudes of pregnant mothers towards use of folic acid*

Figure 3 shows that the majority of the respondents 19(663.3%) were willing to take folic acid during pregnancy while the minority of the respondents 11(36.7%) were not willing to take folic acid during pregnancy.

shows that;

Most of the respondents, 17(56.7%) agreed that folic acid is important during pregnancy while only 3(10%) were not sure. Half of the respondents 15(50%) were not sure that folic acid can prevent birth defects while only 7(23.3%) agreed. Most of the respondents 13(43.3%) disagreed that folic acid should be taken throughout pregnancy while the least 8(26.7%) agreed. The majority of the respondents, 20(66.7%) disagreed that folic acid can be taken without a prescription while the minority of the respondents 3(10%) agreed. Almost all respondents, 27(90%) agreed that foods rich in folic acid can provide adequate folic acid required by the body while only 1(3.3%) disagreed that rich in folic acid can provide adequate folic acid required by the body. More than a third of respondents 11(36.7%) disagreed that folic acid have a bad smell while a few 9(30%) agreed. The majority of respondents 18(60%) felt afraid of the dangerous results of taking folic acid supplements while the minority of the respondents 12(40%) disagreed. Half of the respondents, 15(50%) disagreed with the possibility of suffering from complications of not taking folic acid supplements while the least 4(13.3%) were not sure.Figure4:Feelingcomfortabletotakefolicacidsupplements n = 30

Figure 4 shows that minority of the respondents 7(23.3%) felt comfortable to take folic acid during pregnancy while majority of the respondents 23(76.7%) did not feel comfortable to take folic acid during pregnancy

4. Discussions:

4.1. *Knowledge of pregnant mothers towards use of folic acid:*

The study determined the mothers' knowledge by focusing on whether they had information about folic acid, knowledge of recommended time to start taking, the number of tablets recommended daily, and awareness of the complications of not taking folic acid.

The majority of the respondents 28(93.3%) had information about folic acid use during pregnancy. In line with the findings, where Nusiba (2017) revealed that 83.3% of mothers had heard about folic acid supplements during pregnancy.

Mothers were highly knowledgeable about alternative sources of folic acid with the majority of respondents, 21(70%) mentioning vegetables. Similarly, a study by Sadiq and Hassan (2022) found that 53.6% of mothers knew that green leafy vegetables and citrus fruits are rich in folic acid. Furthermore, a study by Jamil et al, (2017) revealed that 40% of respondents knew green leafy vegetables as alternative sources of folic acid (Jamil et al, 2017).

More than half of the respondents 17(56.7%) did not know the recommended time to start taking folic acid. This could be due to delayed antenatal attendance and low preconception care utilization which creates a gap in mothers' knowledge that folic acid is initiated three mothers before conception. This contradicts a study done by Rehan (2015), which revealed that 68.4%% of participants did not know thatfolic acid should be taken before becoming pregnant (Rehan, Mahmood, & Mazhar, 2015)

The majority of the respondents, 25(83.3%) knew that they should take one tablet daily. The findings are supportive of a study by Medawar et al, (2019) which established that 93.7% knew that folic acid is taken one tablet daily throughout the first trimester. In addition, a study by Oleiwi S.S. et-al, (2021) found that 50% of mothers knew the correct dosage of folic acid supplements for pregnant women.

Most of the respondents, 16(53.3%) knew anemia as the danger of not taking folic acid during

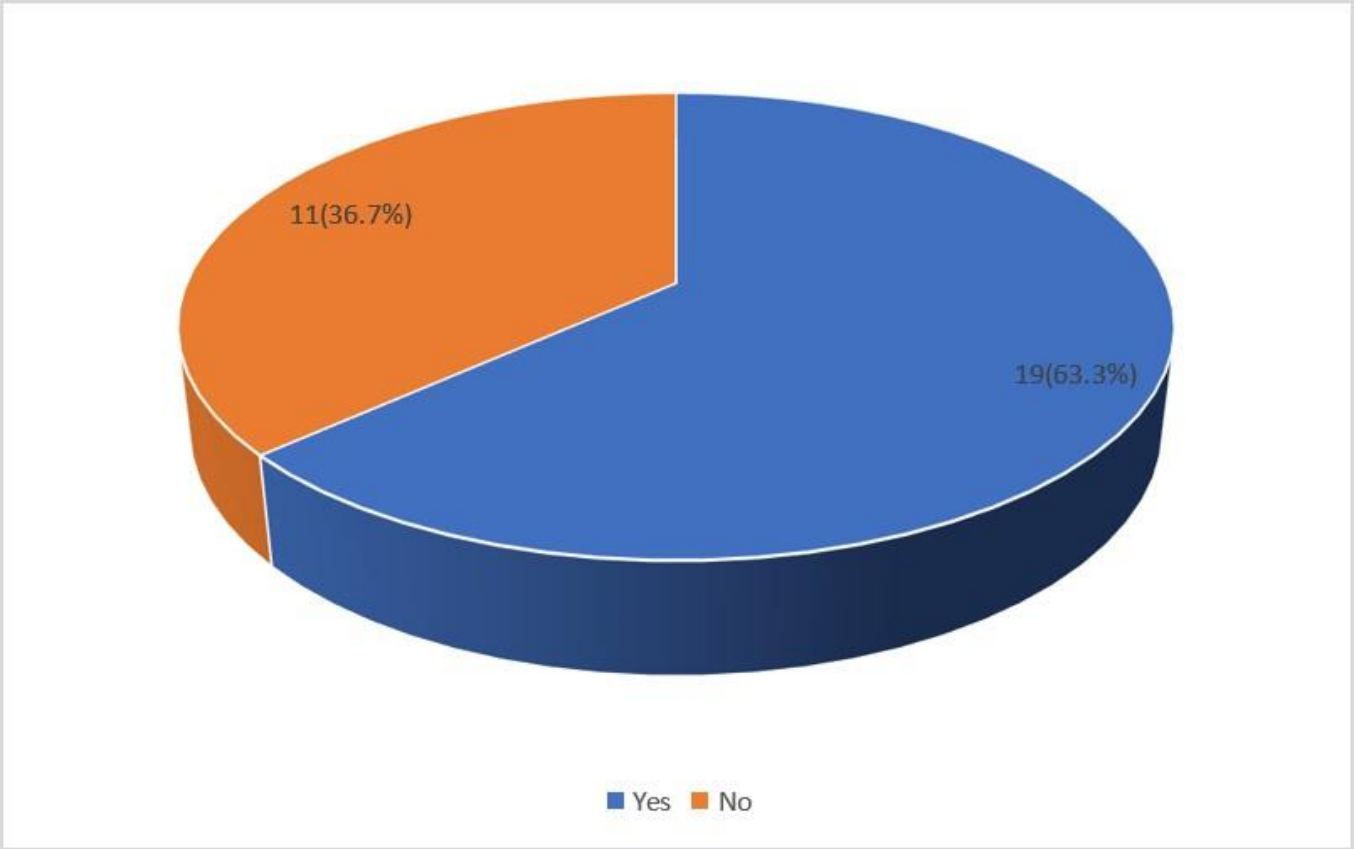

Figure 3: Willingness to take folic acid during pregnancy.

Statement	Variable	Frequency (f)	Percentage (%)
Folic acid is important during pregnancy	Agree	17	56.7
	Not sure	3	10
	Disagree	10	33.3
	Total	**30**	**100**
Folic acid can prevent birth defects	Agree	7	23.3
	Not sure	15	50
	Disagree	8	26.7
	Total	**30**	**100**
Folic acid should be taken throughout pregnancy	Agree	8	26.7
	Not sure	9	30
	Disagree	13	43.3
	Total	**30**	**100**

table 5 Attitudes of pregnant mothers towards use of folic acid n = 30

Folic acid can be taken without prescription	Agree	3	10
	Not sure	7	23.3
	Disagree	20	66.7
	Total	**30**	**100**
Foods rich in folic acid are can provide adequate folic acid required by the body	Agree	27	90
	Not sure	2	6.7
	Disagree	1	3.3
	Total	**30**	**100**
Folic acid tablets have bad smell	Agree	9	30
	Not sure	10	33.3
	Disagree	11	36.7
	Total	**30**	**100**
Feeling afraid of dangerous results of taking folic acid supplement	Agree	18	60
	Not sure	0	0
	Disagree	12	40
	Total	**30**	**100**
Possibility of suffering from complications of not taking folic acid supplement	Agree	11	36.7
	Not sure	4	13.3
	Disagree	15	50
	Total	**30**	**100**

Table 5 Attitudes of pregnant mothers towards use of folic acid n = 30

table 5 Attitudes of pregnant mothers towards use of folic acid n = 30

pregnancy.

4.2. Attitudes of pregnant mothers toward the use of folic acid:

To determine the mothers' attitudes, the following were assessed; whether folic acid can prevent birth defects, whether it is necessary to be taken throughout pregnancy, fears of the dangers of not taking folic acid, and comfortability with taking folic acid supplements.

Half of the respondents 15(50%) were not sure that folic acid can prevent birth defects. The findings are agreeing with a study by Hisam A. et al, (2014) which revealed that the least 59.75% believed that not taking folic acid will cause a deficiency that results in abnormalities in the newborn.

Furthermore, most of the respondents 13(43.3%) believed that folic acid should not be taken throughout pregnancy. The findings are agreeing with a study by Sadiq and Hussein (2022) which established that 80% believed that folic acid should not be taken throughout since occurrence of pregnancy,

The majority of the respondents, 20(66.7%) disagreed that folic acid can be taken without a prescription. In line with the findings, a study by Jamil et al, (2017) revealed that 95.3% believed that they had to wait for a doctor's recommendation.

The majority of respondents 18(60%) felt afraid of the dangerous results of taking folic acid supplements.

The majority of the respondents 23(76.7%) did not feel comfortable taking folic acid during pregnancy.

5. Conclusions:

Mothers were moderately knowledgeable about folic acid use during pregnancy although they had negative attitudes.

Mothers were aware of alternative sources of folic acid, the recommended number of tablets to be taken, and anemia as the danger of not taking folic acid since they had obtained information from health workers. However, they did not know that folic acid is recommended to be started three months before pregnancy.

Negative attitudes were confirmed by disbelief that folic acid can prevent birth defects, the possibility of taking folic acid without a prescription, fear of side effects, and discomfort while taking the medication.

6. Recommendations:

6.1. Ministry of Health:

Health education on the media should be increased to enable mothers to know the recommended time of starting to take folic acid as well as provide visual pictures of the possible complications of not taking folic acid.

6.2. Entebbe Regional Referral Hospital

The hospital management should conduct community outreaches to address the knowledge gaps regarding folic acid which will aid in influencing the uptake of folic acid.

6.3. Health Workers:

Health workers need to encourage mothers to take the medication at bedtime to minimize the possibility of side effects that cause discomfort thereby enhancing the uptake.

Emphasis on the importance of folic acid in preventing birth defects should be strengthened to enable mothers to understand that folic acid is not intended to prevent anemia only but also birth defects.

6.4. Researchers:

Interested academicians are encouraged to conduct related studies about the topic such as factors influencing the uptake of folic acid supplements among pregnant mothers at Entebbe Regional Referral Hospital. This will help increase the amount of information available on the topic.

7. Acknowledgment:

Praise and Glory go to the Almighty God, for He has allowed my existence up to this point, and has enabled me to finish this piece of work. May His name be praised forever! Work of this magnitude, could not have been done on my own, I would like to thank my family, friends, and colleagues/ classmates, especially for their ideas and guidance in the initial stages of the research and throughout the process of writing this report.

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Furthermore, I extend my appreciation to the management of Entebbe Regional Referral Hospital for permitting me to collect data at the facility. I will forever remain indebted to all of you who contributed to this research project.

8. List of Abbreviations:

CDC : Centre for Disease Control and Prevention

RBCs : Red Blood Cells

UBOS : Uganda Bureau of Statistics

UDHS : Uganda Demographics Health Survey

UNMEB : Uganda Nurses and Midwives Examination Board

WHO : World Health Organization

MoH : Ministry of Health

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10. References:

1. Abdulmalek, L. (2017). Knowledge, attitude and practice regarding folic acid among pregnant women in Benghazi, Libya. Ibnosina Journal of Medicine and Biomedical Sciences, 9(03), 67-71.
2. Adebo, O. O., Dairo, D. M., Ndikom, C. M., & Adejumo, P. O. (2017). Knowledge and uptake of folic acid among pregnant women attending a secondary health facility in Nigeria. British Journal of Midwifery, 25(6), 358-364.
3. AlDuraibi, S., & Al-Mutawa, J. (2020). Knowledge and awareness of folic acid usage in Saudi pregnant women in Riyadh city from 2019-2020. Journal of Family Medicine and Primary Care, 9(10), 5158.
4. Atlaw, D., Tekalegn, Y., Sahiledengle, B., Seyoum, K., Solomon, D., Gezahegn, H., . . . Chattu, V. K. (2021). Magnitude and determinants of neural tube defect in Africa: a systematic review and meta-analysis. BMC pregnancy and childbirth, 21(1), 426.
5. Bannink, F., Larok, R., Kirabira, P., Bauwens, L. & Hove, G., (2015). Prevention of spina bifida: folic acid intake during pregnancy in Gulu district, northern Uganda. Pan African Medical Journal; 20:90. [doi: 10.11604/pamj.2015.20.90.5338]CDC (2022). Folic acid. https://www.cdc.gov/ncbddd/folicacid/about.html
6. Hisam, A., Rahman, M.U. & Mashhadi, S.F., (2014). Knowledge, attitude and practice regarding folic acid deficiency; A hidden hunger. Pakistan journal of medical sciences, 30(3):583 - 588
7. Jamil, S., Khan, S. & Sadia, H., (2017). Knowledge, Attitude and practices of folic acid consumption in pregnant women. Int journal of pharmacy sci & scient res, 3(7):74 – 81
8. Kaewpoung S., Deoisres W., Chinsoi C. & Chinsoi C., (2021). Factors Influencing Folic Acid Intakes among Pregnant Women. JHNR [Internet].];37(2):192-20.Available from. https://he01.tci-thaijo.org/index.php/bcnbangkok/article/view/2423
9. Kiwanuka, T.S., Ononge, S., Kiondo, P. & Namusoke, F. (2017). Adherence to iron supplements among women receiving ANC at Mulago National Referral hospital Uganda. Cross sectional study. BMC research notes, 10(510).
10. Medawar, G., Wehbe, T. and Jaoude, E.A., (2019). Awareness and Use of Folic Acid among Women of Childbearing Age. Annals of Global Health, 85(1), p.54. DOI: http://doi.org/10.5334/aogh.2396
11. Mgamb, E., Gura, Z., Wanzala, P., Githuku, J. & Makokha, A., (2017). Folate deficiency and utilization of folic acid fortified flour among pregnant women attending antenatal clinic at Pumwani Maternity Hospital, Kenya, 2015. Pan African Medical Journal, 28(1):8
12. Mohammed, B. S., Kawawa, A. R., & Wemakor, A. (2020). Prevalence and determinants of uptake of folic acid in periconceptional period in a rural lower-middle-income country, Ghana. Basic & Clinical Pharmacology & Toxicology, 126(3), 254-262.
13. Moser, S. S., Rabinovitch, M., Rotem, R., Koren, G., Shalev, V., & Chodick, G. (2019). Parity and the use of folic acid supplementa-

tion during pregnancy. BMJ Nutrition, Prevention & Health, 2(1), 30.

14. Nusiba, I.H.M., (2017). Knowledge, attitude and practice towards folic acid supplementation among pregnant women attending Zungaha health center, South Gezira locality, Gezira state Sudan (2017).
15. Oleiwi, S.S., Mansoor, H.I., Musiub, Z.S. & Hussein, A.S., (2021). Assessment of awareness of folic acid use among pregnant women in primary health care center. Systematic Reviews in Pharmacy, 12(3).
16. Rehan, M., Mahmood, N. & Mazhar, S.B., (2015). Knowledge, attitude and practices regarding periconceptional folic acid supplementation in a tertiary care hospital, Annual of Pakistan Inst Medical Science, 11(4):172 – 175
17. Sadiq, Z.A. & Hussein, H.K., (2022). Assessment of knowledge and attitudes among pregnant women towards folic acid intake during pregnancy in a sample of women attending primary health care centers in Babylon province. Medical Journal of Babylon, 19(2):142 – 151