



Efficacy of on effect of periconceptual intake of folic acid on prevention of neural tube defects among antenatal women in selected hospital at Varanasi, India.

Prof .Dr R. Johncyrani

Principal and corresponding author

Professor cum Principal

HOD OBG Department Apex College of Nursing Varanasi

Email: jancir86@gmail.com

2. - Ms.Nirupma kashyap MSc(N) Tutor. OBG Department, Apex College of Nursing, Varanasi.

Mailid:

nirupmakashayp@gmail.com

3. Ms.Shirish Kumari Upadhyay. Assistant professor. OBG Department, Apex college of Nursing, Varanasi.

Mail id: shirishmishra123@gmail.com.

4.Ms. Grace Youtham Assistant professor. OBG Department,

Apex college of Nursing, Varanasi.

Mail id: youthamgrace@gmail.com.

Abstract

Introduction

It is critically important to get enough folic acid, the synthesis form of Vitamin B also known as folate during periconceptual period. Folic acid helps to prevent Neural tube defect, a serious birth defect of the spinal cord such as spina bifida and in the brain, anencephaly.

Methods

A quasi-experimental research design was adopted to assess the knowledge regarding effects of peri conceptual folic acid intake on prevention of neural tube defects among women attended in opd at selected hospital Varanasi, India. A structured interview questionnaire tool was developed for assess pre test and post test knowledge of antenatal women regarding the effects of peri conceptual folic acid intake on prevention of neural tube defects.

Results

The result shows that in pre-test, majority of the women 24(80%) were having inadequate knowledge. In post-test majority of them 26 (86%) belongs to adequate knowledge. There was statistically significant association found between the post-test knowledge regarding effects of peri conceptual folic acid intake on prevention of neural tube defects among antenatal women with their selected demographical variable such as education and gravid at $P < 0.05$ level.

Conclusion

The study found that the most of the antenatal women had adequate knowledge after received planned teaching programme regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects among antenatal women. Hence the research hypothesis was accepted.

Key words: Effectiveness, Planned teaching programme, effects of periconceptual folic acid intake, neural tube defects, antenatal women.

INTRODUCTION

Folic acid is part of the range of B vitamin and is also called Vitamin B12. In 1931 researcher Lucy wills identify folic acid as a nutrient. But only in 1941 it was extracted from Spinach leaves. In 1946 it was synthesized for the first time. It is also called Folium.

The formation and development of every human cell is dependent on an adequate supply of folic acid. Folic acid governs the synthesis of precursors –of DNA the nucleic acid which gives life for each cell [7].

Folate acts as a cofactor for enzymes involved in DNA and RNA biosynthesis. Folate is also involved in the supply of methyl groups so-called methylation cycle, which uses methionine and makes homocysteine.. The cell's ability to methylate important compounds such as proteins, lipids and myelin will be compromised by deficiency of folate or vitamin B12, resulting in impaired cellular function. Interruption of DNA biosynthesis or methylation reactions could prevent the proper closure of the neural tube. Such inhibition could be caused by simple deficiency of either folic acid or vitamin B12. [8]

Folic acid requirement is depends on the amount of cellular reproduction occurs at particular time. During pregnancy folate-binding proteins existing in the placenta participate in the mechanism of folate transportation to the fetus. Placenta concentrates folic acid into the fetal circulation and as a result fetal folic acid levels are 2- to 4-fold higher than maternal. [1]

Mechanism of transport of folic acid is established in early pregnancy especially within the first trimester (first three months) [2] as folate is vital to the proper development of the fetus. In nine months two celled embryo develops in to 2 billion celled fetus. There is rapid proliferation of various tissue growths including uterine muscle. Alcohol may impair the transport of folic acid across the placenta by decreasing expression of folate transport proteins [3] [6]. Also Folic acid uptake by the human syncytiotrophoblast is interfered by pharmacotherapy, drugs of abuse and pathological conditions.[5]

In consequences the exceptional demand for folic acid and its derivates during pregnancy sometimes cannot be met/.folic acid deficiency will cause defective cell growth and cause damage to the cells [4]

.. Folic acid helps the body to produce new cells .When a women has insufficient folic acid in her body before and during a pregnancy can cause birth defects such as neural tube defects megaloblastic anemia, cancer, etc. [10]

Expert recommends taking 400mcg of folic acid every day when women are trying to get pregnant through the first 3month of pregnancy.

Natural sources of folic acid are green vegetables such as spinach, broccoli, beans, peas and are also found in carrots, sugar, beets, avocados, whole grains, corn, almonds, chestnut, egg yolk and liver.

Methods

The main purpose or objectives of this study is to assess the pretest and post test level of knowledge of antenatal women regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy.. To evaluate the effectiveness of planned teaching programme on knowledge regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy. Also find out the association between knowledge with their selected demographic variables. **H₀**-There will be significant difference in pre-test and post-test score regarding effects of folic acid intake on prevention of neural tube defects among pregnant .**H₁** -There will be an association between selected demographic variable and post-test score on regarding effects of periconceptual folic acid intake on prevention of neural tube defects during pregnancy. **Research approach used for this study was** Quantitative approach. **Research design was** Quasi-experimental one group pre-test and post-test design. Antenatal women, who were in first trimester, were selected as sample. 30 Samples were selected by using simple random sampling technique. **Inclusion criteria** The sample includes those, who were, - pregnant with in first trimester. Attended antenatal opd in selected hospital at durg, -Able to speak and understand Hindi language.-Willing to participate in the study. **Exclusion criteria**, The sample excluded those, who are, not in first trimester of pregnancy, not willing to participate in the study.-Not available at the time of data collection. **Analysis: Descriptive statistics-** Descriptive analysis, percentage distribution Mean, Median, Standard deviation was used to analyze the descriptive data. **Inferential Analysis:** Chi-square test was used to analyze the inferential statistics. **Description of tool:** The structured interview questionnaire tool was developed to assess the knowledge regarding effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy. The tool consists of two sections. **Section –A** contains the demographic data, which included, Age, education, Religion, Occupation, Types of family, Income, Residence, Source of information. **Section-B contains** 20 questions related to effects of periconceptual folic acid intake on prevention of neural tube defects during pregnancy. Each question had 4 options with one correct answer and rests of 3 were wrong. The score for correct answer was 1 and for wrong answer 'zero'. The level of knowledge was categorized as-Inadequate knowledge- <50. Moderate knowledge -50-75. Adequate knowledge - 75-100. The minimum score was '0' and the maximum score was '25'.

Results

Table1: Distribution of demographic variables of antenatal women.

Serial no	DEMOGRAPHIC VARIABLES	NUMBER	%
1	AGE (IN YEARS) a) 18- 25 yr b) 26-32 yr c) Above 32 yr	21 8 1	70 27 3
2	EDUCATION a) Primary education b) High school education c) Higher secondary d) Graduate e) Post graduate	7 8 13 2 0	23.3 27 43.3 7 0
3	OCCUPATION a) Farmer b) Self employ c) Government job d) Private job e) Coolie	13 3 0 2 12	43.3 10 0 7 40
4	INCOME a) 2,000-5,000 Rs. b) 5,001-10,000 Rs. c) 10,001-20,000 Rs. d) Above 20,000 Rs.	12 15 02 01	40 50 7 3.3

5	RESIDENCE a) Rural b) Urban c) Town	20 6 4	67 20 13.3
6	GRAVIDA a) Primi gravida b) Multi gravida	18 12	60 40
7.	SOURCE OF INFORMATION a) Mass Media b) Health Personal c) Friends and family members d) Other	09 17 03 01	30 57 10 3

Table 1 shows the demographic details of antenatal women.

Age: there were 21(70) women belongs to 18-25 years old. **Religion:** most of the women (93%) were Indus and 7% were Muslims. **Education:** There were 13 women completed higher secondary school education and 2 (17%) were graduates. **Occupation** reveals that majority of women 13(43%) were belongs to farmer occupation and remaining 12(40) were working as coolie and 2 (7%) were doing private job. Family income reveals that. Majority of them 15(50) belongs to Rs.5000 to 10,000 income group and 1(3%) belongs to above 20,000 Rs. **Residence** reveals that the Majority of the women 20(100) were living in rural area and 4(13%) of them were living in urban area. **Gravid status** reveals that there were 60% of primi gravid women and 40% were multi gravid women. **Source of information:** most of the women 17(57) received health information from health personal.

FIG-1 PERCENTAGE DISTRIBUTION OF AGE

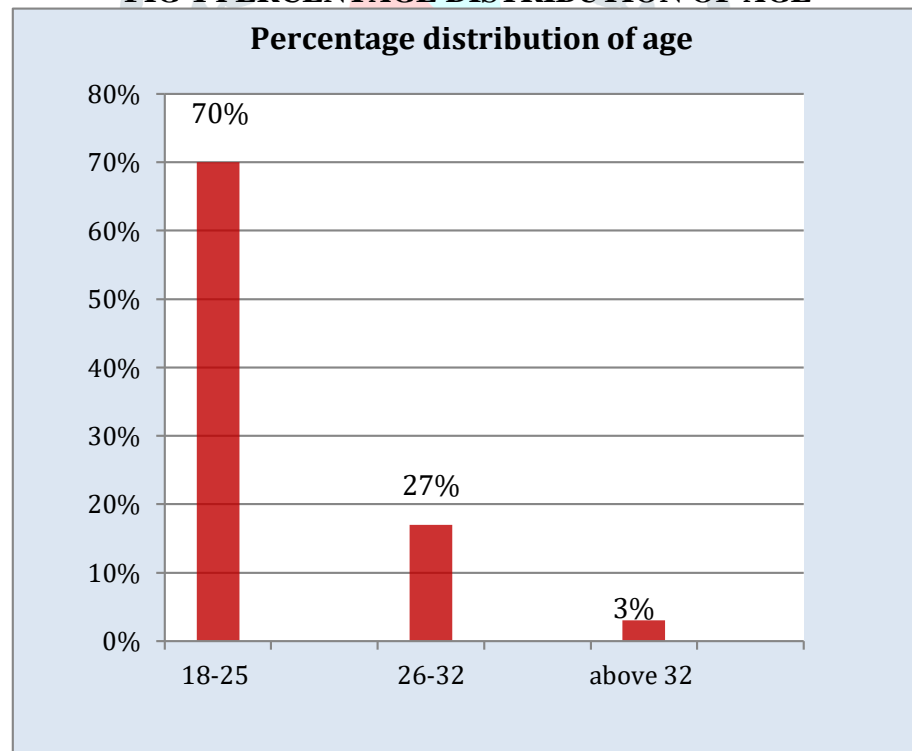


Figure 1 describes percentage distribution of age. There were 21(70) women belong to 18-25 years old 27% of them were in between 26-32 years and only 3% of women were in above 32 years old.

FIGURE -2 PERCENTAGE DISTRIBUTION OF RESIDENCE

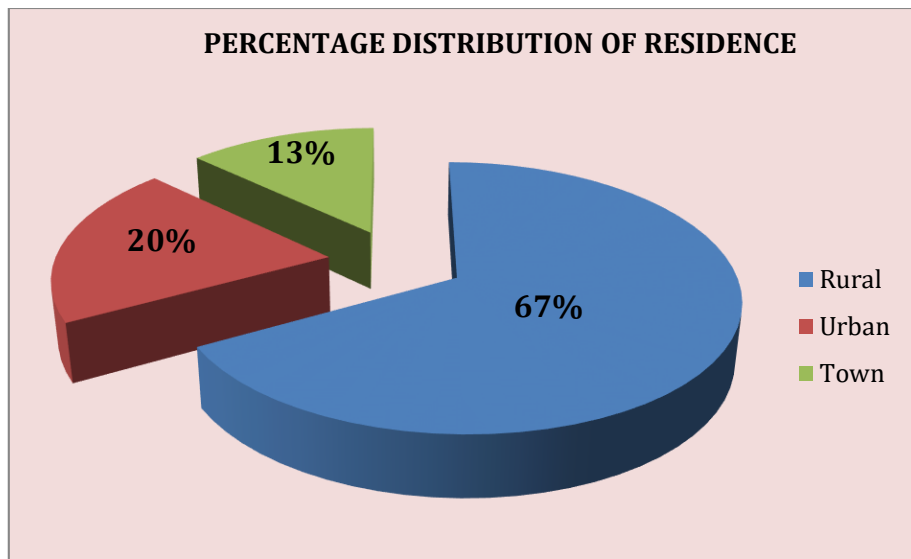


Figure 2 reveals that there were 67% of women from rural areas, 20% of total women from urban areas and 13% of women belong to town residence.

FIGURE -3 PERCENTAGE DISTRIBUTION OF INCOME

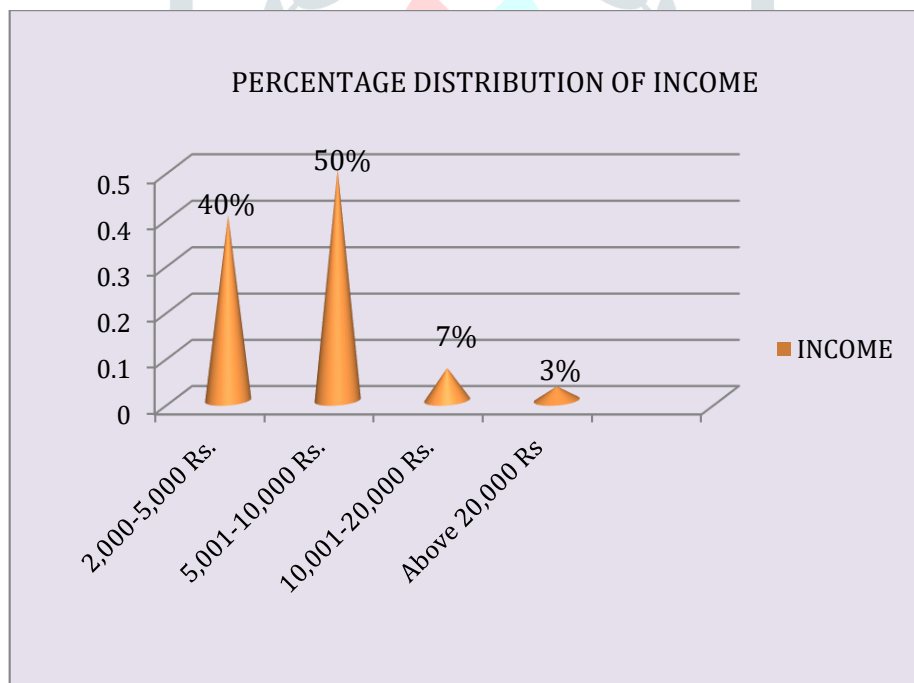


Figure 3 denotes that there were 50% of antenatal women belongs to 5000 to 10,000 rupees income group, only 3% of total women were earning above 20,000 rupees per month. Most of the women were belongs to low socio economic group.

Table -2 Distribution of pre test level of knowledge regarding effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy among ante natal women. n=30

S/N	Level of Knowledge	Score	No. of respondents	
			No	
1	Inadequate	<50	21	70
2	Moderate	50-75	09	30
3	Adequate	>75	00	0

Table 2 shows that 21 (70) women having inadequate knowledge, 9(30%) antenatal women were having moderate knowledge. None of them were having adequate knowledge.

Table 3: Distribution of Mean, Median and Standard deviation towards level of knowledge of antenatal women, regarding effects of peri-conceptual intake of folic acid on prevention of neural tube defects during pregnancy.

Domain	Max. Statement	Max Score	Range	Mean	Mean	SD
Knowledge	25	25	05-17	11.85	47.4	2.29

Table 3 reveals that Mean is 11.85 and Standard deviation is 2.29.

Table 4: Distribution of post intervention, level of knowledge of antenatal women, regarding effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy.

S/N	Level of Knowledge	Score	Total number of respondents	Percentage %
1	Inadequate	<50	0	0
2	Moderate	50-75	8	27
	Adequate	>75	22	73

Table 4 Describes the percentage distribution of level of post intervention knowledge of antenatal women regarding effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy. After intervention the adequate knowledge level was 73% and 27% of women were having moderate knowledge.

Table 5: Mean, Median, Standard deviation on post intervention knowledge of antenatal women regarding effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy.

Domain	Max. Statement	Max. score	Range	Mean	Mean	SD
Knowledge	25	25	13-25	20.3	81.2	4.475

Table 5 explains the mean, median and standard deviation on post intervention knowledge level of women regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy. In that Mean is 20.3 and Standard deviation is 4.475.

Table 6: Distribution of difference between pre and posttest level of knowledge, regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy.

Domain	Mean	Standard Deviation	“t” test
Pretest	11.85	2.29	T value =8.9 df=19
Post-test	20.3	4.47	
Difference	8.45	4.27	

Table 6, describes “t” value was 8.9 and if was 19. It shows that we found that there was mean difference between pre and posttest knowledge level regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy among antenatal women in selected private hospital at varanasi district India.

Table-7: To find out the association between post intervention knowledge regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy among antenatal women with their selected demographic variables

S/ N	Demographic variables	No	percentage	N=30						Chi-Square test
				Inadequate		Moderate		Adequate		
				No	%	No	%	No	%	
1	Education									
	a) Primary education	7	23	0	0	6	20	1	3.	X ² = 1.25
	b) High school education	8	26.6	0	0	1	3.3	7	23.3	df =6
	c) Higher secondary	13	43.3	0	0	1	3.3	12	40	P < 0.05. Significant
	d) Graduate	2	7	0	0	0	0	2	7	
2	Gravid status									
	a) Primi gravid	18	60	0	0	4	13.3	14	46.6	X ² =0.149
	b) Multi gravid	12	40	0	0	4	13.3	8	26.6	df=2 P < 0.05 Significant

Table 7 shows that the association between the level of knowledge regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy among antenatal women with their selected demographic variables. The study result revealed that there is an association between knowledge and education, gravid status of women.

Discussion

The study was conducted to assess the knowledge regarding effects of peri conceptual intake of folic acid on prevention of neural tube defects during pregnancy among antenatal women attended opd at selected government hospital in Drug district, India. In order to achieve the objectives of the study, quasi-experimental one group pre and post test design was adopted. Simple random sampling technique was used to select the sample .The data was collected from 30 samples by using structured interview questionnaire tool .The findings of the study have been discussed with hypothesis and with the finding of other studies .In pre-test majority of the women 21(70%) were having inadequate knowledge. But in In post-test 22 (73%) antenatal women were having adequate

knowledge. The research hypothesis (H_1) was stated the mean post test knowledge score of antenatal women will be higher than the mean pre test knowledge score. (H_2) There will be a significance association between the post test knowledge level with their selected demographic variables. Findings of this study accepted the researcher's hypothesis.

Also this study finding was supported by a study conducted by Firdousa jan(2018) On Effectiveness of STP on knowledge regarding substance abuse among adolescents in selected school at Jammu and kashmir. The findings of the study revealed that in pre test 83.3 % of the subjects had inadequate knowledge where as in post test 100% of them had adequate knowledge. The study concludes that there was significant difference between pre and post test knowledge. [11]. Neural tube defects--including spina bifida, anencephaly, and encephalocele--are common, serious birth defects that are important causes of newborn mortality and disability. Daily oral supplementation with folic acid before conception and during early pregnancy substantially reduces the recurrence of neural tube defects. This report summarizes the findings of that study and provides recommendations for supplementation with folic acid to prevent the recurrence of neural tube defects. [9]

Limitation:

The result of this study should be generalized with caution as there are fewer samples.

Conclusion:

Neural tube defects are the serious birth defects of newborn in which an opening in the spinal cord or brain from early in fetal development. In order to improve the knowledge level on effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy among antenatal women attended opd in selected government hospital at durg district, India. The findings of the study conclude that overall mean score of knowledge was 20.3; the mean % was 81.3%. Also found that there was significant positive co-relation between knowledge and vedio assisted Teaching program and significant association found between post test knowledge level and demographic variables such as education and gravid status of women.

Implication:-

The result of the study proves that after vedio assisted structured teaching antenatal women had adequate knowledge regarding effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy. Nurses should provide periodical health education to the women in community, hospital during premarital counseling as well as with early ante antenatal management. In service education programme should be organized for nurses to provide adequate knowledge regarding effects of periconceptual intake of folic acid on prevention of neural tube defects during pregnancy. The nurse administrator should formulate policies protocols guideline to promote periodic nursing education, counseling prograame towards prevention of high risk birth defects during pregnancy.

Conflict of interest:

The authors declare no conflict of interest

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