

# Assessing the Level of Knowledge in the Preconceptional Use of Folic Acid Supplement among Primigravida Women

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## ABSTRACT

### Background

Folic acid deficiency is one of the most common vitamin deficiencies among women of childbearing in developing countries. Folic acid intake prior to, and during, the first months of pregnancy significantly reduces the risk of fetal neural tube defects.

### Objective

To find out the level of knowledge regarding the benefits and use of preconceptional folic acid supplements among primigravida women.

### Method

A hospital based cross-sectional study was conducted among 250 primigravida women attending obstetric outpatient department of Kathmandu Medical College Teaching Hospital. A pretested questionnaire was administered using systematic random sampling technique and data was analysed by SPSS version 16.0 using descriptive and inferential statistics.

### Result

Study revealed that 10.8% respondents had good knowledge whereas, 65.6% had poor knowledge about preconceptional folic acid supplementation. 87.2% had taken folic acid at some point of pregnancy and 17.6 % of pregnant women had taken preconceptional folic acid. 21.2% had heard about folic acid supplement and 20% had known about benefits of preconceptional folic acid. 17.6% knew that it should be taken one month before conception and 16% answered that it could prevent neural tube defects.

### Conclusion

Majority of primigravida women lack the knowledge of preconceptional folic acid. Most women planning to get pregnant are also not taking folic acid supplementation.

## KEY WORDS

*Folic acid, Neural tube defect, Preconception, Primigravida, Supplement*

## INTRODUCTION

Women consuming a low level of folic acid during pregnancy are at risk for poor pregnancy outcomes.<sup>1</sup> The different neural tube defects (NTDs), including spine bifida, anencephaly and encephalocele lead to lifelong disability and premature death. NTDs are caused by the failure of the open neural tube to close by the 29<sup>th</sup> day post-conception.<sup>2</sup> They occur in approximately 1-2.5 per 1000 live birth.<sup>3</sup> They are associated with physical, neurological and developmental impairment causing life-long disabilities.<sup>4</sup>

The prevalence of NTDs is approximately 4.0 per 10,000 children in Nepal.<sup>5</sup> Among the neural tube defects, encephalocele, myelomeningocele and dermal sinus were the major ones, having almost the same prevalence in the Hill and Terai regions.<sup>5</sup> In order to prevent these defects, a daily supplement of 400 microgram folic acid is recommended from a month before conception to the end of first trimester.<sup>6</sup> Folic acid supplementation can reduce the annual number of NTDs affected pregnancies by 50 to 70%. Despite this fact, most women are not aware and its supplementation rates have yet remained low.<sup>7</sup>

There is a high prevalence of congenital defects in Nepal.<sup>5</sup> Such defects add a burden to families and society. Therefore, it is important for women to be aware of folic acid supplementation before pregnancy to improve their folate nutritional status and prevent NTDs because most women do not yet know they are pregnant until the time of neural tube closure. Thus, the study was conducted to assess the level of knowledge on benefits and use of preconceptional folic acid intake among primigravida women.

## METHODS

A cross-sectional study was conducted to obtain knowledge of preconceptional folic acid intake among primigravida women. Systematic random sampling technique was used to select the sample. Prior ethical approval was taken from KMC-IRC, Kathmandu Medical College, Sinamangal to conduct this study. The women who were pregnant for the first time and visiting the Department of Obstetrics, Kathmandu Medical College Teaching Hospital for antenatal check-up were enrolled in this study. The written consent was obtained from those women prior administering the structured questionnaire.

Sample size was calculated taking 5% of prevalence, with 95% expected response rate using formula sample size ( $n$ ) =  $Z^2pq/d^2$ .<sup>8</sup> Resulting to an estimated sample size of 180, however, during the study 250 participants were enrolled from April to July, 2017.  $K^{\text{th}}$  value was 3 ( $K=N/n$ ), i.e, every 3<sup>rd</sup> pregnant women was selected. Predesigned structured questionnaire was used for data collection in Nepali language. Pre-test was done with 10% of primigravida women in similar setting of final data collection. The criteria for classification of the women's level of knowledge was

on the basis of their awareness score which they got from the knowledge questions prepared as follows: score  $\leq 3$  = poor knowledge, score 4-7 = average knowledge and score  $\geq 8$  = good knowledge. Data were entered and cleaned in excel and analysed in spss version 16.0 by using descriptive statistics like frequencies, percentage, measurement of central tendency and inferential statistics like Fisher's exact test.

## RESULTS

A total of 250 primigravida women visiting obstetric outpatient department participated in this study. Among the total respondents, 52.8% were from age group 26-32 years with the mean age of  $27 \pm 4.22$ . Majority of respondents (50.4%) were residents from semi-urban and 44.4% of respondents has completed higher secondary level education. Regarding occupation, majority of respondents (57.6%) were housewife and 34% have total family income between NPR 40,000-50,000 per month (Table 1).

**Table 1. Respondents' sociodemographic characteristics. (N=250)**

Variables	Frequency	Percentage
<b>Age group in years</b>		
18-25	83	33.2
26-32	132	52.8
$\geq 33$	35	14.0
<b>Mean=27, SD=4.22</b>		
<b>Place of Resident</b>		
Rural	54	21.6
Semi-urban	126	50.4
Urban	70	28.0
<b>Education level</b>		
Primary education	19	7.6
Secondary education	75	30.1
Higher secondary	111	44.4
$\geq$ Bachelor and above	45	18.0
<b>Occupation</b>		
Housewife	144	57.6
Agriculture	31	12.4
Business	36	14.4
Service	39	15.6
<b>Family Income (NRs)</b>		
20000-29999	50	20.0
30000-39999	93	37.2
40000-49999	85	34.0
$\geq 50000$	22	8.8

The majority of respondents (96.4%) expressed that their pregnancy is planned and 10% had previous history of abortion. 9.2% respondents had under gone fertility treatment for conceiving recent pregnancy with 7.2% had perinatal risk problems.

Regarding awareness and understanding of folic acid supplement, about 87.2% respondents had used folic acid supplements at some point of the pregnancy and 17.6% respondents had taken preconceptional folic acid. 21.2% of respondents had heard about preconceptional folic acid and 20% respondents answered that women planning for pregnancy needs folic acid supplement. Similarly, 17.2% respondents knew the correct dose of folic acid and the knowledge of preconceptional use of folic acid supplement was found in 17.6%. Only 16% knew it could prevent NTDs and 40% of the respondents mentioned that the health personals were the most common information source for folic acid intake (Table 2). Self-medication or recommendation by media/books and friends/family members accounted for 18% and 6.8% respectively.

**Table 2. Awareness and understanding of folic acid (N=250)**

Variables	Frequency	Percentage
Heard about FAS	53	21.2
Women planning for pregnancy need FAS	50	20
FAS is taken one month before conception	44	17.6
Known about FAS benefit	50	20
FAS could prevent NTDs	40	16
How to get FAS	186	74.4
Ever taken FAS	218	87.2
Ever taken preconceptional FAS	44	17.6
Media/Books is the source of information	45	18.0
Friend/family members is the source of information	17	6.8
Health Personnel advised to take FAS	100	40
Known about FAS dose	43	17.2

**Table 3. Association between demographic variables and knowledge of folic acid supplement.**

Variables	Poor knowledge n(%)	Average knowledgen (%)	Good knowledge n(%)	#value	p value
<b>Age</b>					
18-25	47(56.6)	23(27.7)	13(15.7)	12.99	0.002*
26-32	86(65.2)	34(25.8)	12(9.1)		
≥33	31(88.6)	2(5.7)	2(5.7)		
<b>Place of Resident</b>					
Rural	45(83.3)	4(7.4)	5(9.3)	117.04	<0.001*
Semi-urban	108(85.7)	8(6.3)	10(7.9)		
Urban	11(15.7)	47(67.1)	12(17.1)		
<b>Occupation</b>					
Housewife	93(64.6)	38(26.4)	13(9.0)	18.50	0.002*
Service	25(64.1)	8(20.5)	6(15.4)		
Others	46(68.6)	13(19.5)	8(11.9)		
<b>Previous Abortion</b>					
No	151(67.1)	48(21.3)	26(11.6)	5.94	0.044*
Yes	13(52.0)	11(44.0)	1(4.0)		
<b>Fertility treatment</b>					
No	161(70.9)	44(19.4)	22(9.7)	30.81	<0.001*
Yes	3(13)	15(65.2)	5(21.7)		
<b>Perinatal risk disease</b>					
No	162(69.8)	47(20.3)	23(9.9)	25.47	<0.001*
Yes	2(11.1)	12(66.7)	4(22.2)		
<b>Vitamin supplement</b>					
Iron+Calcium+Folic acid	127(67.9)	46(24.6)	14(7.5)	22.37	<0.001*
Iron+Calcium+ Folic acid+ Multivitamins	37(58.74)	13(20.63)	13(20.63)		

\*Significance at 5%, #Fisher's Exact Test.

Among total respondents, 65.6% had poor knowledge, 23.6% had average and 10.8% had good knowledge about preconceptional folic acid supplement.

Respondents' age, place of resident, occupation, previous abortion, fertility treatment, perinatal risk disease and vitamin supplement are statistically significant with level of knowledge (Table 3).

## DISCUSSION

The aim of this study was assessing level of knowledge on benefits and use of preconceptional folic acid supplement among primigravida women. Very low number of respondents knew the benefits of folic acid consumption regarding different aspects as well as the link of NTDs with

folic acid use. Women with a higher level of education and those > 25 years old had a greater knowledge regarding benefits and time of administration of folic acid than women with lower education and age. This result is consistent with the studies done in Nepal and Arabian countries.<sup>7,9,10</sup>

Regarding use, respondents who used folic acid preconceptionally had good knowledge than respondents who used after conception. This may be due to that, those women had better counselling regarding benefits of preconceptional folic acid. Compare to similar studies, participants who knew that folic acid was useful for fetal health but a lesser percentage knew it could prevent NTDs.<sup>11-13</sup> Although more than half of respondents knew how to get folic acid, only 17.6% of them reported taking folic acid preconceptionally which tells that in spite of a relatively good level of awareness, the compliance was low, especially preconceptional use of folic acid. Therefore, this study also suggests to investigate the various factors causing low compliance level among those women.

Respondents whose permanent resident is urban or semi-urban had good knowledge in comparison to rural resident and is statistically significant with level of knowledge ( $\geq 0.001$ ) which reveals that women in rural area lack pre-conception counselling. This result is consistent with the study done in Tabriz, Iran.<sup>11</sup> Participants who took pre-conception folic acid or during their pregnancy, 40% reported their health personnel as the recommender of folic acid use.

Respondents under gone fertility treatment ( $p < 0.001$ ), those who had perinatal risk problems ( $p < 0.001$ ), respondents taking vitamin supplements ( $p < 0.001$ ) and respondents having previous abortion ( $p = 0.044$ ) are statistically significant with the level of knowledge. This reveals that women with obstetrical problems had close

visit to health institution and preconceptional counselling. This result is consistent with the study Preconceptional use of folic acid in France which revealed that folic acid use was more frequent in women who had fertility treatment and those who had a chronic disease that required pregnancy planning or routine medical follow-up.<sup>14</sup>

## CONCLUSION

This study has shown a low level of knowledge about preconceptional folic acid supplementation amongst primigravida women. Though the readily availability and affordability of Folic acid tablets in urban areas of Nepal, lack of awareness in the pregnant women about the preconception use of folic acid is the major factor. Therefore, this study strongly recommends to have effective and extensive community oriented awareness program regarding the use of folic acid preconceptionally. In this endeavor, government health care centers, health workers, non-governmental organization working in health sectors and media house can play a pivotal role in creating awareness regarding folic acid intake among reproductive aged women. To help these women for healthy pregnancy outcome, dedicated preconceptional awareness programme needs to be established in every health care level. Moreover, the current study is a mono-center study and multi-center with community oriented study should be conducted for the generalization.

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## REFERENCES

- Bener A, Al Maadid MG, Al-Bast DA, Al-Marri S. Maternal knowledge, attitude and practice on folic acid intake among Arabian Qatari women. *Reprod Toxicol*. 2006;21: 21-5.
- Wu DY, Brat G, Milla G, Kim J. Knowledge and use of folic acid for prevention of birth defects amongst Honduran women. *Reprod Toxicol*. 2007;23:600-6.
- Kitamura K, Fetters MD, Ban N. Preconception care by family physicians and general practitioners in Japan. *BMC Fam Pract*. 2005; 6:31. <http://dx.doi.org/10.1186/1471-2296-6-31>
- Al-Holy M, Eideh A, 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: 49-55 <http://dx.doi.org/10.4236/fns.2013.41008>.
- Bhandari S, Sayami JT, K C RR, Banjara MR. Prevalence of congenital defects including selected neural tube defects in Nepal: results from a health survey. *BMC Pediatr*. 2015;15:133. 2015. DOI:10.1186/s12887-015-0453-1.
- Staff AC, Løken EB, Holven K, Sygnetveit K, Vollset SE, Smeland S. Effects of public initiatives aimed at reducing neural tube defects with folic acid supplementation. *Tidsskr Nor Laegeforen*. 2005;125:435-7.
- Amitai Y, Fisher N, Meiraz H, Baram N, Tounis M, Leventhal A. Preconceptional folic acid utilization in Israel: Five years after the guidelines. *PREV MED*. 2008;46:166-9.
- Naithani M, Saxena V, Mirza A, Kumari R, Sharma K, Bharadwaj J. Assessment of Folic Acid Supplementation in Pregnant Women by Estimation of Serum Levels of Tetrahydrofolic Acid, Dihydrofolate Reductase, and Homocysteine. *Scientifica (Cairo)*. 2016; 1520685. DOI: 10.1155/2016/1520685
- Riazi H, Bashirian S, Amini L. Awareness of Pregnant Women about Folic Acid Supplementation in Iran. *Tehran University of Medical Science; Journal of Family and Reproductive Health*. 2012. 6(4): 159-63.
- Kondo A, Kamihira O, Shimosuka Y, Okai I, Gotoh M, Ozawa H. Awareness of the role of folic acid, dietary folate intake and plasma folate concentration in Japan. *J Obstet Gynaecol Res*. 2005;31:172-7.

11. Mashayekhi SO, Dilmaghanizadeh, M, Reza SM. A survey on the consumption, knowledge and attitude of pregnant women toward the effects of folic acid on pregnancy outcome in Tabriz. *Iranian Journal of Child Neurology*. 2011; 5(1): 35-42. DOI:<https://doi.org/10.22037/ijcn.v5i1.2122>.
12. Alkaabi MS, Alsenaidi LK, Mirghani H. Awareness and knowledge of the use and benefits of folic acid supplements in women in the United Arab Emirates. *Hamdan Medical Journal*. 2013 Dec;212(1208):1-4. DOI : 10.7707/hmj.v6i3.275
13. Paudel P, Wing K, Silpakar SK. Awareness of periconceptional folic acid supplementation among Nepalese women of childbearing age: a cross-sectional study. *Preventive Medicine*. 2012 Nov 1;55(5):511-3.
14. Tort J, Lelong N, Prunet C, Khoshnood B, Blondel B. Maternal and health care determinants of preconceptional use of folic acid supplementation in France: results from the 2010 National Perinatal Survey. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2013 Dec 1;120(13):1661-7. DOI: 10.1111/1471-0528.12414.