OPEN ACCESS

Saudi Journal of Medicine
Abbreviated Key Title: Saudi J Med
ISSN 2518-3389 (Print) | ISSN 2518-3397 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Knowledge, Attitude and Practices (KAP) of Preconceptional Folic Acid supplementation among pregnant women (18-45years) attending antenatal clinic in Alex Ekwueme Federal University Teaching hospital Abakaliki, Ebonyi State, Nigeria

Chinemerem Henry Ugo[2*], Etiedu Christopher Ekara[1], Ozioma Chinwendu Chukwudi[1], Michael Chijioke Chiwenite[3], Robert Chibueze Osuji[4], Gladys Nnanna[3], Uju Maryanne Onuorah[2]

[1]Department of Nutrition and Dietetics, Alex-Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State, Nigeria
[2]Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria
[3]Department of Human Nutrition and Dietetics, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria
[4]Department of Nutrition and Dietetics, Imo State University Owerri, Imo State, Nigeria

DOI: 10.36348/sjm.2022.v07i09.006 | **Received:** 20.08.2022 | **Accepted:** 16.09.2022 | **Published:** 22.09.2022

***Corresponding Author:** Chinemerem Henry Ugo
Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria

Abstract

Background: Folate deficiency is associated with poor pregnancy outcomes and is one of the most common vitamin deficiencies in women, especially those of reproductive age. Folic acid intake prior to, and during, the first months of pregnancy significantly reduces the risk of fetal neural tube defects. Maternal folate status has been associated with other adverse pregnancy outcomes such as preeclampsia, malformations (orofacial clefts, Neural tube defects, anencephaly and encephalocele resulting from incomplete neural tube closure during early embryogenesis), spontaneous abortion, fetal death, fetal growth restriction and preterm delivery. ***Methods:*** The study embraced a cross-sectional study that assess Knowledge, Attitude and Practice of preconceptional folic acid supplementation among pregnant women (18-45years) attending antenatal clinic in Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State. 152 women attending antenatal clinics in Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State were interviewed using structured questionnaire. Data collected were analyzed using SPSS version 21 for frequency and percentage at $P < 0.05$ significance level. ***Results:*** 98.7% of the participants had heard about folic acid, but an analysis of data shows that 26.6% of them knew that folic acid is a vitamin. In addition, very few (29.6%) knew that folic acid could prevent neural tube defects. The main source of information about folic acid supplementation among the surveyed women were through the health workers. Incidence of at least one episode of adverse pregnancy outcome was noted in about 35.5% of the population under study though a majority indicated the form for their loss were miscarriage and stillbirth. Finding showed that 37.5% of the respondent claimed to have used folic acid before pregnancy while 40.1% of the women in this study were aware of the right time to start using folic acid. 46% of the women took folic acid during Antenatal care and their reason were attributed to late presentation for antenatal care, delayed prescription of the folic acid for women during pregnancy, unplanned pregnancy while others claimed they are getting enough folate from food. Approximately 40.8% of the respondents had started supplementation on antenatal booking and from analysis of data on the preferred/normal booking time of the respondents it shows that a high percentage of them attended antenatal from the third month of pregnancy this shows that the majority of the respondents started supplementation too late which is inconsistent with the ideal time to start folic acid supplementation in prevention of neural tube defect. In this study it has been revealed that 48% of the respondents could identify green leafy vegetable as the only source of folate in local foods and 0.7% could identify other food sources like legumes and fruits as sources of folate. ***Conclusion:*** There is a low overall level of awareness of folic acid among pregnant women including lack of understanding of its natural sources, usefulness in preventing Neural Tube Defects and preconceptional intake recommendation. Health education regarding the preconceptional use of folic acid among women of reproductive age is recommended.

Keywords: Folate deficiency, Preconceptional, Pregnancy, Supplementation, Neural tube defects, Antenatal, Health education.

INTRODUCTION

Preconception support is an important component of antenatal care because it helps to reduce potential risk, maternal and child mortality, birth defects in infants such as neural tube defect, low birth weight baby, preterm and post-term baby, as well as promote healthy pregnancy, fetal outcome, and improve pregnancy readiness (WHO, 2013). The importance of preconception care and support has gained greater recognition with the World Health Organization (WHO) Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013–2020 (Ojukwu *et al*., 2016). In 2010, 287,000 women died from long-term disability caused by pregnancy and childbirth. During the same year, globally, 3.1 million newborn babies and 14.5 million premature babies died in their first month of life, while 2.7 million were stillborn (Dean *et al*., 2014). Lack of preconception care and low folic acid supplementation for women in developing countries might increase the risk of neural tube defect in newborns by fourfold compared with developed countries, where taking folic acid reduces neural tube defect up to 80% (Cherian *et al*., 2005). In both developed and developing countries, women's awareness of the need for periconceptional folic acid supplements, as well as compliance with recommendations, have not been well studied. Women's awareness of folate remains low in the United Kingdom, United States, Israel, and Glasgow (Amitai *et al*., 2004), with the exception of Canada (Bener, Al-Maadid, Al-Bast, & Al-Marri, 2006).

Folate deficiency can result in a variety of undesirable health issues, though severe deficiency is not apparent until months after dietary intake has been reduced and the folate storage has been depleted. Macrocytic anemia, weakness and confusion, memory deficits, shortness of breath, peripheral neuropathy, pregnancy complications, and depression are all common side effects of folate deficiency (Weinstein *et al*., 2003).

Preconception care knowledge can be gained through experience or education. Education can be obtained from a variety of sources, including books, newspapers, radio, channels, television, the Internet, and consultations with medical staff (Kasim, Draman, Abdul Kadir, & Muhamad, 2016). According to studies, women who receive prenatal care have more knowledge and frequently engage in risk-reduction behaviors. Folic acid use during the recommended period rises among women who receive pre-pregnancy care (Elsinga *et al*., 2008). Study have found that women who received a preconception care intervention knew more about preconception care and that even brief counseling could improve their knowledge of general and personal preconception health risks (Dunlop, Logue, Thorne, & Badal, 2013).

In Nigeria, not much is known about the knowledge, attitude and practices of preconception care, although these factors are known to contribute to good pregnancy outcomes. Thus, the objective of this study was to determine the knowledge, attitude and practice of preconceptional folic acid supplementation among pregnant women (18-45years) attending antenatal clinic at Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State.

MATERIALS AND METHODS

2.1 Study design

The study employed descriptive cross-sectional study design, which collected information on certain variables among pregnant women (18- 45years) attending antenatal care clinic of Alex Ekwueme Federal University Teaching Hospital Abakaliki about preconceptional folic acid supplementation and accruing health benefits.

2.2 Study Area

The study was conducted in the antenatal clinic of Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State. Alex Ekwueme Federal University Teaching Hospital Abakaliki (AE-FUTHA) is a Federal University Teaching Hospital located in Abakaliki, Ebonyi State. It was created by upgrading the former Federal Medical Center Abakaliki to a teaching Hospital in December 2011. Ebonyi State was created on 1st October 1996. It is made up of thirteen local government areas. The state is also made up of three senatorial zones namely: Ebonyi north (Abakaliki, Ebonyi, Izzi, and Ohaukwu LGA), Ebonyi central (Ezza north, Ezza south, Ikwo, and Ishielu LGA); and Ebonyi south (Afikpo north, Afikpo south, Ohaozara, Onicha, and Ivo LGA) with an estimated population of about 2.6 million people (Ebonyi State Independent Electoral Commission [EBSIEC], 2006).

2.3 Study Population

The population used for the study were pregnant women (≤ 24 weeks gestation) attending antenatal care at Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi state, Nigeria.

2.4 Sampling and Sampling Techniques

2.4.1 Sample Size Determination

The determination of sample size was based on the single population proportion formula. Population proportion of 10% was considered and sample size was estimated using the Cochran formula (Naing, Winn and Rusli, 2006) as follows:

$$N = \frac{z^2pq}{D^2}$$

Where:
N = Required Sample Size
Z = Confidence level at 95% (Standard value is 1.96)
D = Desired Level of precision (5%) = 0.05
P=10% = (0.1)

q=1-p = 0.9

$$N = \frac{1.96 \times 1.96 \times 0.1 \times 0.9}{0.05^2} = 138$$

The minimum number of pregnant women to be use in this study is 138, but to cover up for contingency 10% was added to cater for non-response and possible drop-out = 13.8.

Hence the sample size = 138 + 13.8 = 152.

2.4.2 Sampling Method/Procedure

Systematic random sampling was used for the study. Sampling interval was obtained as follows; Sampling interval = Expected number of pregnant women 18 - 45years older with a gestational age of ≤ 24 weeks who will have come to AE-FUTHA within the data collection period (3 months).

The expected number of pregnant women 18 - 45years with a gestational age of ≤ 24 weeks who had come to AE-FUTHA for antenatal care was estimated by: Reviewing the antenatal clinic records at AE-FUTHA to obtain the number of women 18 – 45years who came to AE-FUTHA for the first visit with a gestational age of ≤ 24 weeks for the preceding 3 months. After determining the sampling interval, a random number was picked using the computer to identify the first study participant to be included in the study. The subsequent participants were then selected based on the sampling interval. If an eligible person declined to participate in the study, the next eligible person was picked.

2.4.3 Inclusion and Exclusion criteria

Inclusion Criteria include:

a) Pregnant women having ≤ 24 weeks gestation.
b) 18 - 45years of age who came to Alex Ekwueme Federal University Teaching Hospital Abakaliki for Antenatal Care.
c) Willingness to participate in the study.

Exclusion Criteria include:

a) Those who declined to participate in the study,
b) Those who were sick or have other complications
c) Those who had a gestation age > 24 weeks
d) Those whose age are below 18years or above 45years.

2.5 Preliminary Activities

2.5.1 Group talk/orientation

A talk was given to orient the subjects on the modalities of the study before commencement. This is to ensure total compliance during the study. The study protocol was carefully explained to the subjects before they signed a written informed consent.

2.5.2 Informed consent and ethical approval

Ethical approval was obtained from the Research Ethics Committee of AE-FUTHA on 25th September 2020 with REC approval number as AE-FUTHA/REC/VOL3/2020/073. Permission was also obtained from the Head of Department, Nutrition and Dietetics and head of unit Antenatal Clinic AE-FUTHA. Informed consent was obtained from participants and all participants' information was kept confidential. No undue harm was inflicted on participants and no cost was incurred by participants.

2.6 Data Collection

This is a cross-sectional descriptive survey. The study population were pregnant women (18-45years) attending Antenatal care clinic in AE-FUTHA. The research instrument for data collection was validated questionnaire. It was designed to assess the knowledge, attitude and practice of preconceptionally folic acid supplement among pregnant women (18-45years). It was divided into five sections.

Section A: Social demographic characteristics
Section B: Knowledge about folic acid and the effect of its deficiencies
Section C: Attitude towards folate supplementation
Section D: Practice of folic acid supplementation
Section E: Knowledge about the local food sources of folate.

2.8 Data analysis

All data were entered and analyzed using Statistical Package for Service solution (SPSS) version 21.0. Data obtained were analyzed using descriptive statistics such as frequency, and percentages. Level of significance was set at $P < 0.05$.

RESULTS

3.1 SECTION A: SOCIAL DEMOGRAPHIC CHARACTERISTICS

Table 3.1 below shows that more than half (56.5%) of the respondents were between the ages of 25- 31years and the lowest percentage 3.9% were in the 39-45 years group. The respondents whose ages were between 32 and 38 years had the second highest percentage of 29.6% while respondents between 18 and 24 years were 9.9%.

Table 3.1: Age distribution of the respondents

Age in years	Frequency (N)	Percentage (%)
18-24	15	9.9
25-31	86	56.6
32-38	45	29.6
39-45	6	3.9
Total	152	100.0

Table 3.2 shows that a majority of the respondents attending antenatal clinics were married (92.8%), widowed was 0.7% and single respondents

had 6.6%. The values were much lower than the married respondents.

Table 3.2: Marital status of respondents

Marital status	Frequency (N)	Percentage (%)
Single	10	6.6
Married	141	92.8
Widowed	1	0.7
Total	152	100.0

Obstetric details of the respondents

Table 3.3 shows parity of the respondents. The zero parity groups had a value of 32.2%, this value was much higher than those of other parity groups. The frequency decreased as the parity increased. Parity greater than four (4) had the least value at 2.0% in the antenatal clinic.

Table 3.3: Parity (number of children)

Parity	Frequency (N)	Percentage (%)
0	49	32.2
1	43	28.3
2	35	23.0
3	18	11.8
4	4	2.6
>4	3	2.0
Total	152	100.0

Table 3.4 shows the gravidarum of the respondents, the gravidarum of the respondents followed the same trend as the parity. The frequency decreased as the gravidarum (number of pregnancies) increased although Gravidarum 2 had the highest percentage 31.6% while gravidarum > 4 had 4.6% in the antenatal clinic.

Table 3.4: Gravidarum (number of pregnancies)

Gravidarum	Frequency (N)	Percentage (%)
1	40	26.3
2	48	31.6
3	37	24.3
4	20	13.2
>4	7	4.6
Total	152	100.0

Educational, occupational, and income levels of the respondents

Table 3.5 shows the educational status of the respondents. The respondents who had some form of post-secondary qualification, B.Sc., B.A., HND or their equivalent (higher institution) had the highest percentage of 65.1%. The lowest percentage of 0.7% had no formal education. The respondents within primary and secondary level had percentage of 2.0% and 32.2% respectively.

Table 3.5: Educational level of the respondents

Educational level	Frequency (N)	Percentage (%)
Primary level	3	2.0
Secondary level	49	32.2
Higher institution	99	65.1
No formal education	1	0.7
Total	152	100.0

Table 3.6 shows occupational spread of the respondents. About 31.6% of the respondents were business women whereas 27% were civil servants. About 24.3% fall under others these were housewives, applicants, and students while 17.1% were artisans which has the lowest percentage.

Table 3.6: Occupation of the respondents

Occupation	Frequency (N)	Percentage (%)
Civil servant	41	27.0
Business woman	48	31.6
Artisan	26	17.1
Other specify	37	24.3
Total	152	100.0

Table 3.7 shows estimated monthly income of the respondents in naira. Analysis of their estimated monthly income in naira. The highest percentage of respondents at 37.5% earned between 7,500 and 45,000 naira monthly whereas those that earn between 45,000 and 60,000 were 7.9 which had the lowest percentage. Those that earned less than 7,500 and greater than 60,000 naira monthly had values of 31.6% and 23.0% respectively.

Table 3.7: Estimated monthly income of the respondents

Income	Frequency (N)	Percentage (%)
<7,500	48	31.6
7,500-45,000	57	37.5
45,000-60,000	12	7.9
>60,000	35	23.0
Total	152	100.0

3.2 Section B: Knowledge about Folic Acid and the Effects of Folic Acid Deficiencies

Table 3.8 shows the number of respondents that indicated that they had heard of folic acid. The majority of the respondents 98.7% knew what folic acid was while about 1.3% does not know about folic acid.

Table 3.8: The number of respondents who have heard about folic acid

Folic acid	Frequency (N)	Percentage (%)
Yes	150	98.7
No	2	1.3
Total	152	100.0

Table 3.9 shows the number of respondents who actually knew folic acid as a vitamin, 26.6% had accurate knowledge whereas 58.7% of the respondent thought it was a mineral supplement. About 14.7% had no idea whatsoever if folic acid was a vitamin or a mineral supplement.

Table 3.9: Accurate knowledge of folic acid among the respondents

knowledge of folic acid	Frequency (N)	Percentage (%)
Vitamin	40	26.6
Mineral supplement	88	58.7
No idea	22	14.7
Total	150	100.0

Table 3.10 shows the number of respondents that knew the importance of folic acid (FA) in pregnancy. A majority of the respondents 44.1% and 19.1 % (about 63.2%) gave incorrect answers as regards the role of folic acid in pregnancy. About 29.6% respondents stated correctly that folic acid could prevent neural tube defects while 7.2% had no idea of the importance of folic acid in pregnancy.

Table 3.10: Respondents knowledge of folic acid importance in pregnancy

Variables	Frequency (N)	Percentage (%)
Healthy pregnancy	67	44.1
Strong baby	29	19.1
Prevent neural tube defect	45	29.6
No idea	11	7.2
Total	152	100.0

Table 3.11 shows number of respondents which knew the recommended dose of folic acid. About 90.8% of the respondents claim to know the recommended dose while 9.2% of the respondents have no knowledge of recommended dose.

Table 3.11: Knowledge of recommended dose of folic acid

Recommended dose	Frequency (N)	Percentage (%)
Yes	138	90.8
No	14	9.2
Total	152	100.0

Table 3.12 shows the number of respondents that knew the recommended daily intake of folic acid. More than two thirds of the respondents 90.1% knew the recommended daily intake of folic acid for preconceptionally supplementation purpose. About 7.9% and 1.3% and thought is 2tabs and 3tabs/ day are recommended doses respectively while 0.7% had no idea whatsoever of the recommended daily intake of folic acid.

Table 3.12: Recommended daily intake of folic acid.

Dose	Frequency (N)	Percentage (%)
1tab/day	137	90.1
2tabs/day	12	7.9
3tabs/day	2	1.3
Others specify	1	0.7
Total	152	100.0

Table 3.13 shows the source of information on folic acid for the respondents who knew what folic acid was. The highest percentage of respondents 82.2% claimed they obtained their information about folic acid usage and importance in pregnancy from health professionals. While 11.2% obtained the information from friends and relations. About 2.6% and 3.9% respectively got information from mass media and the most unpopular information source.

Table 3.13; Respondents sources of information about folic acid

Information	Frequency (N)	Percentage (%)
Health professionals	125	82.2
Mass media	4	2.6
Friends &relations	17	11.2
Other means	6	3.9
Total	152	100.0

Table 3.14 shows the Respondents knowledge of the need of folic acid supplementation before pregnancy. About 86.8% agreed that there is need to take folic acid in pre-pregnancy while 13.2% disagreed on the need to take folic acid in pre-pregnancy.

Table 3.14: Respondents knowledge of the need of folic acid supplementation before pregnancy

Pre-pregnancy Folic acid supplementation	Frequency (N)	Percentage (%)
Yes	132	86.8
No	20	13.2
Total	152	100.0

Table 3.15 show the respondent knowledge on importance of Folic acid supplementation during first trimester. About 94.7% agreed that folic acid supplementation is important in first trimester while 5.3% disagreed.

Table 3.15: Respondents knowledge on importance Folic acid supplementation during first trimester

First trimester Folic acid supplementation	Frequency (N)	Percentage (%)
Yes	144	94.7
No	8	5.3
Total	152	100.0

Table 3.16 show the respondent knowledge on folic acid deficiency leads to abnormality in new born. About 61.8% agreed that it can lead to abnormality in newborn while 38.2 did not agree that it can cause an abnormality in newborn.

Table 3.16: Respondent knowledge on folic acid deficiency leads to abnormality in new born

Folic acid deficiency leads to abnormality in new born	Frequency (N)	Percentage (%)
Yes	94	61.8
No	58	38.2
Total	152	100.0

3.3 SECTION C: ATITUDE TOWARDS FOLIC ACID SUPPLEMENTATION

Table 17 shows pregnancy outcome of the respondent. About 64.5% had positive outcome during pregnancy while about 35.5% had bad pregnancy outcome.

Table 17: Respondents who have you ever had any bad pregnancy outcome

Pregnancy outcome	Frequency (N)	Percentage (%)
Yes	54	35.5
No	98	64.5
Total	152	100.0

Table 18 shows the type of bad pregnancy outcome 54 pregnant women (n=54 out of 152). Among the 54 pregnant women who had bad pregnancy outcome, miscarriage has the highest percentage 72.2% (n=39 out of 54) while stillbirth was about 24.1% (n=13 out of 54). Only 3.7% (n=2 out of 54) of pregnant women had a newborn with neural tube defect.

Table 18: The respondents type of bad pregnancy outcome

Type of bad pregnancy outcome	Frequency (N)	Percentage (%)
Miscarriage	39	72.2
Stillbirth	13	24.1
Neural tube defect	2	3.7
Total	54	100.0

Table 19 shows respondent attitude towards alcohol consumption. Most of the respondent do not consume alcohol, about 81.6% while a lower percentage (18.4%) of the respondent consumes alcohol.

Table 19: Respondents attitude towards alcohol consumption

Alcohol consumption	Frequency (N)	Percentage (%)
Yes	28	18.4
No	124	81.6
Total	152	100.0

Table 20 shows how often 28 pregnant women consume alcohol (n=28 out of 152). Most of the respondent consume it once in a month which is about 50% (n=14 out of 28) while respondent that consume it daily and occasionally had the same percentage 17.9% (n=5 out of 28). About 14.3% (n = 4 out of 28) consumes it once in a week which has the lowest percentage.

Table 20: Respondents alcohol consumption frequency

Alcohol consumption Frequency	Frequency (N)	Percentage (%)
Daily	5	17.9
Once in a week	4	14.3
Once in a month	14	50.0
Other specify	5	17.9
Total	28	100.0

Table 21 shows if smell of folic acid nauseate the respondent or not during intake. About 65.8% of the respondent are not nauseated by the smell of folic acid while 34.2% are nauseated by its smell.

Table 21: If smell of folic acid nauseates the respondent or not during intake

Folic acid as a nauseant	Frequency (N)	Percentage (%)
Yes	52	34.2
No	100	65.8
Total	152	100.0

Table 22 shows the attitude of respondent during intake of folic acid. Majority of the respondent (65.8%) take folic acid with water without closing their nostril while the lowest percentage 2.0% take it with soft drink. About 26.3% take it with water while closing their nostril, 3.3% put it inside a bolus of swallow and 2.6% others specified that they lick or chew it.

Table 22: How the respondents take or swallow folic acid

How respondent take or swallow folic acid	Frequency (N)	Percentage (%)
With water without closing my nostril	100	65.8
With water while closing my nostril	40	26.3
With soft drink	3	2.0
Put inside a bolus of swallow	5	3.3
Others specify	4	2.6
Total	152	100.0

Table 23 shows respondent preference other folic acid containing supplement to folic acid tablets. About 56.6% of the do not prefer folic acid containing supplement whereas 43.4% prefers it.

Table 23: Respondent preference other folic acid containing supplement to folic acid tablets

Preference of folic acid containing supplement over folic acid tablet	Frequency (N)	Percentage (%)
Yes	66	43.4
No	86	56.6
Total	152	100.0

Table 24 shows the supplement that the respondent took (n=66 out of 152). About 83.3% (n=55 out of 66) use pregnancy care while 16.7 % (n=11 out 66) use well woman supplement.

Table 24: Use of other supplement that contain folic acid

Supplement	Frequency (N)	Percentage (%)
Well woman	11	16.7
Pregnancy care	55	83.3
Total	66	100.0

3.4 SECTION D: PRACTICE OF FOLIC ACID SUPPLEMENTATION

Table 25 shows the number of respondents that took folic acid supplements. A majority of the respondents 62.5% did not take folic acid before pregnancy while 37.5% took folic acid supplements before their current pregnancy.

Table 25: The respondents practice of folic acid supplementation before pregnancy

Preconceptional folic acid supplement	Frequency (N)	Percentage (%)
Yes	57	37.5
No	95	62.5
Total	152	100.0

Table 26 shows folate supplementation habit of the respondents. A majority of the respondents who took folic acid supplements in the current pregnancy, 99.3% while 0.7% did not take it.

Table 26: Respondents folic acid intake in the current pregnancy

Folic acid supplementation in pregnancy	Frequency (N)	Percentage (%)
Yes	151	99.3
No	1	0.7
Total	152	100.0

Table 27 shows if the respondents take folic acid religiously. Majority of the respondents (57.2%) claimed to have taken folic acid religiously while 42.8% did not take it religiously.

Table 27: Respondents daily intake of folic acid

Variable	Frequency (N)	Percentage (%)
Yes	87	57.2
No	65	42.8
Total	152	100.0

Table 28 shows the number of respondents that knew the ideal time to initiate folic acid supplementation in pregnancy. About 40.1% respondents knew correctly that supplementation should commence prior to conception while 34.2% thought is first month of pregnancy. The respondents with lowest percentage (9.9%) had no idea of the correct time to initiate folate supplementation whereas 15.8% thought is when they start antenatal.

Table 28: The ideal time for folic acid supplementation

Ideal time to take folic acid	Frequency (N)	Percentage (%)
Before you miss a period	61	40.1
First month of pregnancy	52	34.2
whenever you start antenatal	24	15.8
No idea	15	9.9
Total	152	100.0

Table 29 shows the actual number of respondents that practiced folic acid supplementation. About 46.1% of the respondents started folate supplementation on booking, 31.6% practiced when they missed their period, 20.4% took it before their last period and 2% did not take it.

Tables 29: Respondents timing for folic acid supplementation

Time that the pregnant normally start taking folic acid	Frequency (N)	Percentage (%)
Before your last period	31	20.4
once you miss a period	48	31.6
when you start antenatal	70	46.1
Never	3	2.0
Total	152	100.0

Table 30 the reasons indicated by the respondents (n=121 out of 152) who did not take folic acid supplements before pregnancy. A majority (36.4%) of them reported that they did not take folic acid because they did not know it was important while 29.8% said that it was not prescribed by the doctor. About 15.7% said they get enough folate from food sources whereas 14.9% has unplanned pregnancy. The minority (3.3%) said that they were not sick.

Table 30: Respondents reasons for late supplementation

Reasons for not supplementing before conception	Frequency (N)	Percentage (%)
Unplanned pregnancy	18	14.9
Not prescribed by doctor	36	29.8
Get enough folates from food	19	15.7
Did not know it was important	44	36.4
not sick	4	3.3
Total	121	100.0

Table 31 shows the time when respondents would normally present for ante-natal booking. About one third (40.8%) of respondents preferred third month as their booking time. Other that specified option (9.9%) appeared to be the least popular booking time. None of the respondents preferred seventh month as booking time. Respondents that booked at 1month, 2months and 4months had close values of 17.8%, 14.5% and 17.1% respectively.

Table 31: Shows the time when respondents would normally present for ante-natal booking.

Time for antenatal	Frequency	Percentage
1Month	27	17.8
2Months	22	14.5
3Months	62	40.8
4Months	26	17.1
others specify	15	9.9
Total	152	100.0

3.5 SECTION E: KNOWLEDGE ABOUT THE LOCAL FOOD SOURCES OF FOLATE

Table 32 shows knowledge about folate content of locally available foods. Majority (64.5) of the respondents claimed that they know that food contain folate whereas 35.5% disagreed.

Table 32: Knowledge about folate content of locally available food

Variable	Frequency (N)	Percentage (%)
Yes	98	64.5
No	54	35.5
Total	152	100.0

Table 33 shows the number of respondents that knew the common food sources of folate. One half of the respondents (48.0%) knew correctly that green leafy vegetables contain folate than other food sources while 7.2% knew that orange is a dense source of folate. About one third of the respondents, 36.8.0% had no idea of folate food sources. Minorities respondents 0.7% all the food that contain folate accurately.

Table 33: Shows the number of respondents that knew the common food sources of folate

Variable	Frequency (N)	Percentage (%)
Green leafy vegetable	73	48.0
Yam	2	1.3
Oranges	11	7.2
No idea	56	36.8
Green leafy veg. and orange	8	5.3
orange and beans	1	0.7
beans, orange and green leafy veg	1	0.7
Total	152	100.0

Table 34 shows the respondent knowledge on whether cooking make folate available for body use. About 38.8% of the respondents have no idea, 36.8% agreed and 24.3% disagreed that cooking makes folate available for body use.

Table 34: The respondent's knowledge on whether cooking make folate available for body use

Variable	Frequency (N)	Percentage (%)
Yes	56	36.8
No	37	24.3
No idea	59	38.8
Total	152	100.0

Table 35 show the respondent knowledge on whether excessive cooking reduces the nutritional value of folates. About 44.7% of the respondents agreed, 34.9% had no idea and 20.4% disagreed that excessive cooking reduces the nutritional value of folates.

Table 35: Respondents knowledge on whether excessive cooking reduce the nutritional value of folates

Variables	Frequency (N)	Percentage (%)
Yes	68	44.7
No	31	20.4
No idea	53	34.9
Total	152	100.0

4.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

4.1 DISCUSSION

The results showed that more than half of the respondents were between 25 and 31 years of age while a minor portion was between the ages of 39 and 45. This was expected as it mirrors the peak period in a woman's reproductive cycle, as compared favorably with those of similar study; 64.6% at 20-29 years old (Al-Hossani, Abouzied, Salah, Farag and Fawzy, 2010). An analysis of the respondents' obstetric details shows that 32.2% of the respondents were at parity 0, meaning that they had no biological children physically present in their homes.

The high percentage of women (65.1%) that had some form of higher educational qualification was not surprising with evidence that the study was carried out in Urban setting (Abakaliki metropolis). Approximately 31.6% of these employed respondents earning less than 7,500 Naira a month, suggesting, that a sizeable portion of the respondents were poor according to the WHO standard of earning less than a dollar daily. Though, income of their partners may need to be assessed before conclusions can be properly drawn. The results also indicate that more work need to be done by the government regarding women empowerment.

About 98.7% of the respondents indicated that they have heard of folic acid, but an analysis of data shows that approximately 26.6% of them knew that folic acid is a vitamin. Comparing these results to that of similar studies that have investigated knowledge and practice of folic acid supplementation among the reproductive age group shows that, this study was consistent with the study done by Adebo *et al*., (2017) in Ibadan, Nigeria where 100% of the respondent know about folic acid. This study finding is higher than studies in Libya (Abdulmalek, 2017), Saudi Arabia (Al-Hakeem, 2012), India (Deepti *et al*., 2013) and Iran (Riazi *et al*., 2012) that revealed awareness levels of 73%, 58%, 36.6% and 26.4% respectively. The high levels of awareness in this study could be because the study was carried out in a tertiary health facility situated in the urban area, where most of the respondents were literate and had been informed about folic acid in the hospital. In addition, very few (29.6%) knew that folic acid could prevent neural tube defects, which is inconsistent with the study by the following authors; Al-Hakeem (2012) in Saudi Arabia (50.2%), Liang *et al*., (2011) in China (49.7%) and Anzaku (2013) in Nigeria (49.7%) showing a higher value of respondents who had knowledge of folate in the prevention of neural tube defects. Unlike the studies by Enuku and Adeyemo (2019) in Nigeria (15.4%) and Adebo *et al*., (2017) in Ibadan Nigeria (11.8%) showing that the value (29.6%) being the percentage of respondent with knowledge of folic acid in prevention of neural tube defect was higher when compared. Such low level of awareness of the role of folic acid in the prevention of neural tube defect is not surprising, as most the women in this study had knowledge of folic acid in their first visit to antenatal clinic. This highlights the pressing need for public health education targeting women of reproductive age on the importance of folic acid being a reproductive health-promoting supplement. Health workers therefore need to explain to women the importance of folic acid as this would appear to improve knowledge. Knowledge of correct dosage for supplementation was practically present at 90.1%, as most of the respondent information came from the health professionals which is line with the study done by Abdulmalek, (2017) in Libya.

The main source of information about folic acid among the surveyed women was through the health workers. This finding is similar to those reported in other studies (Jou *et al*., 2010; Al-Hakeem, 2012; Riazi *et al*., 2012; Deepti *et al*., 2013; Anzaku, 2013; Lawal and Adeleye, 2014). This was in contrast to the findings from Albader *et al*., (2019) where the media was the main source of information about folic acid for non-pregnant women hence more efforts are, needed to promote awareness about folic acid through the media because of its wider coverage among the population. Young female will benefit from media information and use the knowledge positively when married and this will contribute to the overall increase in the correct use of folic acid for the primary prevention of NTDs among women of reproductive age in the community. Majority of the respondents (86.8%) knew that there is a need to take folic acid before pregnancy which is contrast with the Study done by Koirala and Pokharel (2018) which reveals that 65.6% respondent had poor knowledge about preconceptional folic acid supplementation. Incidence of at least one episode of adverse pregnancy outcome was noted in about 35.5% of the population under study though a majority indicated the form for their loss were miscarriage and stillbirth. In this study majority of the respondent are not nauseated by smell of folic acid while other respondent preferred folic acid containing supplements. Finding showed that 37.5% of the respondent claimed to have used folic acid before pregnancy. This study showed that majority (99.3%) of women were using folic acid supplements in their pregnancy. This was in consistent with other studies by Adebo *et al*., (2017), Auriel *et al*., (2011), Abdullahi *et al*., (2014) and Lauria *et al*., (2014) respectively.

This was higher than Study done by Koirala and Pokharel (2018) which revealed that 87.2% had taken folic acid at some point of pregnancy. About 99.3% reported that they took folic acid in the present pregnancy but only 57.2% take it daily. A small percentage (20.4%) of the respondents had supplemented preconceptionally this was in line study done by Koirala and Pokharel (2018) where 17% supplemented preconceptionally. Similarly, another study on folic acid and knowledge about women in

reproductive age found that a majority of the women of reproductive age did not practice preconceptional folic acid supplementation due to lack of information (Akkoca *et al*., 2014). Findings showed 40.1% of the women in this study were aware of the right time to start using folic acid, this was higher than 22.7%, 23.6% 29.2%, and 34.6% reported by Adebo *et al*., (2017), Anzaku (2013) and, Lawal and Adeleye (2014) and Liang *et al*., (2011) respectively. This is however lower than 80.5% reported by Lauria *et al*., (2014). About 46% of the women who took folic acid took it during Antenatal care, and their reason were attributed to late presentation for antenatal care, delayed prescription of the folic acid for women during pregnancy, unplanned pregnancy while other claimed they are getting enough folate from food. Approximately 40.8% of the respondents had started supplementation on antenatal booking and from analysis of data on the preferred/normal booking time of the respondents it shows that a high percentage of them attended antenatal from the third month of pregnancy. This shows that the majority of the respondents started supplementation too late which is inconsistent with the ideal time to start folic acid supplementation in prevention of neural tube defect as stated by Prakash (2008).

In this study it has been revealed that 48% of the respondents could identify green leafy vegetable as the only source of folate in local foods and 0.7% could identify other food sources like legumes and fruits as sources of folate. This information tally with the study by Abdulmalek, 2017 showing that only 12% of the respondents were able to identify natural food sources rich in folate.

Low levels of knowledge of the natural sources of folic acid have also been reported in Thailand, and Turkey (32.4% and 39.3% respectively) by Nawapun and Phupong (2007) and Baykan *et al*., (2011) respectively.

4.2 CONCLUSION

Finding from this study revealed that a large percentage of the women had limited information on the use and importance of folate in pregnancy. Strategies need to be developed to raise awareness among women, particularly adolescents who are more likely to have unplanned pregnancies, about the benefits of folate supplementation, as well as to engage and encourage men to care for and support their wives during pregnancy. The role of health and nutrition education in improving preconception folate supplementation also cannot be overemphasized.

The low preconceptional folic acid intake rates among pregnant women were indeed a serious cause of concern, highlighting the need for Antenatal and population health promotion programs, as well as media coverage, to educate women of childbearing age about the importance of folic acid, its natural sources, and the need for preconceptional intake to prevent neural tube defects. This young female if educated or enlightened will benefit and also pass the knowledge to the unborn generation when married thereby contributing to the overall increase in the knowledge, attitude and correct use of folic acid for the primary prevention of Neural Tube Defect among women of reproductive age in the community. Positive attitude towards retaking folic acid supplements in subsequent pregnancies and recommending it to other women who wish to become pregnant open more opportunities for continuous education and eradication of deformities as it relates to preconception and pregnancy.

4.3 RECOMMENDATIONS

- There should be a wider health education coverage in urban and rural areas on the need for preconceptional and conception folate supplementation. This could be done at different organization such as school, churches, mosque, and community health centres as well as at antenatal setting.
- Training is also suggested as reminders to Nurses and Midwives on the benefits of preconceptional and conceptional folate supplementation. And also training and retraining of the Traditional Birth Attendants (TBA) is also a vital medium of passing the message of the benefits of preconceptional and conceptional folate supplementation since most of the rural women prefer home delivery.
- Government regulations and policies should be available to support preconceptional and conceptional folate supplementation at every level of health services from primary to tertiary health services.
- Women empowerment is recommended for sustainable food security and available of folate rich of foods in homes since women play a vital role in home management and reproduction.
- In the absence of fortification programmes, further research is needed to identify successful approaches to increase intake of folic acid.
- Further study on preconception folate supplementation should be done in rural area or primary health setting to ascertain their knowledge Attitude and practice.

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