

## The Effect of Health Educational Program on Pregnant Woman' Knowledgeabout Use of Folic Acid Supplementation.

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### Abstract:

**Introduction:** Vitamin B<sub>9</sub> (folic acid and folate) is essential to numerous bodily functions. Folic acid (FA) is a B-complex vitamin that can't be formed by the body, so its administration in food is required (Rehan M.,2015). The human body needs folate to synthesize, repair, and methylate Deoxyribonucleic acid (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.

**Aim:** The aims of this study were to evaluate the effect of health educational program on pregnant women' knowledgeabout use of folic acid supplementation.

**Method:** Quasi-experimental Pre/Posttest design was utilized in this study.

**Setting:** this study was conducted at the Maternal and Child Health (MCH) centers at Minia City.

**Sample:** A Convenient sample consisted of 100 pregnant women.

**Tool:** A Structured interview questionnaire was used in this study which included two main parts, personal data socioeconomic data and knowledge assessment sheet related to folic acid.

**Results:** 75% of studied sample not taken folic acid during the pregnancy period. Also, the results show that there were high statistical significance differences between pre and post educational program among them as regard mean of total knowledge scores.

**Conclusion:** There were poor knowledge about folic acid among pregnant women and increased the mean total knowledge scores after educational program. So, we recommend that, development of health education program is essential for all pregnant women regarding folic acid usage.

**Keywords:** Educational program, Folic Acid (FA.), Knowledge, Pregnant women

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### I. Introduction

Folic acid (FA) is a B-complex vitamin that can't be formed by the body, so its administration in food is indispensable for pregnant women(Rehan,2015).FA has a major role in normal embryonic development (Finnell.et al.,2004),as it acts as a fundamental of preventive intervention which is decisive for the development of the skull, brain and spinal column of the fetus (Fatima, et al.,2016)

Folic acid (FA) is a vitamin found in certain foods, including dark green leafy vegetables, peanuts and oranges (Safi and Chalouhi 2012). Folic acid is the fully oxidized monoglutamy form of the water-soluble vitamin commercially used and fortified foods. In terms of metabolism, folic acid is converted into coenzyme forms required in numerous one-carbon transfer reactions involved in the synthesis, inter-conversion and modification of nucleotides, amino acids, and other essential structural and regulatory compounds. Interference with Deoxyribonucleic acid (DNA) synthesis, reduced cell growth and destruction of cell division are possible effects of an absence of folic acid. Folic acid supplementation before and during early pregnancy can reduce the prevalence of neural tube defect (NTD) (Simone et al., 2006).

Folic acid was known under different names from 1933 by its curative effects in deficiency states in human and animals and it is essential for the maturation of red blood cell foods such as liver, meat, dairy

products, eggs, milk, fruits and cereals are good dietary source as leafy vegetables. "Women of child-bearing age, are recommended to consume 0, 4 mg/day of FA, to reduce the risk of congenital defects. The intake of folic acid should start at least one month before the conception and should continue for the first quarter of pregnancy" (American College of Medical Genetics Foundation 2004 & Salerno et al., 2013).

Deficiency of folic acid has been associated with anemia and other adverse outcomes in pregnancy such as neural tube defects (NTD). The recommendations for prevention of outcomes are difficult to achieve through diet only, and folic acid supplement and food fortification are feasible public health strategies. It is necessary to determine the usual diet and supplement use among women of reproductive age, including an accurate assessment of other dietary micronutrients (Almeida and Cardoso 2010).

Congenital abnormalities (CAs) concern all diseases of organs or body parts developed in utero. They can be either isolated localized in one organ or multiple affecting at least two organs grouped into a syndrome, a sequence, or an association. Their prevalence is about 14% of all human fetuses considering all types of abnormalities (Bethany et al., 2012 ). Among major CAs, are congenital heart diseases account for 25%, limb defects for 20%, and nervous system abnormalities for 10% (Simone et al., 2006). Moreover, CAs represent the first cause of infant mortalities, with an increasing proportion (more than 25%) in both developed and developing countries (Safi and Chalouhi 2012). Prevention of CAs is defined by individual and public health strategies that can reduce their prevalence.

These active strategies include nutritional interventions, prevention of maternal infections and diseases, peri-conceptional care of sick mothers (epileptic or diabetic), control of professional and environmental exposure to teratogens, and special attention to pregnancies exposed to major health determinants such as obesity, tobacco, alcohol, and drugs (Safi and Chalouhi 2012). Congenital anomalies play a significant role in perinatal and neonatal morbidity and mortality. The frequency of these congenital anomalies varies in different populations. As many infectious diseases have been controlled by use of vaccines and antibiotics (Nadia et al., 2007).

It is difficult and costly to treatment and rehabilitate the morbidity children ((Simone et al., 2006) & Salerno et al., 2013). Finding the variation in the frequency of congenital anomalies may be helpful for us in planning healthcare measures for possible prevention of such anomalies. The major causes of perinatal and neonatal death, both in developed and developing countries are congenital anomalies. They are presumed to be more prevalent in populations with cousin marriages. Congenital anomalies are either single isolated defects or present as multi - ple anomalies in a single individual. A syndrome is defined as a pattern of multiple abnormalities that are related by path physiology and result from common, defined etiology (Gillani et al., 2011).

Congenital anomalies are a major cause of admission and prolonged stay in nursery; they are also an important cause of early and late neonatal deaths. The causes for these anomalies are multifactorial (Gillani et al., 2011).

## **II. Significance of The Problem**

There was lack of knowledge among families and the health authorities about the importance of genetic counseling in the prevention of congenital malformations. Primary or true prevention is at present limited, for example folic acid can prevent only a small proportion of congenital anomalies (Safi and Chalouhi 2012). Tertiary prevention (corrective surgery or medical treatment of anomalies) is successful and curative for some malformations (Malak and Al-Hakeem 2012). The pattern and prevalence of congenital anomalies may vary over time or geographical location, thereby reflecting a complex interaction of known and unknown genetic and environmental factors including sociocultural, racial and ethnic variables (American College of Medical Genetics Foundation 2004 Nadia et al., 2007).

### **Aim of The Study**

1. Evaluate the effect of health educational program on pregnant women' knowledge about use of folic acid supplementation.

### **Hypothesis**

**H.1** Pregnant women will have inadequate knowledge about Folic Acid supplementation.

**H.2** Pregnant women post Educational program will have high score of knowledge about folic acid supplementation than pre- educational program.

## **III. Methodology**

**Design:** Quasi-experimental Pre/Posttest design was used to achieve the aim of the study. **Sitting:** Pregnant women who were admitted to Maternal and Child Health (MCH) centers at Mini city. **Sample:** The number of women who were found eligible for participation was convenient sample consisted of 100 pregnant women who agreed to participate in the study. The study assessed pregnant women's knowledge and use of folic acid as

follows: Pre/and post the intervention. The time interval between the pre-test and the post-test was (12) weeks; a period long enough to minimize the effect of the pre-test on the results and conclusions of the experiment. Data was collected within 12 months from January to December 2015, two days/week at official time from 8 am: 12 pm. The researchers met the subjects at MCH centers.

**Ethical approval** was obtained from the responsible authorities of. MCH centers. Participants' consent was obtained early of the study and steps to ensure confidentiality and anonymity were attained. A pilot study to assess the clarity of the study tools was carried out on ten women.

**Instruments**

An interview questionnaire which included two main parts. **First part** collected personal socioeconomic questions as age, educational level, trimester and socio- economic level. **Secondpart** contained questions about the knowledge related to definition of folic acid, resources, harmful effect of its lack, amount and requirement of folic acid, importance of its, and source of knowledge. The scoring system was designed 20 questions, every question equal two scores and total scores equal 40 scores. After the calculation of each subject's scores the subject who was has: less than 50% (less than 20 scores) have poor knowledge, 50- 70% (20 – less than 28 scores) have satisfactory knowledge and more than 70% (28 scores) have goodknowledge.

**Validity of the instrument**

The researchers validated the instrument by submitting it to a jury of five supervisors of maternity health nursing and community health nursing at Minia University. The researchers followed the recommendations of the referees and made amendmentsaccordingly.

**Reliability of the instrument**

To ensure the test reliability, the researchers followed test/retest technique. The researchers applied it to a pilot sample of (10) pregnant women who were excluded from the study with a two-week period between the test and the re-test. The reliability of the test was calculated using correlation coefficient and it was 0.89 which is appropriate for conducting such astudy.

**Folic acid educationprogram**

These three hours interactive learning session was delivered to those women who admitted to MCH centers. The program consisted of a formal lecture and discussion bout folic acid knowledge and how to use.

**IV. Results**

Table: (1). Shows that a total of 100 pregnant women participated in this study, their mean age (Standard Deviation) were  $23.0 \pm 4.08$  years old. Around one third of studied sample was primary education, half of the sample (50%) were at third trimester, and two thirds (61%) had middle socioeconomic status. This table also shows that the majority of subject (75%) not taking a folic acid during pregnancy period and this considered as a serous indicator.

Table (2) demonstrates Pre/Post knowledge about folic Acid among studied sample; as regards to concept of folic acid; forty five percent (45%) preof the studied sample told that is vitamin compared to 75% post education program. While (21%) of the studied sample don't know the concept of folic acid compared to 10%post (. About two third (63%) of them don't know harmful effect of its deficiencycompared to20% post. More than two third (70%) of the sample don't know how to avoid the deficiency of folic acid compared to 20% post. In relation to how to avoid side effect of folic acid deficiency, about two third of the sample don't know. As regards to the quantity of folic acid, about two third(64%) of the sample don't know the proper amount compared to only 10% post. In relation to knowledge about the importance of folic acid near to three quarter (74%) of the studied sample don't know the importance of folic acid compared to 16% post. The majority of the studied women (82%) werein need to health education. The most percentage of sources of knowledge about folic acid from health care provider were doctors and nurses (78.0%).

Table (3). Shows the distributionof pregnant women knowledge level in pre-& post educational program among studied sample. it was observed that there was an improvement inpregnant women level of knowledge regarding folic acid post program.

Table (4). Demonstrate the relation between level of knowledge regarding folic acid post program and level of education among studied sample with statistically significant differences.

**Table 1:** Demographic characteristics of the studied sample

Variable	No	%
Mean age (years) Mean + SD	23.04 ± 4.08 years	
Level of education		
Primary	37	37%

Secondary	29	29%
High education	34	34
<b>Trimester</b>		
1 <sup>st</sup>	20	20%
2 <sup>d</sup>	30	30%
3 <sup>rd</sup>	50	50%
<b>Folic acid taken Intake</b>		
Yes	25	25%
No	75	75%
<b>Socio-economic level</b>		
Low	3	3%
Middle	61	61%
High	36	36%

**Table 2: Pre/Post knowledge about folic Acid among studied sample.**

Variables	Pre		post	
	No	%	No	%
<b>Concept of folic acid</b>				
• Vitamin	45	45%	75	75%
• Type of mineral	34	34%	15	15%
• Don't know	21	21%	10	10%
<b>Sources of FA</b>				
• Know	25	25%	75	75%
• Don't know.	75	75%	25	25%
<b>Know harmful effect of its deficiency:</b>				
• Yes	37	37%	80	80%
• No	63	63%	20	20%
<b>Required quantity:</b>				
• 400 micro/day	20	20%	20	20%
• 400 milligram /day	16	16%	70	70%
• Don't know	64	64%	10	10%
<b>Know importance of folic acid:</b>				
• Yes.	26	26 %	84	84%
• No.	74	74 %	16	16%
<b>Avoid deficiency of FA:</b>				
• Know	30	30%	80	80%
• Don't know	70	70%	20	20%
<b>Take folic during pregnancy:</b>				
• Yes	60	60%	90	90%
• No	40	40%	10	10%
<b>Source of knowledge:</b>				
• Doctors or nurses.	78	78%	78	78%
• Internet.	8	8%	8	8%
• T.V./media.	6	6%	6	6%
• Brochure.	8	8%	8	8%
<b>You need health education:</b>				
• Yes.	82	82%	82	82%
• No.	18	18%	18	18%

**Table 3: Distribution knowledge level in pre& post educational program among studied sample**

Item	Pre-Program No.	%	Post Program No.	%
Good	18	18%	56	56%
Satisfactory	19	19%	22	22%
Poor	63	63%	22	22

**Table 4: Relation between level of knowledge regarding folic acid post program and level of education among studied sample**

Level of Knowledge	Level of education			P-Value
	primary	secondary	High education	
Good	9	15	32	0.001*
Satisfactory	10	11	1	0.001*
Poor	18	3	1	0.003*

## V. Discussion

This pre-posttest study was aimed to evaluate the effect of health educational program on pregnant women' knowledge about use of folic acid supplementation. Their mean age (Standard Deviation) were 23.0 ±

4.08 years old as shown in table 1. Two third (68%) of them was high socio-economic level.

About two third of the studied sample know little knowledge about the folic acid and the most of them need health education. so, it is important to implement educational intervention. This agree with study conducted by Bagheri, behnampour, and ghaemi (2010) who stated that, there is a strong need for immediate public health education initiative. Information to specifically inform women about the need to take folic acid for the prevention of NTDs by all tiers of healthcare system and media, can improve the intake of folic acid during the protective period.

Participant in this study reported that, the health care providers were the main source of knowledge about folic acid. This agree with study conducted by Murad, (2013) who mentioned that, main source of knowledge about folic acid among the women was through the health workers (Al-Holy 2013).

About two third of pregnant women in this study don't know harmful effect of folic acid deficiency, because there is no educational intervention about folic acid supplementation before; this agree with studies conducted (National Institute of Population Studies 2007, Wade and McBeth 2012) stated that, no studied of educational intervention on folic acid topic delivered to the females in college for women.

In relation to knowledge about the importance of folic acid; in near to three quarter of the studied sample don't know the importance of folic acid. This agree with (Jamela et al.,2008) who stated in her study that, a high percentage of educated women were not aware by the importance of folic acid.

The study has highlighted a good level of knowledge among highly educated women whereas those women who were exposed health education about folic acid with positive correlation was observed ( $P < .001$ ). On the contrary study carried out in Malaysia showed that education was positively associated with vitamin/mineral supplementation (Pon et al., 2006). A study conducted by (Mohamed et al., 2012) the knowledge of iron rich foods was poor. Higher level of knowledge was observed in subjects with higher educational background ( $p < .001$ ). Another study carried out in India by (Kuar and Singh) to see the effect of education on knowledge, attitude and practice of pregnant women showed that 93% of the educated women were in favor of including iron rich foods in their diet as compared to 67% in the group with no education ( $p < 0.001$ ).

These results indicate that, immediate health program consisting oral presentation and handout about folic acid is effective in increasing knowledge about uses of folic acid and importance of folic acid to prevent congenital anomalies and other complication of its deficiency.

## VI. Conclusion

According to the results of this study there was poor knowledge about folic acid among pregnant women and increase mean total knowledge scores after the educational program. So, there is need to increase the knowledge of females about the using and importance of folic acid in all setting of the community especially MCH centers.

## V. Recommendations

1. Development of health education programs is essential for pregnant women regarding folic acid usage.
2. Repeated the educational program after 3 & 6 months to evaluate the retained knowledge regarding folic acid supplementation.
3. Increase Health educational programs about the health of the women during pregnancy, labor, and post-partum periods.
4. MCH. centers should provide all women folic Acid supplementation especially who are newly married and primiparous women.

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