

**ST PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE**

**DEPARTMENT OF MEDICINE**



**ASSESSMENT OF MATERNAL KNOWLEDGE, ATTITUDE AND PRACTICE  
TOWARDS PRECONCEPTIONAL FOLIC ACID SUPPLEMENTATION  
ATTENDING ANC CLINIC ST PAUL HOSPITAL MILLENNIUM MEDICAL  
COLLEGE FROM APRIL 1,2017- MAY 1,2017 G.C**

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**JANUARY, 2016**

**ADDIS ABEBA, ETHIOPIA**

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MEDICAL COLLEGE FROM APRIL 1,2017- MAY 1,2017 G.C**

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ADDIS ABEBA, ETHIOPIA

APPROVED BY THE BOARD OF EXAMINATION

This research by Tigist belachew is accepted in its present form by the board of  
examiners as satisfying research for qualifying degree of medicine

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## Acronyms/Abbreviations

ANC - Antenatal Care

DNA - Deoxyribonucleic Acid

EDHS - Ethiopian Demographic Health Survey

EFMoH- Ethiopian Federal Ministry of Health

FMOH – Federal Ministry of Health

KAP - Knowledge, Attitude and Practice

NTDs - Neural Tube Defects

SPSS- Statistical Packaging for Social Science

WHO - World Health Organization

MDG -millennium development goals

## Summary

**Background** Incidences of NTD has become Four times higher in developing countries which can be decreased by 80% with maternal folic acid supplement. Health authorities in many countries around the World recommend women of reproductive age to use folic acid supplements before and early in pregnancy to reduce the risk of having a baby with a neural tube defect [1,3].

**Objective:** To assess knowledge, attitude and practice of folic acid supplementation and among women visiting st paul Millennium Medical College ANC clinic.

**Method:** - A cross-sectional study was carried out to determine knowledge, attitude, and practice of folic acid use. Data was collected using structured questionnaire. And the data analysis was made using SPSS version 22.0. The result of collected data was expressed and interpreted using appropriate tables and figures. Finally based on the results which was found appropriate conclusions and possible recommendation will be provided. Time line: study was conducted from April 1<sup>st</sup>-may1st 2017GC with estimated total budget of 2038 birr.

**Result:** the mean age of the respondent were 21 year .37(9.8%) were illiterate and 341(90.2%) were literate. Only 10.9% of respondents has good knowledge about folic acid use and 15(3.9%) of them knows it should be taken 2month prconceptionaly.41 (85.4%) have positive attitude toward folic acid use during pregnancy. Only three in hundreds take folic acid pre conceptionally

**Conclusion and Recommendations :** The knowledge, attitude and practices of folic acid use at pre pregnancy age is low in the study area. The government should focus on giving education thru health professional and mass Medias.

**Key words:** knowledge, attitude, practice, preconception

# 1. INTRODUCTION

## 1.1 Background

Vitamin B9 (folic acid and folate) is essential to numerous bodily functions. The human body needs folate to synthesize, repair, and methylate DNA as well as to act as a cofactor in certain biological reactions. It is especially important in aiding rapid cell division and growth, such as in infancy and pregnancy. Maternal folate deficiency is associated with neural tube defects (NTDs).[1]

Globally, an estimated two billion people are affected by deficiencies of essential vitamins and minerals, collectively known as hidden hunger, which negatively impact on health and economic development. The unified global efforts to mitigate the hidden hunger, in populations around the world are crucial to the achievement of most of the Millennium Development Goals (MDGs). A number of countries in sub-Saharan Africa, as well as India and Afghanistan, had an alarmingly high level of hidden hunger, with stunting, iron deficiency anemia, and vitamin A deficiency all being highly prevalent. In 36 countries, deficiencies of micronutrients were responsible for 1.5-12% of the total DALYs.[2]

According to a research, there is significant dose--response relationship between folate intake and birth weight. This relationship indicated 2% increase in birth weight for every two-fold increase in folate intake.[3] Less folic intake during pregnancy may be associated with autism in newborn infants.[4] Preliminary research has shown a possible link between folic acid and Down syndrome.[5] Folic acid supplements consumed before and during pregnancy may reduce risk of heart defects in infants.[6]

The worldwide incidence of neural tube defects (NTDs) ranges from 1.0 to 10.0 per 1,000 births with almost equal frequencies between two major categories: anencephaly and spina bifida (SB).[7] In USA, the numbers of annual NTD-affected birth defects were calculated from a 24-month pre-fortification period (1995-1996) and a 24-month post-fortification period (1999-2000).[8] An estimated 2,490 spina bifida--affected pregnancies and 1,640 anencephaly affected pregnancies occurred annually before fortification of food with folic acid, after fortification, an

estimated 1,640 spina bifida--affected pregnancies and 1,380 anencephaly-affected pregnancies occurred, for an annual average of 3,020 NTD-affected pregnancies (a 27% decline). According to a study done in Pakistan prevalence of anencephaly was 11.33/1000 births and that of spina bifida was 0.72/1000 births.[9]According to a survey the pregnant anemic women visiting tertiary care hospital of Rawalpindi had iron (57%); folate (20%), followed by combined iron folate (19%) and cobalamine (4%) deficiency during first antenatal visit.[10]

Adequate folate intake during the preconception period (which is the time right before and just after a woman becomes pregnant) helps protect against a number of congenital malformations, including neural tube defects (which are the most notable birth defects that occur from folate deficiency).[11]

## 1.2 Statement of problem

The worldwide incidence of neural tube defects (NTDs) ranges from 1.0 to 10.0 per 1,000 births with almost equal frequencies between two major categories: anencephaly and spinal bifida (SB). An estimated 2,490 spinal bifida-affected pregnancies and 1,640 anencephaly affected pregnancies occurred annually before fortification of food with folic acid, after fortification, an estimated 1,640 spinal bifida-affected pregnancies and 1,380 anencephaly- affected pregnancies occurred, for an annual average of 3,020 NTD-affected pregnancies (a 27% decline). According to a research, there is significant dose--response relationship between folate intake and birth weight. This relationship indicated 2% increase in birth weight for every two-fold increase in folate intake. Less folic intake during pregnancy may be associated with autism in newborn infants. Preliminary research has shown a possible link between folic acid and Down syndrome. Folic acid supplements consumed before and during pregnancy may reduce risk of heart defects in infants.

The incidence of neural tube defects (NTDs) in developing countries has been reported to be up to four-fold higher than in developed ones [12]. The life-long medical and socio-economic consequences of NTDs in affected children are equally known to be worse in low-resource settings. In developing countries, the absence of pre-conception counseling coupled with sub-optimal antenatal care services is a barrier to reducing the incidence of NTDs [13]. In order to identify targets for primary preventive strategies, we aimed to ascertain factors associated with periconceptional intake of FA as well as the level of the knowledge of its role in the prevention of birth defects in selected reproductively active women. It was also hoped that this would give insights into the possible predictors of late commencement of FA by this study population.

It was essential to first assess the KAP (i.e. benefits, requirement in pregnancy, use of folic acid supplements, folic acid intake in pregnancy) of this important micronutrient i.e. folic acid and then spread the word regarding its importance in pre- conception and antenatal period as to prevent the most preventable disease i.e. newborn abnormality. The necessity of this study was to create awareness regarding importance of this micronutrient deficiency (folic acid) especially

in the most vulnerable group that are pregnant women visiting St Paul's Millennium Medical College. Association between the education level and knowledge of folic acid intake was also analyzed.

## 1.2 Justification of the Study

In Ethiopia antenatal care (ANC) coverage by skilled provider in 2011 was 34%. Now-a-days, the Ethiopian government's commitment is above all times to improve the maternal and perinatal health in particular (19). Many researches and projects focused on maternal health are common, but little attention is given to maternal nutrition in the study area [20]. It is clear that maternal nutrition is crucial in reducing Maternal and infant morbidity and mortality but no study has been conducted to assess nutritional knowledge, attitude and practices of pregnant mothers in the study area. So this study is aimed to assess the Knowledge, Attitude and Practices (KAP) among pregnant women attending ANC clinics in St Paul millennium medical college hospitals, Addis Ababa, Ethiopia regarding the meaning, the importance practices of taking folic acid supplementation.. Besides the health providers and Ethiopian Ministry of Health, others who are interested in the field of maternal health in general will benefit from this research

## 1.3 Literature review

In the United States, Sharp, et al. (2009) reported that women of childbearing age who were from low socioeconomic backgrounds knew little about the importance of the recommended daily intake of folic acid and only 63 (25%) of the total number of women surveyed (N=250) reported consuming folic acid supplements daily(14). Similarly, a New Zealand study identified that knowledge and understanding about recommended folic acid intake among women of child bearing age was relatively poor, with only 64% of the 1000 women surveyed being aware that pregnant women needed to take recommended doses of folic acid(15). In Hail region-Saudi

Arabia among 300 married women, 91.0% of the subjects were aware of folic acid, 81.0% knew that folic acid could prevent neural tube defects and 84.0% of the subjects took folic acid prior or during a certain stage of pregnancy (16).

A study which was conducted at Military Hospital and Combined Hospital Rawalpindi, Pakistan, among 400 married reproductive age women in 2013 revealed that 53.25% of them knew folic acid intake is important, 40.25% thought that folic acid deficiency among pregnant women results in abnormality in new born. Regarding the rich source of folic acid 60.25% of women had idea and from the total 23.25% were regularly having green vegetables and fruits. 51.25% of respondents had received folic acid supplementation during pregnancy. (17).

Research from New South Wales, Australia in 2013 had explained 81.6% (N=152) used supplements during their pregnancy; 67.7% took supplement brands which contained both folic acid and iodine in varying dosages. 36% of them started taking supplements before their pregnancy. The supplement use was significantly higher among pregnant women who were in the highest household income category. 75.6% of pregnant women understood that neural tube defects (NTDs) is the health problem associated with inadequate intake of folic acid and 39.5% of them knew the health problems associated with inadequate iodine intake. Half of the pregnant women had limited awareness about good sources of folic acid and iodine. Educated women from higher socio-economic backgrounds had better knowledge about the importance of folic acid and iodine in pregnancy (18). Community based cross sectional study design was employed in Mecha district from June 25 - July 15/2013. In this study only 20.4% of participants were compliant with iron folate supplementation. Although a study and a study done in rural Bangladesh shows that knowledge of mothers about anemia and IFA was very low and the level of women's knowledge has increased after awareness-raising activities are done. Women who have provided the awareness creation were more likely to adhered Iron and folate compared to those who did not receive.

In multivariable analysis, age of the mother, educational status of the mother, knowledge of anemia and iron folate tablets, and history of anemia during pregnancy were significantly associated with compliance to iron folate supplementation. Belief that too many tablets would harm the baby and fear of side effects were the major reasons given for noncompliance.

## 2. Objectives

### 2.1 General objective

The general objective of the study is to assess maternal knowledge, attitude and practice toward folic acid supplementation among women visiting st Paul Millennium Medical College ANC follow up center

### 2.2. Specific objectives

- To measure the knowledge of women in child bearing age on the use of folic acid supplement
- To assess the attitude toward folic acid supplement
- To assess the folic acid use among the pregnant women

### 3. Methods and Materials

#### 3.1. Study Area and Study Period

Addis Ababa is the capital city of Ethiopia. It has a population of 3,384,569 according to the 2007 population census. This study will be conducted in St. Paul's hospital millennium medical college Gynecologic and obstetrics department. The hospital was built by emperor Haile Selassie I in 1969 G.C. The medical college was formed in 2007 G.C. To meet the United Nations Millennium Development Goals which aim to reduce by three quarters the number of maternal deaths and reduce by two-thirds the number of child deaths in low and middle income countries, an OBGYN residency training program at St. Paul Hospital and Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia was launched on July 1st, 2012. Seven residents were accepted into the program.

Data was collected from April 1st 2017-May 1st 2017 G.C.

#### 3.2. Study Design

A cross sectional study was conducted using the structured interviewer-administered questionnaire.

#### 3.3. Source Population

All pregnant women visiting SPHMMC ANC follow up clinic

#### 3.4. Study Population

All women included based on the sampling technique.

##### 3.4.1. Inclusion criteria

All pregnant women visiting SPHMMC ANC follow up clinic and who are willing to participate in the study

##### 3.4.2. Exclusion criteria

- Clients that are too ill to participate in an interview
- Women who are not willing to participate

### 3.5. Sample Size and Sampling Technique

Using WHO sample size calculator, 378 sample size was calculated with confidence level of 95%, anticipated population proportion (p) of 0.2 and absolute precision (d) of 0.04.

$$n = \frac{Z^2 P(1 - P)}{d^2}, \text{ then } n_f = \frac{n}{1 + n/N}$$

Where n = sample size

$n_f$  = final sample size

N = estimated size of woman visiting ANC within one month (5840).

Z = tabulated value of Z at 95 % confidence interval (1.96)

P = anticipated proportion of population

d = margin of error to be tolerated (0.04)

$$n = \frac{(1.96)^2 0.2(0.8)}{(0.04)^2}$$

$$n = 384.16$$

$$n_f = 360.22$$

The non-response rate could be as high as 5%, so the total final sample size will be :-

The total  $n_f = n_f + \text{non response rate}$

$$= 360 + (360 \times 0.05)$$

$$= 378$$

**Sampling Technique:** the sample (n) was calculated by dividing the estimated total number of women visiting St Paul's Millennium Medical ANC clinic within one month by the sample size so that every nth (15<sup>th</sup>) women will be interviewed. The first woman will be chosen randomly.

### 3.5. Variables

Independent variable

Age  
Educational status  
Occupation of the mother  
Occupation of the husband  
Number of pregnancy  
Number of delivery

#### Dependent variable

Knowledge, Attitude & practice on folic acid supplement

#### 3.6. Data collection process

Interviewer administered structured questionnaire was used with modification from other researches as presented in literature review. The questionnaire was prepared originally in English and then translated to Amharic language and then back to English. Before beginning the actual study the questionnaire and the whole method was pretested on some professionals to find for any errors, if found, to be corrected.

A total of 4 interns who worked at the ANC OPD were interview the women.

#### 3.7. Operational definition

**Knowledge:** it refers to an individual's understanding to ward folic acid supplementation. From the study. Knowledgeable: 7 questions were asked for the knowledge part, each correct answer were given one mark and no mark were given for wrong answer and women with mean score for knowledge questions of 0.5 is considered to be knowledgeable.

**Attitude:** Positive or negative response about folate use during pregnancy (5)

**Practice:** Prevalence of folic acid use in pre-pregnancy period and the 1st trimester of pregnancy (5)

#### 3.8. Data Processing and Analysis

The data was analyzed by using SPSS 20 and it was presented using narratives, figures and tables

### 3.9. Ethical consideration

Ethical clearance was obtained from st Pauls millennium medical college, gynecology and obstetrics department. Permission was obtained from the college academic provost and department head, and informed consent was obtained from individual respondent. Questionnaire were analyzed, and the respondents were told that they have the right to be involved or not to be involved in the study and that noninvolvement otherwise will not affect the clinical care they might receive

### 3.10. Dissemination of finding

The result of this research will be submitted to public health department and the result will be presented with seminar. Then, finally the result will be presented to the medical college community.

## RESULT

### I sociodemographic characteristics

A total of 378 participants were interviewed. The minimum age was 16 and maximum was 45. the mean age is 21. To analyze the number of participants according to their age, 311(82.3%) of them were below age of 30 years and only 67(16.9%) were with age group of more than 30. Regarding marital status, most of the respondents 366(96.6%) were married. With regard to their religion 208(55%) of them were orthodox followed by Muslim 129(34.1%). The minimum family size is one and the maximum family is eight, most of them are three 152(40.2%).

The majority of respondent have completed primary school 267(70.6%) and no formal learning 37(9.8%). and with regard to their husband educational level 160(42.3%) completed secondary school, only 11(2.9%) have no formal learning.

Regarding their occupation, 201(53.2%) are housewife, 177(46.%) are employed (self or government) and their husband occupation most of them are government employee 153(40.5%). The minimum monthly income is 300 and the maximum is 20000 with the average income being 2650 ETB.

**Table 1. Sociodemographic characteristics of the mother attending ANC follow up in sphmmc from April 1, 2017-may 1,2017**

| <b>Variable</b>               | <b>frequency</b> | <b>Percent</b> |
|-------------------------------|------------------|----------------|
| <b>Age</b>                    |                  |                |
| 16-20                         | 14               | 3.7            |
| 21-30                         | 297              | 78.6           |
| 31-40                         | 60               | 15.9           |
| >40                           | 7                | 1.9            |
| <b>Age at first pregnancy</b> |                  |                |
| 16-20                         | 102              | 27             |
| 21-30                         | 264              | 69.8           |
| 31-40                         | 12               | 3.2            |
| <b>Marital status</b>         |                  |                |
| Single                        | 4                | 1.1            |
| Married                       | 366              | 96.8           |
| Divorced                      | 4                | 1.1            |
| Widowed                       | 5                | 1              |
| <b>Religion</b>               |                  |                |
| Orthodox                      | 208              | 55             |
| Muslim                        | 129              | 34.1           |
| Catholic                      | 4                | 1.1            |
| Protestant                    | 37               | 9.8            |
| <b>Ethnicity</b>              |                  |                |
| Oromo                         | 122              | 32.3           |
| Gurage                        | 99               | 26.2           |

|                                   |     |      |
|-----------------------------------|-----|------|
| Amhara                            | 89  | 23.5 |
| Tigre                             | 14  | 3.7  |
| Other                             | 54  | 14.3 |
| <b>Family size</b>                |     |      |
| One                               | 8   | 2.1  |
| Two                               | 96  | 25.4 |
| Three                             | 152 | 40.2 |
| Four                              | 67  | 17.7 |
| More than four                    | 55  | 14.6 |
| <b>Educational level</b>          |     |      |
| No formal learning                | 37  | 9.8  |
| Primary school                    | 163 | 43.1 |
| Secondary school                  | 104 | 27.5 |
| College                           | 74  | 19.6 |
| <b>Husband educational status</b> |     |      |
| No formal education               | 11  | 2.9  |
| Primary school                    | 122 | 32.3 |
| Secondary school                  | 160 | 42.3 |
| College                           | 85  | 22.5 |
| <b>Occupation</b>                 |     |      |
| Housewife                         | 201 | 53.1 |
| Government employe                | 85  | 22.5 |
| Private business                  | 25  | 6.6  |
| Other                             | 67  | 17.7 |
| <b>Husband occupation</b>         |     |      |
| Government employee               | 153 | 40.5 |
| Private business                  | 88  | 23.3 |
| Other job                         | 137 | 36.7 |

## II obstetrics and medical characteristics

Analysis of parity showed majority of the women, 140(37%) out of 378 were primiparus where 120(32%) Para two (has two children). Women having 2 and above children were 209(55.2%).Whereas, 30(8%) are nulliparous. From those respondents, 166(44%) have previous delivery complication from which majority of them were abortion 86(53%), the remaining which are 19(11.7%) had stillbirth and 4(2.5%) prematurity. similarly born alive but with congenital anomaly were 4(2.5%).

With regard to their previous ANC follow-up most of the respondent have ANC follow up 360(95.2%) and 18(4.8%) had no ANC follow up and among those who had follow up 330(92%) attend based on schedule and 30(8%) didn't attend according to the schedule.

**Table 2. obstetrics and medical characteristics of women attending ANC at sphmmc from April1-may 1,2017**

| <b>Variable</b>                       | <b>frequency</b> | <b>Percent</b> |
|---------------------------------------|------------------|----------------|
| <b>Gravidity</b>                      |                  |                |
| One                                   | 85               | 22.5           |
| Two                                   | 158              | 41.8           |
| Three                                 | 73               | 19.3           |
| Four                                  | 39               | 10.3           |
| >four                                 | 23               | 6.1            |
| <b>Parity</b>                         |                  |                |
| Nulliparous                           | 30               | 7.9            |
| One                                   | 139              | 36.8           |
| Two                                   | 120              | 31.7           |
| >two                                  | 89               | 23.5           |
| <b>Previous delivery complication</b> |                  |                |
| Yes                                   | 166              | 43.9           |
| No                                    | 212              | 56.1           |
| If yes what complication              |                  |                |
| Stillbirth                            | 19               | 11.7           |
| Abortion                              | 86               | 53.1           |
| Preterm                               | 4                | 2.5            |
| Alive with anomaly                    | 4                | 2.5            |
| Unknown                               | 49               | 30.2           |
| <b>Had ANC follow up</b>              |                  |                |
| Yes                                   | 360              | 95.2           |
| No                                    | 18               | 4.8            |
| <b>Attend based on schedule</b>       |                  |                |
| Yes                                   | 330              | 92             |
| No                                    | 30               | 8              |

### **III, level of knowledge on folic acid supplement**

There were 6 questions selected to assess the knowledge, each correct answer was given one mark and no mark was given for wrong answer. In this study, the knowledge score of the

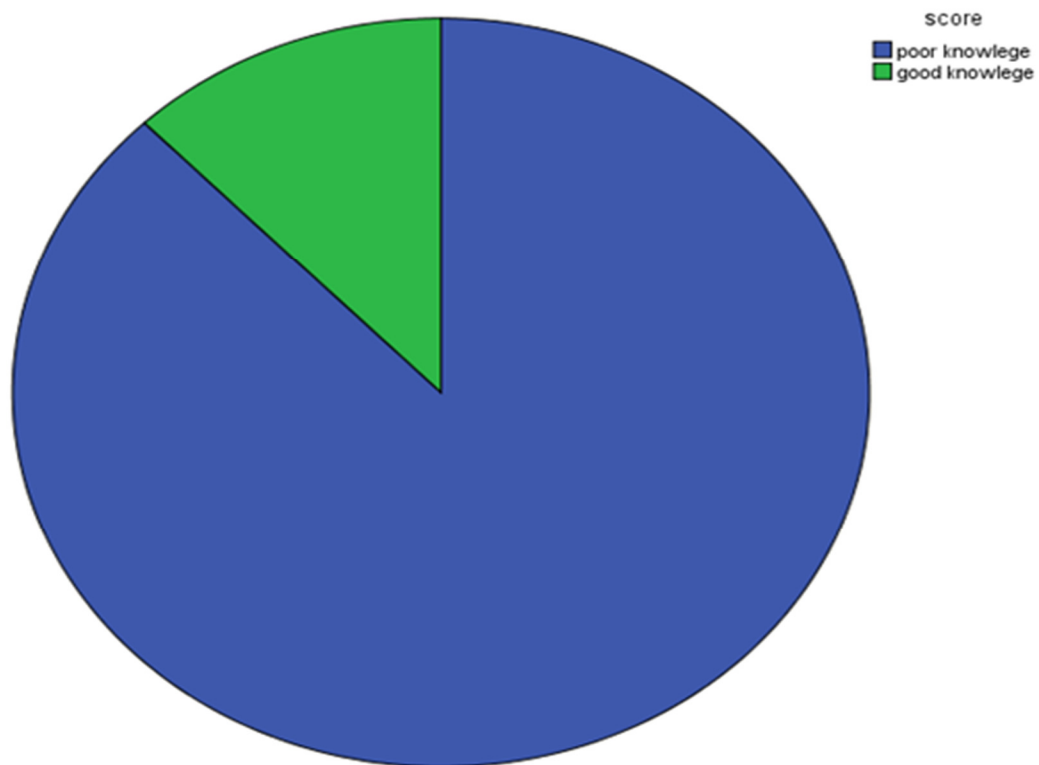
respondents ranged between 0 and 6 with the mean of 0.5 (SD=1.52) and median of 0 .The score was normally distributed. The knowledge score was further divided to two levels which are good knowledge and poor knowledge using the mean knowledge score as the cutoff point. The proportion of respondents with good knowledge was 12.2 %( 42).further analysis of the knowledge reveals that 48(12.7%) have heard of folic acid and the rest had no information about it . Among those who knows about folic acid 52.1 %( 25) of them were informed from their primary physician. Only 19(39.6%) said that folic acid is a vitamin. Regarding its use 41(85.4%) knows that it is useful .From those who know its use, 13(31%) said it prevent congenital anomaly on the baby whereas, 12(30%) don't know its benefit.

Almost Half of the respondent who heard about folic acid 26(54.2%) know that folic acid can be acquired from daily meal but only 18 of them knows that folic acid can be acquired from green vegetable. With regard to the time of supplementation 15(31.3%) knows the correct time to be supplemented and 10(20.8%) doesn't know the time of supplementation.

**Table 3, knowledge about folic acid supplement during pregnancy of pregnant women on ANC follows up at sphmmc**

| Variable                               | frequency | percent |
|----------------------------------------|-----------|---------|
| <b>Ever heard about folic acid</b>     |           |         |
| Yes                                    | 48        | 12.7    |
| No                                     | 330       | 87.3    |
| <b>If yes where did you heard</b>      |           |         |
| Media                                  | 4         | 8.3     |
| Doctor                                 | 25        | 52.1    |
| School                                 | 15        | 31.3    |
| Other                                  | 4         | 8.3     |
| <b>What is folic acid</b>              |           |         |
| Vitamin                                | 19        | 39.6    |
| Mineral                                | 8         | 16.7    |
| Medication                             | 10        | 20.8    |
| Don't know                             | 11        | 22.9    |
| <b>Importance for pregnancy</b>        |           |         |
| Ye                                     | 41        | 85.4    |
| No                                     | 7         | 14.6    |
| <b>If yes what is its use</b>          |           |         |
| Prevent anemia                         | 13        | 33      |
| Prevent prematurity                    | 3         | 6       |
| Prevent congenital anomaly             | 13        | 31      |
| Don't know                             | 12        | 30      |
| <b>Daily requirement of folic acid</b> |           |         |
| 200                                    | 4         | 8       |
| 300                                    | 8         | 16      |
| 500                                    | 36        | 75      |
| <b>FA can be acquired from meal</b>    |           |         |
| Yes                                    | 26        | 54.2    |
| No                                     | 22        | 45.8    |
| <b>If yes what type of meal</b>        |           |         |
| Green vegetable                        | 18        | 70      |
| Egg and milk                           | 3         | 11.5    |
| Cereals                                | 2         | 7.5     |
| Beef meat                              | 3         | 11      |
| <b>Time of supplement</b>              |           |         |

|                                                 |     |      |
|-------------------------------------------------|-----|------|
| 2 month preconception to 2<br><b>month post</b> | 15  | 3.9  |
| 1 <sup>st</sup> trimester                       | 16  | 4.2  |
| 2 <sup>nd</sup> trimester                       | 7   | 1.8  |
| Don't know                                      | 340 | 89.9 |



#### IV level of attitude towards folic acid

According to the study, from the 48 participants who heard about folic acid, 41(10.8%) Of them think that folic acid Is useful during pregnancy,45(11.9%) think women should use it during pregnancy. None of them think that folic acid is harmful during pregnancy. 37(9.8%) of them are willing to advice pregnant women to use it during pregnancy.

**Table1. 4 level of attitude towards folic acid of pregnant women attending ANC in sphmmc from April1-may1,2017**

| <b>Variable</b>                                 | <b>frequency</b> | <b>Percent</b> |
|-------------------------------------------------|------------------|----------------|
| <b>FA useful I in pregnancy</b>                 |                  |                |
| Yes                                             | 41               | 10.8           |
| No                                              | 7                | 1.9            |
| <b>FA should be used during pregnancy</b>       |                  |                |
| Yes                                             | 45               | 11.9           |
| No                                              | 3                | 0.8            |
| <b>FA harmful during pregnancy</b>              |                  |                |
| Yes                                             | 0                | 0              |
| No                                              | 48               | 100            |
| If yes why                                      |                  |                |
| <b>Will you advice pregnant women to use it</b> |                  |                |
| Yes                                             | 37               | 9.8            |
| No                                              | 11               | 2.9            |

#### v. practice of Folic acid during pregnancy

Among 48 of the participants who have information about folic acid, 41 (85.4%) have used folic acid in their current or previous pregnancy, 7(14.6%) didn't practice it and from those who didn't use folic acid 3 of them say it's because they haven't been informed by their physicians and 4 claims that they don't have money to buy it. from those who practiced 12(29.3%) started 2 months preconception and used up to 2 month's postconceptional, 22(53.7%) in the 1<sup>st</sup> trimester, 3(7.3%) in the 2<sup>nd</sup> trimester and 4(9.8%) started during the 3<sup>rd</sup> trimester. 23(47.9%) take folic acid rich food during pregnancy. overall 27 (51.9%) have proper and 21(48.1%) have improper practice of folic acid use during pregnancy.

**Table 1.5 level of practice of pregnant mother attending ANC in sphmmc from.**

| <b>Variable</b>                                                   | <b>Frequency</b> | <b>Percent</b> |
|-------------------------------------------------------------------|------------------|----------------|
| <b>Have you ever used FA during current or previous pregnancy</b> |                  |                |
| Yes                                                               | 41               | 10.8           |
| No                                                                | 7                | 89.2           |
| <b>If yes when did you start</b>                                  |                  |                |
| 2 month preconception ally                                        | 12               | 3.17           |
| 1 <sup>st</sup> trimester                                         | 22               | 5.82           |
| 2 <sup>nd</sup> trimester                                         | 3                | 0.79           |
| 3 <sup>rd</sup> trimester                                         | 4                | 1.05           |
| Don't use                                                         | 337              | 89.1           |
| <b>Do you take FA rich meals during pregnancy</b>                 |                  |                |
| Yes                                                               | 23               | 6.08           |
| No                                                                | 355              | 93.9           |

### Limitation Of the study

- This study is unable to determine the association between independent variables and attitude and practice of pregnant women due to lack of reference to score both.
- Limited literature made the research difficult to compare the data with other results

## Discussion

This descriptive cross sectional (knowledge, attitude and practice) study regarding folic acid deficiency among women of child bearing age concluded that there is a wide deficiency in knowledge, attitude and practice regarding this important micronutrient in the most vulnerable group that is women of child bearing age. A great number of pregnant women attained poor score on folic acid supplementation knowledge based questions. Consumption of 400 µg of folic acid daily at least 2 month before conception and in the early days of pregnancy could prevent 50–70% of neural tube defects (19) and the intake of nutrients must be increased during pregnancy to cope with the demands of both the growing fetus and the mother.(21) Eating healthy food supplies the daily vitamin requirements, but most diets require supplementation.(19) Worldwide, more than 20 million infants are born with a low birth weight annually, and, of these, 3.6 million die during the neonatal period, mainly due to malnutrition.(22) Balanced supplementation appears to improve fetal growth and may diminish the risks for stillbirth and infants born small-for-gestational age.(23) on the current study, only 9% of them know folic acid as a vitamin supplement. And from all respondent only 3.9% were knowledgeable of the recommendation for periconceptional folic acid intake aimed at preventing NTDs. As in general, only 10% of them has good knowledge about the supplement. This level of folic acid awareness is very low in compared to 32.0% and 53.7% reported from abudabi and Qatar respectively (15,9). Moreover, these folic acid awareness rates are remarkably lower those reported from Thailand and Australia (76.1% and 89.0% respectively) (16,17)

So, results of this study strongly recommend that knowledge about folic acid should be provided through awareness campaigns and telecommunication media. Nursing staff and midwives should contribute to motivate and educate the women, as it is their professional and ethical obligation. Parity also contributes to the level of knowledge and practices of folic acid use periconceptionally. So, there is a need to plan health education program to improve their attitudes, with special consideration during antenatal care.

In this study majority of women were having poor knowledge. A literature search was conducted to identify studies that included assessment of folic acid knowledge and use in U.K. women of different ethnicities study. It concluded that implementing targeted, innovative education campaigns together with a mandatory fortification policy, including the fortification of ethnic minority foods, will be required for maximum prevention of folic acid preventable Neural Tube Defects.(24)

#### 1, Association between the knowledge score and sociodemographic data of the pregnant women visiting sphmmc ANC clinic

Chi square test was used in order to check the association between level of knowledge and socio-demographic and obstetrics status of the respondent .A P-value  $< 0.05$  was considered statistically significant. It was identified that there is significant association between occupation of the mothers and their husband. Women and husbands who work as a government employee has poor knowledge .the difference may be because of less time for the government employee to access information about the supplement. Other than this there is no any significant association between other demographics Para meter and level of knowledge.

**table 6 association between knowledge score with sociodemographic characteristic's**

| Variable                         | Knowledge score |                   | OR           | AOR      | P value  |
|----------------------------------|-----------------|-------------------|--------------|----------|----------|
|                                  | Good knowledge  | Poor knowledge    |              |          |          |
| <b>Age</b>                       |                 |                   |              |          |          |
| 16-20                            | -               | 14(4%)            | 1            |          |          |
| 21-30                            | 35(85%)         | 261(77.5%)        | 0            |          |          |
| 31-40                            | 6(15%)          | 54(16%)           | 0            |          |          |
| >40                              | -               | 7(2.5%)           | 1            |          |          |
| <b>Age at first pregnancy</b>    |                 |                   |              |          |          |
| 16-20                            | 7(17%)          | 95(28%)           | 0            |          |          |
| 21-30                            | 34(83%)         | 230(68.5%)        | 0            |          |          |
| 31-40                            | -               | 12(3.5%)          | 1            |          |          |
| <b>Marital status</b>            |                 |                   |              |          |          |
| Single                           | -               | 4(1.2%)           | 1            |          |          |
| Married                          | 37(90%)         | 328(97.5%)        | 0            | 0.023    | 1        |
| Divorced                         | 4(10%)          | -                 | 0            | 0        | 1        |
| Widowed                          | -               | 4(1.2%)           | 0            | 0.456    | 1        |
| <b>Family size</b>               |                 |                   |              |          |          |
| one                              | 4(50%)          | 4(50%)            | 1            |          |          |
| two                              | 0               | 96(100%)          | 0.59         | 0.002    | 1        |
| Three                            | 3(9.9%)         | 137(90.1%)        | 0.95         | 1        | 0.99     |
| Four                             | 19(28.4%)       | 48(71.6%)         | 0.537        | 0.342    | 0.46     |
| >Four                            | 3(5.6%)         | 51(94.4%)         | 0.149        | 0.004    | 0.5      |
| <b>Educational level</b>         |                 |                   |              |          |          |
| No formal learning               | 3(7.5%)         | 34(10%)           |              |          |          |
| Primary                          | 4(10%)          | 158(47%)          | 3.485        | 0.453    | 0.9      |
| Secondary                        | 19(46%)         | 85(25%)           | 0.395        | 0.438    | 0.4      |
| College                          | 15(36.5%)       | 59(18%)           | 0.347        | 0.455    | 0.4      |
| <b>Husband educational level</b> |                 |                   |              |          |          |
| No formal learning               | -               | 11(3.5%)          | 1            | 1        |          |
| Primary                          | 3(8%)           | 119(35%)          | 2.88         | 0        | 1        |
| <b>Secondary</b>                 | <b>19(46%)</b>  | <b>140(41.5%)</b> | <b>10.04</b> | <b>0</b> | <b>1</b> |
| College                          | 19(46%)         | 66(20%)           | 1.13         | 0        | 1        |

|                            |                |                 |              |              |               |
|----------------------------|----------------|-----------------|--------------|--------------|---------------|
| <b>Occupational</b>        |                |                 |              |              |               |
| Housewife                  | 14(34%)        | 186(55%)        | 1            | 1            |               |
| Private business           | 4(10%)         | 21(6%)          | 0.395        | 0.276        | 0.06          |
| <b>Government employee</b> | <b>15(36%)</b> | <b>70(20%)</b>  | <b>0.351</b> | <b>0.784</b> | <b>0.0487</b> |
| Other                      | 8(20%)         | 59(9%)          | 0.555        | 0.406        | 0.099         |
| <b>Husband occupation</b>  |                |                 |              |              |               |
| Private business           | 8(20%)         | 80(24%)         | 1            | 1            |               |
| <b>Government employee</b> | <b>29(70%)</b> | <b>124(37%)</b> | <b>0.428</b> | <b>0.484</b> | <b>0.0124</b> |
| Other                      | 4(10%)         | 132(39%)        | 3.300        | 3.183        | 0.112         |

## 2. Association between the obstetrics data and level of knowledge about folic acid supplement during pregnancy

According to the data, there is significant association between number of gravidity ( $p=0.0234$ ). women having 3 previous pregnancy are more knowledgeable than woman have no previous pregnancy. This may be due to more frequent exposure to health professionals who can be there primary source of information

**Table 7 association between obstetrics history and knowledge about folic acid use in pregnancy**

| <b>Variable</b>                       | <b>Poor knowledge</b> | <b>Good knowledge</b> | <b>AOR</b>   | <b>P value</b> |
|---------------------------------------|-----------------------|-----------------------|--------------|----------------|
| <b>Gravidity</b>                      |                       |                       |              |                |
| One                                   | 82(21.6%)             | 3(0.7%)               |              |                |
| Two                                   | 132(34.9%)            | 26(6.87%)             | 1            | 0.006          |
| <b>Three</b>                          | <b>63(16.6%)</b>      | <b>10(2.64%)</b>      | <b>1.45</b>  | <b>0.0234</b>  |
| Four                                  | 35(9.25%)             | 4(10.5%)              | 1            | 0.43           |
| >four                                 | 20(5.29%)             | 3(0.7%)               | 2.223        | 1              |
| <b>Parity</b>                         |                       |                       |              |                |
| Nulliparous                           | 30(7%)                | 0                     |              |                |
| One                                   | 126(33.3%)            | 13(3.43%)             | 1            | 0.99           |
| Two                                   | 90(23.8%)             | 30(7%)                | 1            | 1              |
| <b>three</b>                          | <b>57(15,07%)</b>     | <b>0</b>              | <b>1.045</b> | <b>0.032</b>   |
| four                                  | 19(5.02%)             | 3(7%)                 | 1            | 1              |
| five                                  | 10(2.64%)             | 0                     | 1            | 1              |
| <b>Previous delivery complication</b> |                       |                       |              |                |
| <b>Yes</b>                            | <b>138</b>            | <b>28</b>             | <b>2</b>     | <b>0.013</b>   |
| No                                    | 194                   | 18                    |              |                |

## Conclusion

According to the study the knowledge about pre conception folic acid supplement is poor among pregnant women visiting ANC clinic at St Paul's millennium medical college. For most of women the primary information source is health professionals. This shows less media coverage about the micronutrient.

Practice was also not satisfactory as only three in hundred women had received folic acid supplementation during their pre-pregnancy and antenatal period.

Occupational status and number of previous pregnancy plays important role in the level of knowledge about this micronutrient supplement. There is a dire need to increase awareness regarding importance of preconceptional supplement of the vitamin especially by involving health care professionals, community health workers, pharmacist and especially media as it is completely preventable hidden public health problem.

## Recommendation

Since most of the awareness about folic acid were created by the health professionals. If we can impart health education through gynecologists, physicians, media, symposiums and workshops and can enhance the fortification of food with folic acid through government interventions, we can decrease the knowledge gap and improve the practice of the nutrient so that we can reduce the incidence of neural tube defects and other abnormalities in newborn to quite an extent.

## Reference

1. Weinstein SJ, Hartman TJ, Stoltenberg-Solomon R, Pietinen P, Barrett MJ, Taylor PR, et al. Null association between prostate cancer and serum folate, vitamin B(6), vitamin B(12), and homocysteine. *Cancer Epidemiology Biomarkers Prev.* 2003;12 (11 (pt 1)):1271–1272.
2. Muthayya S, Rah JH, Sugimoto JD, Roos FF, Kraemer K, Black RE. The global hidden hunger indices and maps: an advocacy tool for action. *PLoS One.* 2013;8(6) doi: 10.1371/journal.pone.0067860. [PMC free article]
3. Fekete K, Berti C, Trovato M, Lohner S, Dullemeijer C, Souverein OW, et al. Effect of folate intake on health outcomes in pregnancy: a systematic review and meta-analysis on birth weight, placental weight and length of gestation. *Nutr J.* 2012;19(11):75. doi: 10.1186/1475-2891-11-75. [PMC free article]
4. Rebecca JS, Daniel JT. Maternal periconceptional folic acid intake and risk of autism spectrum disorder and developmental delay in the CHARGE (childhood Autism Risks from Genetics and Environment) case-control study. *Am J Clin Nutr.* 2012;96(1):80–89. doi: 10.3945/ajcn.110.004416. [PMC free article]
5. James SJ, Pogribna M. Abnormal folate metabolism and mutation in the methylenetetrahydrofolate reductase gene may be maternal risk factors for Down syndrome. *Am J Clin Nutr.* 1999;70(4):495–501.
6. Hisam A, Rhaman M, Mashhadi SF. Knowledge, attitude and practice regarding folic acid deficiency: The hidden hunger. *pak j med sci* 2014;3(30)

7. Bassano LA. Folic acid supplementation and cardiovascular disease: the state of art. *The Am J Med Sci*. 2009;338(1):48–49. doi: 10.1097/MAJ.0b013e3181aaefd6.
8. Au KS, Ashley-Koch A, Northrup H. Epidemiologic and genetic aspects of spina bifida and other neural tube defect. *Dev Disabil Res Rev*. 2010;16(1):6–15. doi: 10.1002/ddrr.93. [PMC free article]
9. Mersereau MNP, Kilker K, Carter H, Fassett E, Williams GJ, et al. Spina Bifida and Anencephaly Before and After Folic Acid Mandate --- United States, 1995-1996 and 1999--2000. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5317a3.htm> (Accessed 25 September 2012).
10. Khattak ST, Khan M, Naheed T, Khattak Iu, Ismail M. Prevalence and management of anencephaly at Saidu Teaching Hospital, Swat. *J Ayub Med Coll Abbottabad*. 2010;22 (4):61–63.
11. Khan DA, Fatima S, Imran R, Khan FA. Iron, folate and cobalamin deficiency in anaemic pregnant females in tertiary care centre at Rawalpindi. *J Ayub Med Coll Abbottabad*. 2010;22 (1):17–21.
12. Folic Acid. Wikipedia, the free encyclopedia. [http://en.wikipedia.org/wiki/Folic\\_acid](http://en.wikipedia.org/wiki/Folic_acid) (accessed 22 September 2012)
13. Sharp GF, Naylor LA, Cai J, Hyder ML, Chandra P, Guillory J. 'Assessing Awareness, Knowledge and Use of Folic Acid in Kansas Women between the Ages of 18 and 44 Years'. *Maternal and Child Health Journal*. 2009;13(6): 814-21.
14. El-mani SF. Knowledge, behaviour and practices of pregnant women in Wollongong regarding folic acid and iodine nutrition after the introduction of a mandatory fortification program. 2013.
15. Al-Holy M, Eideh Aa, Epuru S, Abu-Jamous D, Ashankyty I. Awareness of Folic Acid Intake among Women in the childbearing Age in Hail Region—Saudi Arabia *Food and Nutrition Sciences*. 2013;4(1):49-55.

16. Popa AD, Niță O, Graur LI, Popescu RM, Botnariu GE, Mihalache L, et al. Nutritional knowledge as a determinant of vitamin and mineral supplementation during pregnancy. *BMC Public Health*. 2013;13:11
17. Lunet N, Rodrigues T, Correia S, Barros H. Adequacy of prenatal care as a major determinant of folic acid, iron, and vitamin intake during pregnancy. *Cad Saúde Pública, Rio de Janeiro*. 2008;24 (5):1151-7.
18. Pratim P, Sharma S, Sarkar TK, Mitra P. Iron and Folic Acid Consumption by the Ante-natal Mothers in a Rural Area of India. *Int J Prev Med*. Oct 2013;4(10):1213-6.
19. .Al-Holy M, Eideh Aa, Epuru S, Abu-Jamous D, Ashankyty I. Awareness of Folic Acid Intake among Women in the childbearing Age in Hail Region—Saudi Arabia *Food and Nutrition Sciences*. 2013;4(1):29-35
20. Anum Fatima, Nadia Saif, Mansoor Ghani, Sardar Ali. Knowlage of women on preconception folic acid supplementation. *The Professional Medical Journal*. 2016;23(7): 828-8
21. Maton a, Human biology and health. prentince hall;1997
22. Botto LD, moore CA khoury MJ, Erickson JD. Neural tube defect. *NEJM* 1999;341(20):1509-19
23. Asindi A, Al-Shehri A. Neural tube defects in the Asir region of Saudi Arabia. *Annals of Saudi medicine*. 2001; 21(1/2):26
24. Ota E, Tobe-Gai R, Mori R, Farrar D. Antenatal dietary advice and supplementation to increase energy and protein intake. *Cochrane Database Syst Rev*. 2012 Sep;9
25. Peake JN, Copp AJ, Shawe J. Knowledge and periconceptional use of folic acid for the prevention of neural tube defects in ethnic communities in the United Kingdom: systematic review and meta-analysis. *Birth Defects Res A Clin Mol Teratol*. 2013;97(7):444-451. doi: 10.1002/bdra.23154.

## **Annex . English version Questionnaire**

This questionnaire is prepared to assess The general objective of the study is to assess Maternal knowledge, attitude and practice toward preconception folic acid supplementation and factors affecting folic acid intake among women visiting michu clinic in st paul Millennium Medical College. The information your provide is used only for research purpose and you don't need to write your name

Since your information affects the results you are kindly requested to give Franck and since response.If there is anything that requires clarification please don't hesitate to ask the facilitator for clarification. Do you wish to participate in the study?

Yes, I want to participate in the study

No, I don't want to participate.

For any clarification please ask the data collector for more elaboration

### **Socio-Demographic Characteristics**

|                          |                                                                      |
|--------------------------|----------------------------------------------------------------------|
| 1.Marital status         | 1. Single<br>2. Married<br>3. Divorced<br>4. widowed<br>5. Separated |
| 2.age                    | 1.16_20yr<br>2.21-30yr<br>3.31-40yrs<br>4.>41yrs                     |
| 3 age at first pregnancy | 1.16_20yr<br>2.21-30yr<br>3.31-40yrs<br>4.>41yrs                     |
| 4.Religion               | 1. Orthodox Tewahdo                                                  |

|                                  |                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------|
|                                  | 2. Muslim<br>3. Catholic<br>4. Protestant<br>5. Others(specify)_____                                               |
| 5.Ethnicity                      | 1. Amhara<br>2. Tigrie<br>3. Oromo<br>4. Guragie<br>5. others specify_____                                         |
| 6.Family size                    | 1.One<br>2. Two<br>3. three<br>4. four<br>5. Five and above                                                        |
| 7.Educational level              | 1. No formal learning<br>2. primary school<br>3. secondary school<br>4. college education                          |
| 8.Your husband educational level | 1. No formal learning<br>2. primary school<br>3. secondary school<br>4. college education<br>5. other specify_____ |
| 9.Occupation                     | 1. Housewife<br>2. Private business<br>3. Employee<br>4. Other specify_____                                        |
|                                  |                                                                                                                    |

|                               |                                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------|
| 10. Your husband occupation   | 1. Health care worker<br>2. Private business<br>3. Employee<br>4. Other specify_____ |
| 11<br>Monthly income<br>_____ |                                                                                      |

### Obstetrics and medical Characteristics

|                                                            |                                                                                      |
|------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 12. Obstetrical score.                                     | 1. Gravida_____<br>2. Para_____                                                      |
|                                                            |                                                                                      |
| 13. Previous delivery was there any complication           | 1. yes<br>2. no                                                                      |
| 14. do you have ANC follow up for all of your pregnancies? | 1. yes<br>2. no                                                                      |
| 15. do you attained your follow up based on the schedule?  | 1. yes<br>2. no                                                                      |
| 16. If yes for no 9 what was it?                           | 1. Still birth<br>2. Abortion<br>3. Preterm<br>4. Alive baby with congenital anomaly |

## Assessment of Knowledge

|                                                                                                         |                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17. Have you ever heard of folic acid?                                                                  | 1. yes<br>2. no                                                                                                                                                                                 |
| 18. If your answer is yes for no 17 from where did you hear?                                            | 1. media<br>2. from friends<br>3. from my doctor<br>4. From family<br>5. from school<br>6. other specific _____                                                                                 |
| 19. What is folic acid?                                                                                 | 1. vitamin<br>2. mineral<br>3. medication<br>4. I don't know                                                                                                                                    |
| 20. Is it important for pregnancy?                                                                      | 1. yes<br>2. no                                                                                                                                                                                 |
| 21. If your answer for question no 20 is "yes" What are uses of folic acid supplement during pregnancy? | 1. prevent anemia during pregnancy<br>2. prevent premature birth<br>3. prevent congenital anomaly on the baby<br>4. it has no use<br>5. I don't know its benefit                                |
| 22. How much is the daily requirement of folic acid for a pregnant woman?                               | 1. 200µg<br>2. 400µg<br>3. 300µg<br>4. 500µg<br>5. I don't know                                                                                                                                 |
| 23. Do you know that folic acid can be acquired from your daily meals?                                  | 1. yes<br>2. no                                                                                                                                                                                 |
| 24. From which types of meal can we get folic acid rich supplement?                                     | 1. green vegetables<br>2. egg and milk<br>3. cereals<br>4. fruits<br>5. beef meat<br>6. others                                                                                                  |
| 25. When should a pregnant woman start taking folic acid supplement?                                    | 1. 2 month preconceptionally upto 2 month postconceptionally<br>2. 1 <sup>st</sup> trimester<br>3. 2 <sup>nd</sup> trimester<br>4. 3 <sup>rd</sup> trimester<br>5. any time thru. The pregnancy |

|  |                |
|--|----------------|
|  | 6.i don't know |
|--|----------------|

### Attitude assessment

|                                                                   |                                                                                                                                                                                                    |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26.Do u think folic acid supplement during pregnancy is use full? | 1.yes<br>2.no                                                                                                                                                                                      |
| 27.Do u think women should use it during pregnancy ?              | 1.yes<br>2.no                                                                                                                                                                                      |
| 28.do u think folic acid is harmfull for pregnancy?               | 1.yes<br>2.no<br>3.sometimes                                                                                                                                                                       |
| 29.If your answer is "yes" for no 17why?                          | 1 it will harm the baby<br>1 the drug might be addictive<br>2 It will complicate the next pregnancy<br>3 It will make the women infertile<br>4 Never mind if she use it or not<br>5 Other specific |
| 30.will you give advice for a pregnant woman to use it?           | 1.yes<br>2.no                                                                                                                                                                                      |

### Practice assessment

|                                                                                     |                                                                                                                                                           |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31.Have you ever used folic acid supplement for your current or previous pregnancy? | 1.yes<br>2.no                                                                                                                                             |
| 32..If your answer is no for no 31why?                                              | 1.the doctor didn't told me<br>2. I don't think it is important<br>3.i am afraid it might hurt my baby<br>4.i don't have money to buy it                  |
| 33.if your answer for no 31 is yes when did u start using it.                       | 1.2month periconceptionally upto<br>2month postconceptionaly<br>2.1 <sup>st</sup> trimester<br>3.2 <sup>nd</sup> trimester<br>4.3 <sup>rd</sup> trimester |
| 34 do you take folate rich meals during your pregnancy?                             | 1.yes<br>2.no<br>3.occassionally<br>4.i don't know flats rich foods<br>5.i don't have enough income to buy                                                |

